Contingency Plan with Guidelines & SOP's for COVID-19

02 April 2020

Compiled by :

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3. **Karnataka State Disaster Management Authority. Bengaluru**

Disclaimer:

These guidelines as prepared as per the present Government of India & WHO advisories are subject to modification as and when new advisories are issued.

Background

1. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered “novel corona virus”. Most people infected with the COVID-19 virus will experience mild to moderate symptoms and recover without requiring special treatment. People who have underlying medical conditions and those over 60 years old have a higher risk of developing severe disease and death. Common symptoms include fever, tiredness & dry cough. Other symptoms include shortness of breath, aches and pains, sore throat and very few people will report diarrhoea, nausea or a runnynose.

2. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneeze. This can happen by direct close contact with COVID-19 positive patient and indirect contact where the droplets survive on surfaces and clothes for many days. And by touching any such infected surface or cloth and then touching one’s mouth, nose or eyes can transmit the disease. The time between getting the infection and showing symptoms (incubation period)of COVID 19 is 1 to 14 days. Some people with the infection, but without any serious symptoms can also spread the disease. At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments.

3. WHO has declared the COVID-19 outbreak as Public Health Emergency on 11 February 2020 and subsequently classified it as a global pandemic.

4. India reported the first confirmed case of the corona virus infection on 30 January 2020 in the state of Kerala. The affected had a travel history from Wuhan, China. India has started implementing preventive measures to curb the spread of the disease. Starting from 04 March, India mandated universal screening at all airports in the country given the rise in coronavirus imports. Thermal screening has been installed at 21 airports including Bengaluru to check for coronavirus in India. The Prime Minister of India requested all citizens to observe a nation-wide curfew or "Janta curfew" on 22 March from 7 am to 9 pm. urging people to not leave their houses on that day unless for emergencies. He noted that this exercise would help in following social distancing in the coming weeks. Screening measures have also been implemented at 12 major seaports and 65 minor seaports and landborders.

5. The Prime Minister has taken bold and decisive steps to break the chain of transmission and as ordered for a total clampdown till 14th April We are now at an important turning point in our fight against COVID-19. It is equally vital that this window is used for further ramping up measures to find, isolate, test, treat and trace.
6. Karnataka reported its first confirmed case on 9 March 2020 and subsequently invoked provisions of the Epidemic

Diseases Act, 1897. A total of 14,115 persons have enrolled for observation and 182 in total are currently in Isolation at Health Facilities. A total of 1.6 lakh International passengers have been screened at the airports in the State and 6166 passengers have been screened at Mangalore and Karwar seaports. There has been no flight movement from 23.03.2020, 1:30am onwards.

7. As on 29 March 2020 83 COVID-19 positive cases have been confirmed in the state which includes 3 deaths & 5 discharges. Out of 83 cases in Karnataka so far 6 cases are transit passengers of Kerala who have landed in airports and being treated in Karnataka.

ABSTRACT			
	ACTIVITIES	**Today**	**CUMULATIVE**
A	**Persons Enrolled For Observation**	308	14115
B	**Persons In Isolation At Health Facilities**	80	228
C	**Total samples collected for Testing**	179	3170
D	**Total samples reported as negative**	229	2874
E	**Total Samples Positive for COVID-19**	7	83

8. In order to assess the requirement of infrastructure and manpower for the clinical management of Covid-19 cases a preliminary meeting was held by ACS, Health and Family Welfare with a few luminaries like by Dr Devi Shetty, Chairman, Narayana Hrudayalaya, Dr Alexander Thomas, President of Association of Healthcare providers of India, and Dr Chandrashekhar, K. R. hospital, Bengaluru, Dr. Ravindra, President, PHANA and few other senior doctors of the Government. It was proposed in the meeting that the State of Karnataka should urgently prepare a contingency plan keeping in view the experience of worst affected countries like Italy, China, Iran etc., and that the plan should be prepared with a very short deadline.

9. It was decided to immediately implement the important elements of the plan without awaiting the completion of the full document. As such now 31 fever clinics have already been established and operationalized in Bangalore, 17 hotels have been identified as supervised quarantine centers and Victoria & Bowring Hospitals have been designated as COVID hospitals.
10. Based on the increasing COVID confirmed cases in the country and state and also the experience of the other countries a contingency plan needs to be developed to be prepared for the exigencies

11. A Contingency plan is a course of action designed to help and respond effectively to a significant future event or situation that may or may not happen. Contingency plan a proactive strategy, set up to account for disruptive unplanned events, that enable preparedness if and when they arrive. It accounts for developing steps to take when an actual issue occurs.
12. A contingency plan requires a great deal of research and brainstorming. We have had several rounds of meeting with medical experts from the Government as well as Private medical establishments. Based on these meetings and their recommendations we have designed a projection matrix for the state, district wise, an escalation matrix and worked out on the resources and resource personnel required for implementing the Contingency Plan. We have drawn a strategy for Community surveillance, quarantine, supervised isolation wards, PPEs, trained manpower, rapid response teams for COVID-19 pandemic management.

Projection matrix

13. The Department of Disaster Management has used the incidences of cases from four countries, which have comparable population connectivity i.e., Italy, Iran, China and Spain. We chose to focus on these population centres, on the assumption that the introduction of COVID-19 was most likely to occur in international transportation hubs, and thus that these countries were most likely to be the focal points of initial COVID-19 transmission in the country. Based on the incidence of COVID19 in the Lombardi of Italy, where it was around 13,000 cases per ten million population, the projection matrix is formulated for our state, (district wise including) which was as suggested by the team of private establishment doctors lead by Dr Devi Shetty, Narayana Hrudayalaya, Dr Alex – Baptist Hospital, and Dr Chandrashekhar – K R hospital, because the state needs to be prepared for the conditions, which have been faced by the above mentioned countries. We have projected little on the higher side for the city of Bangalore because of its population connectivity and density. The projected percentages are shown in the table below.

	Bangalore	Hot spots	Rest of Karnataka
Population to Positive cases	0.15%	0.14%	0.11%
Positive cases to hospitalisation	15%	15%	15%
Positive cases to ICU	5%	5%	5%

14. Based on the District wise projected population and the likely positive cases, hospitalization and ICU cases as per the percentages above. The total projected across the state is about 87196.

Sl. No.	District	Incidence	Sl. No.	District	Incidence
1	Bangalore	18040	16	Mandya	2225
2	Bangalore Rural	1554	17	Hassan	2189
3	Kalaburagi	4024	18	Shimoga	2159
4	Chikkaballapura	1968	19	Bidar	2098
5	Mysore	4706	20	Chitradurga	2044
6	Kodagu	869	21	Haveri	1968
7	Dharwad	2896	22	Kolar	1893
8	Dakshina Kannada	3277	23	Uttara Kannada	1771
9	Belgaum	7495	24	Koppal	1712
10	Tumkur	3301	25	Udupi	1451
11	Bellary	3022	26	Yadgir	1447
12	Bijapur	2682	27	Chikmagalur	1402
13	Davanagere	2397	28	Ramanagara	1334
14	Raichur	2376	29	Gadag	1312
15	Bagalkot	2328	30	Chamarajanagar	1258
				Total	**87196**

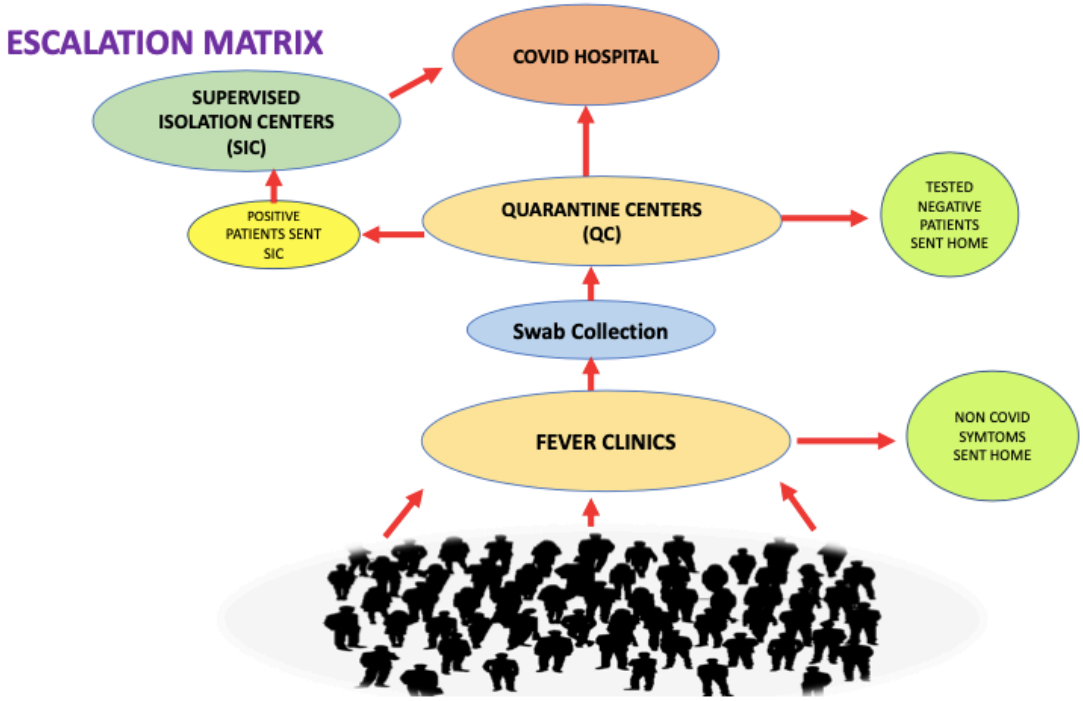
15. **Escalation matrix**

It is required for augmentation of resources, proper coordination, monitor and review. It also helps in preparation of clear protocols for each level. After deliberation it was agreed to have the following escalation

matrix.

1. Fever Clinics
2. Quarantine Centers
3. Isolation Centers
4. Designated COVID 19 Hospital

The escalation is presented here as a chart as below



FEVER CLINICS

16. Any citizen with any symptoms related to corona virus like fever, cough, sore throat or breathlessness will first reach the fever clinics opened in various parts of the city / district. The first point of
17. contact for suspected Covid-19 patients in the state during the operation of the contingency plan shall be Fever Clinics only. These clinics will have a COVID Rapid Response (CRR) team comprising of a 1 doctor, 2 nurses and a health care worker. The total number of fever clinics projected for the state 581.

18. As per the prescribed protocol, the team will check the temperature of the citizens coming to the clinic based on the symptoms and temperature, will triage them into suspected group and safe group and the demographic details is captured in case of the suspected group. The suspect is then sent to the swab collection center for collecting swab as per protocol.
19. The suspect is then shifted to the nearest quarantine center until the results of the swab is received. Necessary augmentation of infrastructure and manpower will be established to run the Fever clinics. It was also agreed that the Private health care establishments will support in establishing/ adopting fever clinics.

QUARANTINE CENTER (QC)

20. Quarantine refers to separation of individuals who are not yet ill but have been exposed to COVID-19 and therefore have a potential to become ill. All suspect cases detected in the fever clinics (till a diagnosis is made), will be kept in in a designated facility (quarantine centre) till such time they are tested negative.
21. Based on the projections we require about 1744 across the state at a capacity of 150 per center. QC will be located in Hotels, Hostels, Service apartments, make shift accommodations for a minimum of 150 beds. Based on the triage at the fever clinics, suspected cases who have been recommended for swab tests are shifted to QC after swab collection. Here suspected cases who are awaiting swab results and not likely to be infected based on the symptoms are stationed.
22. QC will have a team of 2 nurses, 1 doctor and 1 help per

shift. The temperature and symptoms of the suspected cases are monitored as per protocol. Suspected cases will remain in QC till Test results are received, based on which the suspect is sent to the Isolation center if he has mild symptoms and to the COVID hospital if he has moderate or severe symptoms. If the result is negative he is sent home and asked to come to the fever clinic if he again has symptoms as per protocol.

SUPERVISED ISOLATION CENTERS (SIC):-

23. Isolation for people who are confirmed to have COVID-19 is mandatory to prevent spread. Isolation refers to separation of individuals who are ill and suspected or confirmed of COVID- 19. Based on the triage done at the QC, Covid-19 positive patients who requires close medical supervision will be shifted to SIC. SIC will be isolation centers with medical care available by a team of 1 specialist, 2 doctor and 4 nurses and will follow the protocols for isolation centers. Special personal protective equipment will be used to care for these patients in health care settings.
24. Based on the projections we require about 371 across the state at a capacity of 200 per center. COVID 19 positive patients are kept under close observation and depending on the situation COVID -19 positive patients will be discharged. If critically ill, will be sent to COVID-19 Hospitals for further treatment. Persons testing positive for COVID- 19 will remain in Supervised Isolation centres and hospitalized till such time 2 of their samples are tested negative as per MoHFW's discharge policy.

COVID-19 HOSPITALS:-

25. Will be the apex centre for treating critically ill COVID-19

patients. Only patients from either isolation or quarantine centres will be allowed to be admitted in the Covid-19 hospitals. Here all facilities like central oxygen line and ICU with ventilators are available.

26. These will be identified one in each district. These hospitals will have ICU facility with piped oxygen supply and ventilators. We will have two teams in the Hospital,

    1. Medical team of general physicians, pulmonologists and infectious disease experts headed by a senior physician from the government hospital with members from both government and private hospitals will treat patients.

    2. ICU team of anaesthesiologists and intensivists headed by a physician from the govt hospital with members from both government and private hospitals.

    The requirement of Anaesthesiologists, Intensivists, Pulmonologists, ICU Trained Nurses, Junior doctors with basic knowledge of ICU care, Nephrologists, Radiologists, Gastroenterologists, Neurologists, and Cardiologists will be deployed from pooling of resources from government, medical colleges and private sector.

27. About 15% of the patients are likely to develop pneumonia, 5 % of whom require ventilator management. Hence dedicated Intensive care beds needs to be earmarked. Some among them may progress to multi organ failure and hence critical care facility in needs to be identified.
28. At all times doctors, nurses and para-medics working in the clinical areas will wear three layered surgical mask and gloves. The medical personnel working in isolation and critical care facilities will wear full complement of PPE (including N95 masks). The support staff engaged in

cleaning and disinfection will also wear full complement of PPE. Environmental cleaning should be done twice daily and consist of damp dusting and floor mopping with Lysol or other phenolic disinfectants and cleaning of surfaces with sodium hypochlorite solution as per protocols. (Detailed guidelines available on MoHFW's website may be followed for the same).

29. Requirements for each of the escalation units-
    a) Requirements for fever clinics would be 2 Thermal scanners, 2 BP apparatus, 2 Pulse oximeter, Masks and sanitizers, Floor mopping solution and 2 Ambulances.
    b) Requirements for Swab Collection Centre would be Swab Collection kits , PPEs, Viral transport media (VTMs), Cold Transport boxes, Sodium Hypochloride solution, adequate sanitizers, bio medical waste bins, 6 Staff Nurse/ technicians and Ambulance.
    c) Requirements for the Swab testing centre would be a RTPCR (Real Time Polymerized Chain Reaction) kits, 3 Sample receivers, 3 RNA extractors, 3 Assorters, 3 PCR sample runners, 2 Reporters, 3 Dispatchers/ Data entry operators, PPE kits and Consumables- reagents etc.
    d) Requirements for Quarantine Centres would be 150 bed centre with drinking water, toilets, food for the patients, 2 Thermal scanners, 2 BP apparatus, 2 Pulse oximeter, Masks and sanitizers, Floor mopping solution and 2 Ambulances.
    e) Requirements for Isolation Centres would be 5 Thermal scanners, 8 BP apparatus, 10 Pulse oximeter, Portable Oxygen cylinders, 50 IV stands, 10 cardiac table, IV fluids- RL/DNS, Emergency drugs- anti allergen, hydro cortisone, 100 Oxygen delivery Masks, HEPA installation and 2 Ambulances.

30. Manpower Abstract projections required per unit per shift would be.

	Nurse	Doctors	Specialist	Help	Shifts per day
Fever clinic	2	1		1	3
QC	2	1		1	3
SIC	4	2	1	3	3
Hospital	10	4	2	2	3
ICU	35	10	5	2	4

31. Daily Consumables 100% projected case load for the state would be

Unit	N 95 masks	PPE	Sanitiser	Gloves	Hand wash	Patient Gowns
Fever clinic	6976		1744	13951	13951	
QC	15695		17439	52318	52318	
SIC		7782	3706	44470	44470	
Hospital		6278	1308	12555	12556	
ICU		8720	436	17439	17439	
Total	23000	23000	25000	141000	1200	90000

32. The total Manpower required for the state per week would be

	Fever Clinics	SICs	Hospitals	ICU	Total
Nurse	2615	7848	3924	6104	**20491**
Doctors	1307	3924	1570	1744	**8545**
Specialist		1962	785	872	**3619**
Lab Technician	2615				**2615**

33. We would prepare detailed entry to exit protocols for each of the following

P-1 Fever Clinics

P-2 Swab Collection

P-3 Testing center

P-4 Quarantine Center (QC)

P-5 Supervised Isolation Center (SIC)

P-6 COVID Hospitals (CH)

P-7 ICU Management

P-8 Biomedical Waste management

P-9 Hospital Infection control Protocol

P-10 Stock receiving & Reporting protocol

P-11 Resource Mapping & delegation

P-12 Food & essential requirement delivery & disposal

P-13 Control room- Call center

34. The contingency plan proposes a MIS monitoring tool where we can collect daily data from all the escalation units and compile centrally. The escalation units will report work status as well as the consumables consumed daily on the portal. MIS reports would be required for effective management of resources and in making policy decision.

35. Subsequent of Approval of the contingency plan, Districts will Implement the following

1. Identification of Resources and augmentation of
    a. Fever Clinics – Location and identification of fever clinics,infrastructure, teams, protocols
    b. COVID Rapid Response teams for Fever clinics and training on protocols
    c. Testing & Screening infrastructure at Fever Clinics
    d. COVID-19 hospitals- Location and identification of hospitals and necessary infrastructure

augmentation.

e. Medics & Paramedics for QCs, SIC's and COVID-19 Hospitals

f. PPE availability, distribution and necessary training

g. Other resources- oxygen cylinders, masks, sanitizers, drugs etc.

2. Pooling of resources – infrastructure and manpower of Governments, Medical colleges and private establishments
3. Establish Command and control room as access points forcitizens
4. Targets of probable positive cases, hospitalisation, ICU to be given district/ corporation wise and communicate to Districts
5. Reporting, Monitoring and review tool-portal
6. Mobile app for effective & authentic communication to citizens

36. The above plan was placed before the High Level committee of Medical experts under the chairmanship of Hon'ble Vice Chancellor, Rajiv Gandhi University of Health Sciences (G O MED187 MMC 2020 Dtd 19 03 2020). The committee has held a series of meeting and submitted the report to the Government (Vide file no VC/PS/100/2019-20 dtd 28. 03. 2020) and has approved the contingency plan prepared. It also finalised protocols as per the contingency plan requirements.

37. This plan can serve as the guide post in managing Covid-19 Pandemic in the state of Karnataka. The Covid-19

Contingency plan encompassing the escalation matrix, protocols and resources required, projections are placed as annexure to this note.

38. Staggered requirement of Infrastructure, consumables and manpower are prepared based on the following projections.

Total projected	Week 1	Week 2	Week 3	Week 4
100%	20%	50%	80%	100%

39. Based on the inputs received by the districts the implementation of this contingency plan will be reviewed by the State Executive Committee and decision will be taken regarding the level of augmentation in a phase-wise manner.

40. The COVID 19 Cabinet Subcommittee task force will review periodically decisions taken by the State Executive Committee

41. The above proposal is approved by the State Executive Committee.

TITLE: FEVER CLINIC **SOP NO: P1**
BY: RGUHS

SCOPE: To be used by the Government health authorities/ hospitals/ clinicians running fever clinic

Purpose: This document describes the information regarding the patient screening for fever due to suspected COVID 19 infection

Responsibilities:

1. Social distance is to maintained by the patients before seeing the registration desk
2. Registration of the patient details – soci-demographic details with contact number
3. Recording of the temperature using thermal scanner and other vitals – 1 & 2 by Nurse
4. Referring to the doctor for detailed examination
5. Repeated cleaning of the environment with sodium hypochlorite (1%)
6. All the HCW including the ground staff to wear N95 mask and gloves

Selection of the patient

1. Based on the case definition as per GOI patient is to be segregated as suspected COVID or Not
2. If COVID suspected then such patients are to be sent for the specimen collection to the nearest specimen collection centre or testing centre.
3. If Suspect case is having all the clinical symptoms as per the case definition and having moderate to severe illness*, more than 60 years of age, then such patients are to be sent to designated COVID-Hospital
4. If the patient is Non COVID 19 – such patients are to be sent to home with an advice as per the norms and home quarantine

Documents to accompany

1. Details of the patient – registration details
2. Doctor advise slip for laboratory testing

- * Patient needs to shifted to designated COVID19 Hospital

Mode of transport of the suspected COVID Patient is only by the designated vehicle at the fever clinic.

BMW Management: as per the guidelines laid down the GOI

National Centre for Disease Control
Directorate General of Health Services
MoHFW, GOI, New Delhi

The updated case definitions and contact-categorisation

It has been observed that WHO has recently updated the case definitions based on the current information available and will be revised as new information accumulates. India may also need to adapt case definitions depending on current epidemiological situation. Based on the available information on COVID-19, the following case definitions are put forth for approval:

Suspect Case:
A patient with acute respiratory illness {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath)}, **AND** a history of travel to or residence in a country/area or territory reporting local transmission (See NCDC website for updated list) of COVID-19 disease during the 14 days prior to symptom onset;

OR

A patient/Health care worker with any acute respiratory illness **AND** having been in *contact* with a confirmed COVID-19 case in the last 14 days prior to onset of symptoms;

OR

A patient with severe acute respiratory infection {fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness breath)} **AND** requiring hospitalization **AND** with no other etiology that fully explains the clinical presentation;

OR

A case for whom testing for COVID-19 is inconclusive.

Laboratory Confirmed case:
A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.

Updated definition of contact:
A contact is a person that is involved in any of the following:

- Providing direct care without proper personal protective equipment (PPE) for COVID-19 patients
- Staying in the same close environment of a COVID-19 patient (including workplace, classroom, household, gatherings).
- Traveling together in close proximity (1 m) with a symptomatic person who later tested positive for COVID-19.

High Risk Contact:

- Touched body fluids of the patient (Respiratory tract secretions, blood, vomit, saliva, urine, faeces)
- Had direct physical contact with the body of the patient including physical examination without PPE.

- Touched or cleaned the linens, clothes, or dishes of the patient.
- Lives in the same household as the patient.
- Anyone in close proximity (within 3 ft) of the confirmed case without precautions.
- Passenger in close proximity (within 3 ft) of a conveyance with a symptomatic person who later tested positive for COVID-19 for more than 6 hours.

Low Risk Contact:

- Shared the same space (Same class for school/worked in same room/similar and not having a high risk exposure to confirmed or suspect case of COVID-19).
- Travelled in same environment (bus/train/flight/any mode of transit) but not having a high-risk exposure.

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Specimen Collection, Packaging and Transport Guidelines for 2019 novel Coronavirus (2019-nCoV)

Title: Specimen Collection, Packaging and Transport Guidelines for 2019 Novel Coronavirus (2019-nCoV)	SOP number: ICMR-NIV/2019-nCoV/Specimens_02 Prepared by: Dr. Y.K. Gurav Date: 25/01/2020 Reviewed by: Dr. V. Potdar Date: 25/01/2020 Approved by: Dr. P. Abraham Date: 25/01/2020

Scope:

To be used by the Government health authorities/ hospitals/ clinicians/ laboratories planning to collect appropriate clinical samples as indicated for diagnosis of 2019-nCoV.

Purpose:

This document describes the information for collection, packaging and transport of clinical specimens to Influenza group at ICMR-National Institute of Virology (NIV), Pune, Maharashtra for diagnosis of 2019 Novel Coronavirus (2019-nCoV)

Responsibilities:

- The clinician should decide necessity for collection of clinical specimens for laboratory testing of 2019-nCoV only after following the case definition as given by the health authorities, Government of India.
- Appropriate clinical sample need to be collected by laboratory personnel/ health care worker trained in specimen collection in presence of clinician.
- By following all biosafety precautions and using personal protective equipment's (PPEs), clinical samples need to be sent to designated laboratory (ICMR-NIV, Pune) by following standard triple packaging.

Selection of patient:

Any person who presents with Severe Acute Respiratory Illness (SARI), AND any one of the following i.e. a history of travel from Wuhan, China in the 14 days prior to symptoms onset; disease in healthcare worker working in an environment of SARI patients; unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment; should be urgently investigated. Updated case definition need to be followed as per MOHFW, Govt of India which is available on the website www.mohfw.gov.in

Specimen collection details:

(Adapted from the WHO guidelines on 2019-nCoV):

Specimen type	Collection materials	Transport to laboratory	Storage till testing	Comment
# Nasopharyngeal and oropharyngeal swab	Dacron or polyester flocked swabs*	4 °C	≤5 days: 4 °C >5 days: -70 °C	The nasopharyngeal and oropharyngeal swabs should be placed in the same tube to increase the viral load.
Bronchoalveolar lavage	sterile container*	4 °C	≤48 hours: 4 °C >48 hours: –70 °C	There may be some dilution of pathogen, but still a worthwhile specimen
Tracheal aspirate, nasopharyngeal aspirate or nasal wash	sterile container*	4 °C	≤48 hours: 4 °C >48 hours: –70 °C	Not applicable
Sputum	sterile container	4 °C	≤48 hours: 4 °C >48 hours: –70 °C	Ensure the material is from the lower respiratory tract
Tissue from biopsy or autopsy including from lung	sterile container with saline	4 °C	≤24 hours: 4 °C >24 hours: –70 °C	Autopsy sample collection preferably to be avoided
# Serum (2 samples – acute and convalescent)	Serum separator tubes (adults: collect 3-5 ml whole blood)	4 °C	≤5 days: 4 °C >5 days: –70 °C	Collect paired samples: • acute – first week of illness • convalescent – 2 to 3 weeks later
# Whole Blood (5 ml)	Blood in EDTA Vial	4 °C	≤5 days: 4 °C	Not applicable

For transport of samples for viral detection, use VTM (viral transport medium) containing antifungal and antibiotic supplements. Avoid repeated freezing and thawing of specimens.* *# Priority specimens .*** *Other specimens need to be sent as per the clinical condition of the patient*

Specimen labelling and processing:

- Personal protective equipment's (apron, hand gloves, face shield, N95 Masks etc.) need to be used and all biosafety precautions should be followed so as to protect individuals and the environment.
- Proper labelling (name/age/gender/specimen ID) need to be done on specimen container and other details of sender (name/address/phone number) on the outer container by mentioning "To be tested for 2019-nCoV"
- For any queries, the nodal officer from ICMR-NIV Pune (Dr Yogesh K. Gurav, Scientist E) may be contacted (Phone 020-26006290/ 26006390; Email: gurav.yk@gmail.com/gurav.yk@gov.in) and need to be informed in advance before sending specimens to ICMR-NIV, Pune.

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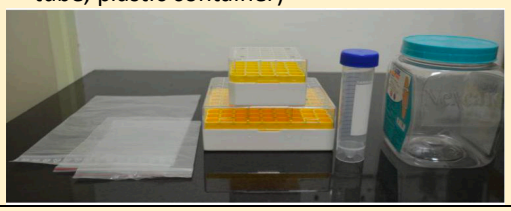
Specimen Collection, Packaging and Transport Guidelines for 2019 novel Coronavirus (2019-nCoV)

Requirements for Clinical Samples Collection, Packaging and Transport

1. Sample vials and Virus Transport Medium (VTM)

2. Adsorbent material (cotton, tissue paper), paraffin, seizer, cello tape

3. A leak-proof secondary container (e.g., ziplock pouch, cryobox, 50 mL centrifuge tube, plastic container)



4. Hard-frozen Gel Packs

5. A suitable outer container (e.g., thermocol box, ice-box, hard-board box) (minimum dimensions: 10 x 10 x 10 cm)

Procedure for Specimen Packaging and Transport

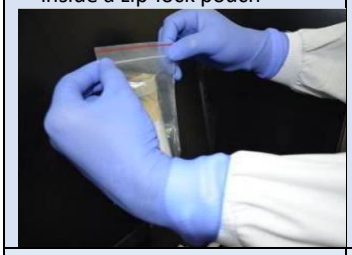
1. Use PPE while handling specimen

2. Seal the neck of the sample vials using parafilm

3. Cover the sample vials using absorbent material

4. Arrange primary container (vial) in secondary container

5. Placing the centrifuge tube inside a zip-lock pouch

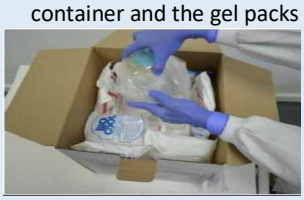


6. Placing the zip-lock pouch inside a sturdy plastic container and seal the neck of the container

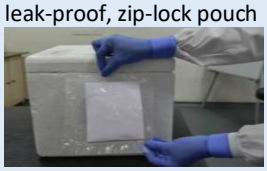
Note: *Sample vials can also be placed inside a zip-lock pouch, covered in absorbent material and secured by heat-sealing or rubber bands. Then, the zip-lock pouch should be placed inside another plastic pouch and secured*

7. Using a thermocol box as an outer container and placing the secondary container within it, surrounded by hard-frozen gel packs

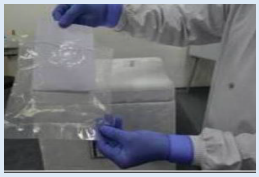
7. Using a hard card-board box as an outer container and placing the secondary container and the gel packs



8. Placing the completed Specimen Referral Form (available on www.niv.co.in) and request letter inside a leak-proof, zip-lock pouch

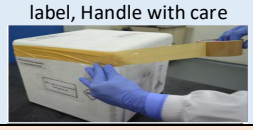


9. Securing the zip-lock pouch with the Specimen Referral Form on the outer container



10. Attaching the labels:

- Senders' address, contact number; Consignee's address /contact number;
- Biological substance-Category B;
- 'UN 3373'; Orientation label, Handle with care



Documents to accompany:

1) Packaging list/proforma Invoice 2) Air way bill (for air transport) (to be prepared by sender or shipper) 3) Value equivalence document (for road/rail/sea transport) [Note: 1. A vaccine-carrier/ice-box can also be used as an outer container 2. The minimum dimensions of the outer container should be 10 x 10 x 10 cm (length x width x height)]

Routing of samples:

- Clinical specimens, official documents and Specimen request forms for testing of 2019-nCoV need to be sent to the ICMR-NIV address (The Director, ICMR-National Institute of Virology, 20-A, Dr Ambedkar Road, Pune, Maharashtra, Pin: 411001).
- For shipment-related queries/information, kindly contact Dr Sumit Bharadwaj (Scientist B, Influenza Group) on email: sumitduttbhardwaj@gmail.com, phone 020-26006290/26006390

Ministry of Health & Family Welfare
Government of India

Help us to help you

NOVEL CORONAVIRUS (COVID-19)

COVID-19 testing - when and how?

All individuals need not be tested, because

Disease is primarily reported in Individuals with travel history to the affected countries or close contacts of positive cases

WHOM TO TEST

ALL symptomatic people who

- Have history of international travel in last 14 days
- Had come in contact of confirmed cases
- Are healthcare workers
- Are hospitalized patients with Severe Acute Respiratory Illness (SARI) or Influenza Like Illness (ILI) or severe pneumonia.

Asymptomatic direct and high-risk contacts of confirmed cases should be tested once between day 5 and day 14 of coming in his/her contact. Direct and high-risk contact include:

- Those living in same household with a confirmed case
- Healthcare workers who examined a confirmed case without adequate protection as per WHO recommendations

List of labs (Govt. & Private) can be accessed at: icmr.nic.in

davp 17102/13/0031/1920

For further information:
Call the State helpline numbers or Ministry of Health and Family Welfare, Government of India's 24x7 helpline numbers

1075 (Toll Free) | 011-23978046
Email to: ncov2019@gov.in , ncov2019@gmail.com

mohfw.gov.in @MoHFWIndia @MoHFW_INDIA mohfwindia

as per inspection of the sequence alignment were designed

First line screening assay: E gene assay

Pl note along with novel corona real time PCR protocol, sample should be tested for Influenza detection

Reference:

https://www.who.int/health-topics/coronavirus/laboratory-diagnostics-for-novel-coronavirus

Requirements:

a. Instruments:

1. Real Time PCR machines (Make : ABI, Biorad, Roche)
2. Biosafety cabinet (Make: Micro FITT, Model: MFIBIO4X2, Serial no: 14476, Rm no: Reagent preparation room)

b. Pipettes

1. Rm. Reagent preparation room

For reagent dilutions

0.5-10 µl (Make: BIOHiT, Serial no:6519410)
20-200 µl (Make: Thermo, Serial no:CH17505)
100-1000 µl (Make: Thermo, Serial no:CH28611)

For master mix preparation (Make: Thermo)

0.5-10 µl (Serial no:V44877)
2-20µl (Serial no:V42740)
20-200 µl (Serial no:U75613)
100-1000 µl (Serial no:CH01229)

2.Rm. RNA addition room:

5-100 µl multichannel (Make: BIOHiT, Serial no.6545582)
2-20 µl (Make:Thermo, Serial no. V17267)

3. Rm. Real Time PCR room (Positive control addition)

2-20µl (Make: Thermo, Serialno.V90525)

c. Small equipments

Vortex V1 plus: (Make: BIOSAN, Serial no: 15975, Location: Rm no: Reagent preparation room),
Mini spin:(Make: TAESON, Serialno:1775, Location: Rmno: Reagent preparation room,
Hood: (Make: Serial no. V-14971, Rm: Realtime PCR room)
Miniplate spinner: (Make: Labnet, Serialno.V-15725, Rm: Real Time PCR room)

d. Plasticware: MicroAmp Fast reaction tubes (8tubes/strip),96 Thin wall PCR plates, 96 Thin wall PCR plates 0.1 ml, 1.7ml Eppendorf tubes, stand, microtips, 96 well cooler

e. Consumables: Disposable powder free gloves, Lab coats, aerosol barrier tips (20ul,200ul and 1000ul), Laboratory marking pen, tissue paper rolls

f. Reagents:

1. Invitrogen Super Script™ III Platinum® One-Step Quantitative Kit (Cat. No.11732088)
2. QIAamp Viral RNA Mini Kit (QIAGEN, Cat# 52906) or equivalent RNA extraction Kit
3. Nuclease FreeWater
4. Ethanol (96–100%)

Primers and Probes

Assay/ Use	Oligonucleotide ID	Sequence(5'–3')	Comment
Egene	E_Sarbeco_F1	ACAGGTACGTTAATAGTTAATAGCGT	400nM
	E_Sarbeco_R2	ATATTGCAGCAGTACGCACACA	400nM
	E_Sarbeco_P1	FAM-ACACTAGCCATCCTTACTGCGCTTCG-BHQ	200nM
RNaseP Gene (Internal Control)	RNaseP Forward	AGATTTGGACCTGCGAGCG	400nM
	RNaseP Reverse	GAGCGGCTGTCTCCACAAGT	400nM
	RNaseP Probe	FAM-TTCTGACCTGAAGGCTCTGCGCG-BHQ	200nM

R is G/A; FAM, 6-carboxy fluoresce in; BHQ, Black Hole Quencher

Documentation:

- Clinical sample register
- RNA extraction Laboratory book
- Realtime PCR Laboratory book
- Result record book

Procedure/ Protocol:

1. Perform RNA extraction of clinical samples according to 'RNA extraction-QIAamp viral RNA Mini Kit' protocol in RNA extraction area.
2. Perform real time PCR reactions as shown in table for E gene assays and RNaseP housekeeping gene in separate tube
3. Determine the number of reactions (N) to set upper assay. In addition, include Negative control, Positive control and MOCK (human source cell line) in the test.
4. Prepare excess reaction cocktail to account for pipetting error.
   If number of samples (n) including controls =1 to 10, then N = n +1
5. In the **clean reagent preparation room** prepare the Master Mix:
   Calculate the amount of each reagent to be added for each Primer/ probe set reaction master mix.

The calculations are as follows:

Component	VolumeforE gene	Volume for RNaseP
H_2O (RNase free)	5µl	5 µl
2x Reaction mix	12.5 µl	12.5 µl
PPmix	1.5 µl	1.5 µl
Agpath *	1 µl	1 µl
Template RNA	5 µl	5 µl
Total	**25 µl**	**25 µl**

*Superscript III Invitrogen enzyme use 0.5ul and adjust the water volume to 5.5µl

6. Mix reaction mixtures by pipetting up and down. Do not vortex.
7. Centrifuge for 5-10 sec to collect contents at bottom of the tube, and the n place the tube in cold rack.
8. Set up reaction strip tubes or plates in 96-wellcooler rack.
9. Dispense 20µl of each master mix into each well as per the plate setup.
10. Before moving the plate to the nucleic acid handling area. Pipette 5ul of the nuclease free water into NTC wells. Cap NTC wells.
11. **In the nucleic acid extraction room**, add 5ul of each sample and 5ul of MOCK extraction control into respective wells as per the setup.
12. Cap the column or cover the plate with tissue paper to which the samples and MOCK control has been added.
13. Finally, pipette 5µl of positive viral template control (E gene in-vitro transcribed RNA and for RNaseP, add pooled influenza control) into all VTC wells in **positive control addition area.** Cap VTC wells/or seal the plate with optical sealer. Centrifuge the plate for 10 seconds. Make sure that bubbles are eliminated from the bottom of the reaction tubes.
14. For real time PCR setup follow the instructions given by the Real-time PCR system manual for plate setup. **Save your plate setup!**
15. The reaction volume is 25µl. Program the run method as follows:

Reverse Transcription	55°C for10 min
Taq inhibitor inactivation	95°C for 3 min
PCR amplification (45 Cycles)	95°C for 15 sec 58°C for 30 sec* (data collection)
Final extension	40°C for 30 sec

Fluorescence data should be collected during the 58^0C incubation step.

16. After completion of the run, save the run and analyze the collected data.

Interpretation/examination:

1. The NTC reactions for primer/ probe sets **should not exhibit** fluorescence curves that cross the threshold line. If a false positive occurs with one or more of the primer and probe NTC reactions, sample contamination may have occurred. Invalidate the run and repeat the assay with stricter adherence to the procedure guidelines.
2. All clinical samples should **exhibit RNaseP reaction curves** that cross the threshold line at or before 35 cycles, thus indicating the presence of sufficient RNA from human RNase P gene indicating the specimen is of acceptable quality. However, it is possible that some samples may fail to give positive reactions due to low cell numbers in the original clinical sample.

Failure to detect RNaseP in any of the clinical samples may indicate:

a. Improper extraction of nucleic acid from clinical materials resulting in loss of
b. RNA or carry-over of RT-PCR inhibitors from clinical specimens
c. Absence of sufficient human cellular material in sample to enable detection
d. Improper assay setup and execution
e. Reagent or equipment malfunction

3. The MOCK should NOT exhibit fluorescence growth curves for primer/probe sets for 2019-nCoVE gene. Only in RNaseP target, MOCK should show fluorescence

curve. If the MOCK shows any amplification with the 2019-nCoV E gene specific primer/ probes, that crosses the threshold line, interpret as follows:

a. Contamination of RNA extraction reagents may have occurred. Invalidate the run and confirm reagent integrity of RNA extraction reagents prior to further testing.

b. Cross contamination of samples occurred during RNA extraction procedures or assay setup. Invalidate the run and repeat the assay with stricter adherence to procedure guidelines.

4. PTC reactions should produce a positive result with the 2019-nCoV E gene and RNaseP reactions between 20 and 30 cycles. If expected positive amplification is not seen with the Positive Control, invalidate the run and repeat the assay with stricter adherence to procedure guidelines. Do not use PTC reagents that do not generate expected result.
5. When all controls meet stated requirements, **a specimen is considered presumptive positive for 2019-nCoV, if the amplification curve for the E gene cross the threshold line within 35 cycles**. The Ct cycle cut-off to be used for the E gene is 35 cycles.
6. Immediately send the sample to Reference laboratory i.e. NIV Pune.

Limitations

1. Analysts should be trained and familiar with testing procedures and interpretation of results prior to performing the assay.
2. A false negative result may occur, if inadequate numbers of organisms are present in the specimen due to improper collection, transport or handling.
3. A false negative result may occur, if an excess of DNA/ RNA template is present in the reaction. If inhibition of the RP control reaction is noted for a particular sample, extracted RNA can be tested at 2 or more dilutions (e.g., 1:10 and 1:100) to verify result.

If the sample is positive immediately send the sample to Reference laboratory i.e. ICMR–NIV Pune for Confirmatory testing. It is only after confirmatory test becomes positive, that the sample can be declared positive.

Confirmatory assay Available at ICMR NIV

- **ORF1b**
- **RdRp gene assay**
- **E gene assay**

Report: Communicate the result on daily basis to ICMR NIV Pune

Report Format

Sample ID	Patient State & place	Travel History	Sample received Date & time Testing lab	Severity/ condition of patient	Result for 2019-nCorona virus

ICMR-National Institute of Virology (ICMR-NIV), Pune

Standard Operating Procedure For Detection of 2019 novel coronavirus (2019-nCoV) in suspected human cases by rRT-PCR : confirmation assay

Purpose: This protocol is designed to detect 2019-nCoV in human clinical specimens

Introduction: The purpose of this document is to provide interim guidance to laboratories and stakeholders involved in laboratory testing of patients who meet the definition of suspected case of pneumonia associated with a novel coronavirus identified in Wuhan, China. (https://www.who.int/health-topics/coronavirus/laboratorydiagnostics-for-novel-coronavirus)

Principle: The real time assay uses the TaqMan fluorogenic probe based chemistry that uses the 5′ nuclease activity of Taq DNA polymerase and enables the detection of a specific PCR product as it accumulates during PCR cycles.

Coronaviruses under the subgenus Sarbecovirus that includes 2019-nCoV, SARS-CoV and bat SARS-like coronaviruses were used to generate a non-redundant alignment. Confirmatory assays designed based on their matching to the Wuhan virus as per inspection of the sequence alignment. Suspected human sample should be first tested for E gene assay and then confirmatory assay by RdRp and N gene assay.

- **Confirmatory assay: RdRp, ORF gene assay**

Reference:

https://www.who.int/health-topics/coronavirus/laboratory-diagnostics-for-novel-coronavirus

Requirements:

a. Instruments:

1. Real Time PCR machines (Make : ABI, Rm. Real time PCR room)
   - Model:7500 Fast: Serial no: 275012996
   - Model:7500 Fast Dx: Serial no: 275030301
   - Model:7500: Serial no: 275006294
   - Model: 7500 Fast Dx: Serial no: 275005234
   - Model:7500 Step one Plus: Serial no: 27200433
2. Biosafety cabinet (Make: Micro FITT, Model: MFI BIO4X2, Serial no: 14476, Rm no: Reagent preparation room)

b. Pipettes

1. Rm. Reagent preparation room

For reagent dilutions
0.5-10 µl (Make: BIOHiT, Serial no: 6519410)
20-200 µl (Make: Thermo, Serial no: CH17505)
100-1000 µl (Make: Thermo, Serial no: CH28611)
For master mix preparation(Make: Thermo)
0.5-10 µl (Serial no:V44877)
2-20µl (Serial no: V42740)
20-200 µl (Serial no: U75613)
100-1000 µl (Serial no: CH01229)

2.Rm. RNA addition room:
5-100 µl multichannel (Make: BIOHiT, Serial no. 6545582)
2-20 µl (Make: Thermo, Serial no. V17267)
3. Rm. Real Time PCR room (Positive control addition)
2-20 µl (Make: Thermo, Serial no.V90525)

c. Small equipments

Vortex V1 plus: (Make: BIOSAN, Serial no: 15975, Location: Rm no: Reagent preparation room),
Minispin : (Make: TAESON, Serial no: 1775, Location: Rm no: Reagent preparation room,
Hood: (Make: Serial no. V-14971, Rm: Real time PCR room)
Miniplate spinner: (Make: Labnet, Serial no. V-15725, Rm: Real Time PCR room)

d. Plastic ware: MicroAmp Fast reaction tubes (8 tubes/strip) , 96 Thin wall PCR plates, 96 Thin wall PCR plates 0.1 ml, 1.7ml Eppendorf tubes, stand, micro tips, 96 well cooler

e. Consumables: Disposable powder free gloves, Lab coats, aerosol barrier tips (20ul, 200ul and 1000ul), Laboratory marking pen, tissue paper rolls

f. Reagents:

1. Invitrogen SuperScript™III Platinum® One-Step Quantitative Kit (Cat. No.11732088)
2. AgPath-ID™ One-Step RT-PCR
3. QIAamp Viral RNA Mini Kit (QIAGEN, Cat#52906) or equivalent RNA extraction Kit
4. Nuclease Free Water
5. Ethanol (96–100%)

Primers and Probes

Assay/ Use	Oligonucleotide ID	Sequence (5'–3')
RdRp	RdRP_SARSr-F2	GTGARATGGTCATGTGTGGCGG
	RdRP_SARSr-R1	CARATGTTAAASACACTATTAGCATA
	RdRP_SARSr-P2 Specific for Wuhan-CoV	FAM-CAGGTGGAACCTCATCAGGAGATGC-QSY
HKU ORF gene	HKU-ORF1b-nsp14F	TGGGGYTTTACRGGTAACCT'
	HKU-ORF1b-nsp14 R	AACRCGCTTAACAAAGCACTC
	HKU-ORF1b-nsp14 P	FAM-TAGTTGTGATGCWATCATGACTAG-QSY

FAM, 6-carboxyfluorescein; QSY Quencher (select quencher none in plate set up)

Documentation:

- Clinical sample register
- RNA extraction Laboratory book
- Real time PCR Laboratory book
- Result record book

Procedure/Protocol:

1. Perform RNA extraction of clinical samples according to "RNA extraction- QIAmp viral RNA Mini Kit" protocol in RNA extraction area.
2. Perform real time PCR reactions as shown in table for RdRp, ORF and N gene assays Determine the number of reactions (N) to set up per assay. In addition, include Negative control, Positive control and MOCK (human source cell line) in the test.
3. Prepare excess reaction cocktail to account for pipetting error.
   If number of samples (n) including controls = 1 to 10, then N = n + 1

4. In the **clean reagent preparation room** prepare the Master Mix:
   Calculate the amount of each reagent to be added for each Primer /probe set reaction master mix. The calculations are as follows:

Component	Volume for RdRp gene	Volume for ORF
H_2O (RNAse free)	5 µl	5 µl
2x Reaction mix	12.5 µl	12.5 µl
PP Mix	1.5 µl	1.5 µl
AgPath One-Step RT-PCR *	1 µl	1 µl
Template RNA	5 µl	5 µl
Total	**25 µl**	**25 µl**

*** Invitrogen SuperScrip III Platinum One-Step Quantitative Kit, use 0.5ul and adjust the water volume to 5.5µl**

5. Mix reaction mixtures by pipetting up and down. Do not vortex.
6. Centrifuge for 5-10 sec to collect contents at bottom of the tube, and then place the tube in cold rack.
7. Set up reaction strip tubes or plates in 96-well cooler rack.
8. Dispense 20µl of each master mix into each well as per the plate set up.
9. Before moving the plate to the nucleic acid handling area. Pipette 5ul of the nuclease free water into NTC wells. Cap NTC wells.
10. **In the nucleic acid extraction room**, add 5ul of each sample and 5ul of Mock extraction control into respective wells as per the set up.
11. Cap the column or cover the plate with tissue paper to which the samples and mock control has been added.

12. Finally, pipette 5ul of positive viral template control into all VTC wells in **positive control addition area.** Cap VTC wells/ or seal the plate with optical sealer. Centrifuge the plate for 10 seconds. Make sure that bubbles are eliminated from the bottom of the reaction tubes.
13. For real time PCR set up follow the instructions given by the Real-time PCR system manual for plate set up. **Save your plate setup!**
14. The reaction volume is 25ul.Program the run method as follows:

Reverse Transcription	55°C for 30 min
Taq inhibitor inactivation	95°C for 3 min
PCR amplification (45 Cycles)	95°C for 15 Sec 58°C for 30 sec* (data collection)

Fluorescence data should be collected during the 58^0C incubation step.

15. After completion of the run, save the run and analyze the collected data.

Interpretation/examination:

1. The NTC reactions for primer / probe sets **should not exhibit** fluorescence growth curves that cross the threshold line. If a false positive occurs with one or more of the primer and probe NTC reactions, sample contamination may have occurred. Invalidate the run and repeat the assay with stricter adherence to the procedure guidelines.
2. The MOCK should NOT exhibit fluorescence growth curves for primer/probe sets for 2019-nCoV RdRp, ORF and N gene. Only in RP target, MOCK should show fluorescence growth curve. If any 2019-nCoV RdRp, ORF and N gene specific primer/probes exhibit a growth curve that crosses the threshold line, interpret as follows:
    a. Contamination of RNA extraction reagents may have occurred. Invalidate the run and confirm reagent integrity of RNA extraction reagents prior to further testing.

b. Cross contamination of samples occurred during RNA extraction procedures or assay setup. Invalidate the run and repeat the assay with stricter adherence to procedure guidelines.

3. PTC reactions should produce a positive result with the 2019-nCoV RdRp, and ORF and N gene reactions between 20 and 30 cycles. If expected positive reactivity is not achieved, invalidate the run and repeat the assay with stricter adherence to procedure guidelines. Do not use PTC reagents that do not generate expected result.
4. When all controls meet stated requirements, a specimen is considered confirmed positive for 2019-nCoV reaction growth curves cross the threshold line within 35 cycles for E gene, and both RdRp, ORF Or either RdRp or ORF

Limitations

1. Analysts should be trained and familiar with testing procedures and interpretation of results prior to performing the assay.
2. A false negative result may occur if inadequate numbers of organisms are present in the specimen due to improper collection, transport or handling.
3. A false negative result may occur if an excess of DNA/RNA template is present in the reaction.

Guidelines for Quarantine facilities COVID-19

The purpose of this document is to provide interim guidance for setting up of quarantine facilities

Guidelines for Quarantine facilities

1.0. Introduction

Quarantine is the separation and restriction of movement or activities of persons who are not ill but who are believed to have been exposed to infection, for the purpose of preventing transmission of diseases. Persons are usually quarantined in their homes, but they may also be quarantined in community-based facilities.

Quarantine can be applied to

- An individual or to a group of persons who are exposed at a large public gathering or to persons believed exposed on a conveyance during international travel.
- A wider population- or geographic-level basis.

Examples of this application include the closing of local or community borders or erection of a barrier around a geographic area (cordon sanitaire) with strict enforcement to prohibit movement into and out of the area.

The purpose of this document is to provide guidelines for setting up of quarantine facilities during the current COVID-19 outbreak.

The recommended duration of quarantine for Covid-19 based on available information is upto 14 days from the time of exposure.

The purpose of quarantine during the current outbreak is to reduce transmission by

- Separating contacts of COVID-19 patients from community
- Monitoring contacts for development of sign and symptoms of COVID-19, and
- Segregation of COVID-19 suspects, as early as possible from among other quarantined persons

The scope of this document is to cover the procedures required for

- Physical infrastructure/Functional Services requirement at quarantine facilities
- Procedure for medical monitoring of contacts, reporting formats
- Protocol for referrals of suspects/ Symptomatics and isolation of symptomatics if required temporarily
- Infection control practices by medical personnel, supporting staffs and catering staffs etc.

2.0. Evaluation of potential sites for facility-based quarantine is important for preparedness planning (Checklist at Annexure-11).

Requirements for Quarantine facility in a community-based facility is as under

1. **Location:**
    - preferably placed in the outskirt of the urban/ city area (can be a hostel/unused health facilities/buildings, etc.)
    - away from the people's reach, crowded and populated area
    - well protected and secured (preferably by security personnel/ army)
    - preferably should have better approachability to a tertiary hospital facility having critical care and isolation facility
2. **Access considerations**
    - Parking space including Ambulances etc.
    - Ease of access for delivery of food/medical/other supplies
    - Differently-abled Friendly facilities (preferably)
3. **Ventilation capacity:** Well ventilated preferably natural
4. **Basic infrastructure/functional requirements:**
    - Rooms/Dormitory separated from one another may be preferable with in-house capacity of 5-10 beds/room
    - Each bed to be separated 1-2 meters (minimum 1 metre) apart from all sides.
    - Lighting, well-ventilation, heating, electricity, ceiling fan
    - Potable water to be available
    - Functional telephone system for providing communications.
    - Support services- fooding, snacks, recreation areas including television
    - Laundry services
    - Sanitation services/Cleaning and House keeping
    - Properly covered bins as per BMW may be placed

5. **Space requirements for the facility:**

    - Administrative offices- Main control room/clerical room
    - Logistics areas/Pharmaceutical rooms

- Rest rooms- doctors/nurses/supporting staffs
- Clinical examination room/ nursing station / Sampling area
- Laundry facilities (on- or off-site)
- Mess/Meal preparation (on- or off-site)
- Holding area for contaminated waste
- Wash room/Bathroom/Toilet

6. **Social support resources/ Recreational areas**
   - Television and radio / Reading materials/ indoor plays

7. **Monitoring the health of contacts:** During that period, contacts should be monitored at least daily for fever and respiratory symptoms.

2.2. Standard operating Procedures: To ensure smooth operation in the quarantine facility, the standard Operative procedures (SOPs) needs to be framed as under

- Daily monitoring surveillance using the daily reporting format (annex 1)
- Fever triage/ Isolation
- Case and contact monitoring and response
- Transfers of suspect/symptomatic to designated hospital (through ambulances)
- Public information
- Provider information (SOPs)
  - medical personnel (annex 2),
  - nursing staff (annex 3),
  - movement of health personnel and support staff (annex 4) and
  - security staff (annex 5)

Functional flow should be maintained to reduce/minimise the interactions between quarantine people and healthcare professionals/supporting staffs so that transmission of disease is prevented and controlled

3.0. Risk assessment of the quarantine facility

The risk level refers to how likely it is that someone in the Quarantine camp will become infected with corona virus as a result of movements and activities performed in the Quarantine camp.

Risk assessment includes identification of the biohazard risk precaution levels, along with its associated activities. The risk level refers to how

likely it is that someone in the Quarantine camp will become infected with corona virus as a result of procedures performed in the Quarantine camp. Areas were sagregated and labeled as:

- **Low risk areas:** Areas having less direct contact with evacuee suspects such as control room center in the quarantine center, nursing station and areas of kitchen where food is cooked.
- **Moderate risk areas:** Moderate risk areas are where infectious aerosols are generated from areas where the suspects were inhabiting in their bed linen, pillows and nearby clothes; low concentration of infectious particles. Contaminated surface near the quarantine zones.
- **High risk areas (containment Quarantine camp):** Areas where direct dealing with the suspects are as under

  Medical examination room, sample collection areas(high concentration of infectious particles while coughing, sneezing, gag reflex during nasopharangeal & oropharangeal sample collection). Toilet and bathroom areas, dining areas, areas of bio-waste collections, segregation and disposal.

Based on risk assessment, areas should be earmarked and infection prevention control measures to be applied as per MOHFW guidelines.

4.0 Securing Entry and Exit points

- In order to prevent and control infection in the facility, strategic points in the facility needs to be identified including
- The Control room where a person entering inside quarantined building to get proper awareness and training on infection control measures,
- A well informed and trained security to check (main entrance gate of the area) and a guard (24*7) with registers for ins and outs and a designated nursing officer for checking proper PPE wear (main entrance gate in the building)
- The international biohazard warning symbol and sign to be displayed on the doors of the rooms where suspects are kept, BMW management areas,samples of higher risk groups are handled

- Only authorized & trained persons or those designated in work areas to permitted to enter the quarantine areas;
- Doors to keep closed at all times preferably under observation of a guard.
- There should be double door entry was managed with only one door to be open at a single time.

5.0 . Human resource Deployment: In the quarantine facility, Chief Medical officer needs to be appointed as In-charge /nodal officer for overall coordination and supervision of the quarantine center. Services of General duty medical doctors, Medicine specialists, Pediatrics, Microbiologist (for diagnostic support and IPC), Psychiatrists & Psychologists are required for routine examination and relevant clinical care of the quarantined people. Para-medics including Staff Nurse and Lab. Technician, Pharmacist need to be posted. Public health specialist are required for monitoring public health aspects of the facility while services of clinical microbiologist are required for sample collection, packaging and infection prevention & control practices. House keeping staff also need to be deployed.

6.0 Training – Training is the most important and critical part to ensure that all activities takes place as per established protocol and SOPs, training of health care professionals and other relevant staffs was undertaken initially. Training of medical officers on SOPs needs to be followed at Quarantine centers for daily examination, movements in the facility, infection prevention control measures and use of PPE kit etc.

Training of clinicians, laboratory technicians and medics needs to be undertaken on appropriate sample collection (nasopharyngeal and throat) and triple layer packaging with cold chain maintenance.

Paramedical staffs i.e., staff nurses; medics, pharmacist etc. needs to be trained on SOPs to be followed at Quarantine centers and use of PPE kit. Staff undertaking the work in Laundry, Mess/Canteen, security and other related staff i.e., drivers, general duty staff etc. needs to be trained on use of mask, gloves , cleaning and disinfection procedures and use of PPE kit, etc.

Refresher training or regular direction to all the above staffs needs to be provided as on need basis. During the quarantine period as and when new staff was posted, it needs to be ensured that he/she received proper training before undertaking the work. It is to emphasized that all activities / procedures must be done under strict monitoring/observations of trained specialists.

7.0 . **Daily Clinical Examination and referral -** All quarantined people needs to be examined twice (morning & evening) daily clinically and those requiring

referrals for related symptoms of Corona virus (fever, cough, sore throat, breathlessness etc.) or any other reason needs to be referred to designated hospital in ambulance directly with due precautions as per referral SOP. Ambulances need to be placed in the facility in standby mode for transport including advanced lifesaving ambulance.

Daily census of the people needs to be undertaken twice a day (ex. Morning 8 am and evening 6 pm).

8.0 Coordination– Chief medical officer needs to supervise and coordinate with various organizations working with the facility. To ensure all activities take place according to standard protocol, separate teams were constituted for various purposes- Supervisory team, admin team, logistic team, referral team, medicine / equipment team, hygiene sanitation team.

Daily review meetings needs to be conducted under chairmanship of Chief medical officer to discuss day to day affairs and sort out any issue requiring attention.

24*7 control room needs to be established at the facility with monitor for CCTV cameras and speakers at each floor so that quarantined people can be communicated on routine basis and necessary instructions can be provided.

9.0 Recording and reporting mechanisms- To ensure standardized reporting, daily reporting formats of suspected cases with symptoms related to corona virus, no. of cases requiring referral, sample collection status needs to designed (as per annexure 1). It needs to be sent daily to relevant higher authorities.

10.0 Monitoring and Supervision – Daily monitoring visit needs to be conducted inside quarantine facility and outside the facility in the surrounding campus by public health and incharge officers and gaps to be noted. Necessary corrective actions and preventive actions to be taken by the nodal officer.

Visits also given by senior officers from for regular review.

11.0 Establishment of Infection Prevention Control (IPC) measures – As per risk assessment was undertaken with respect to probability of infection from possibly infected quarantine people to health care, other staffs and surrounding areas. Special map of the facility needs to be prepared to outline the details of movement of health care and other personnel around the quarantine area and in the building. It need to be ensured that movement of health care staffs and other personnel to undertake as per the designed map to prevent and control infections.

Separate fence needs to be raised around the building to prevent entry of animals especially dogs, monkeys and even birds if possible.

Well informed and trained security personnel needs to be deployed all around the building on 24*7 rotation basis to monitor the facility and to avoid entry of un-desired persons/animals and even birds for eating any food remains/droppings inside the area.

To ensure that all health care personnel use PPE as per guidelines, they need to be properly trained and assisted during wearing of PPE. Separate areas to be earmarked for PPE Donning and Doffing. Compliance for same to be ensured by nodal officer.

Separate well informed and trained nursing officers need to be stationed at the building to regulate the movement of the staffs entering the facility. He/ She should be assigned the duty that every person entering the facility enters in the register of all the details on time of name, designation entry/exit. Nursing officer to ensure that all the persons are labeled while entering the building so that they can be identified by security staff. At the entrance, two door entries may be ensured to avoid mixing of quarantine people with health care staff.

It is to be ensured that all the quarantine facility is decontaminated daily (refer to infection prevention control guidelines) with disinfectants (freshly prepared 1% hypochlorite, detergent solution) including surface mopping of all the floor, bathrooms, toilets facility, under side of beds, other related items placed in the rooms of quarantine people .

A separate cubicle for people developing mild symptoms for temporary observation (transit room) may be considered so that it will lead to an early isolation of any symptomatic person and to prevent transmission to other cluster of groups.

12.0 Lodging, **Catering, Laundry and other related activities** –Disposable and pre-packed food to be needs to be served to quarantined people. All the quarantined people to be kept on separate beds with distance of 1-2 meters with no bed facing opposite to each other. All Beds were having disposable bed sheet that should be changed on daily basis. Personal toiletries/ towel/ blanket/ pillow with covers/electric kettle, room heater and water dispenser may be provided to each person depending on availability.

A separate room needs to be assigned to perform laundry services for cleaning of all the clothes and other washing related activities. Before laundering, all the washable items needs to be placed in 1% hypochlorite up to 30 minutes and later washed in detergent solution.

13.0 Biomedical waste (BMW) management- To ensure that biomedical waste management in the facility takes place as per standard guidelines, separate yellow, red /black bags, foot operating dustbins needs to be kept at each floor and outside the facility. It is to strictly ensured that Doffing takes place in the designated area with all the PPE kit including mask, gloves is properly placed in yellow bags. All the health care workers collecting the possible infectious material such as food items, PPE kits from yellow bags should also wear PPE and following the IPC measures. Designated place to be earmarked outside the building for collection of yellow and black bags. It should be collected at least twice daily by biomedical waste management vehicle/any other local established practice.

Site of collection of biomedical waste should be regularly disinfected with freshly prepared 1% hypochlorite solution. All officials concerned with the administration and all other health care workers including medical, paramedical, nursing officers, other paramedical staff and waste handlers such as safaikarmacharis, attendants & Sanitation attendants needs to be well oriented to requirements of handling and management of general and biomedical waste generated at the facility. Steps in the management of biomedical waste include generation, accumulation, handling, storage, treatment, transport and disposal as mentioned in the SOP needs to be followed. Continuous training, monitoring & supervision to monitor the implementation to be done on daily basis to manage compliance related issues. All the generated waste from Quarantine facility to be treated as isolation waste and its disinfection /treatment was strictly monitored by specialists in the health authorities.

14.0 Logistic management- All logistic to be used in quarantine facility i.e., PPE , medical equipments i.e. Thermal thermometer, Stethoscope, BP machine etc., office logistic, sample collection and packaging material, etc.to purchased in advance.

Performa needs to be prepared for daily consumption of PPE, triple layer mask, gloves, etc. and monitored by logistic team on daily basis.

15.0 Information, Education & Communication (IEC) and Psycho-social support – As on arrival, there might be an obvious sense of psychological fear and panic among all the quarantine people and some of the involved stakeholders like health care professionals/staffs including doctors, security personnel etc.. An interpersonal communication needs to made to all of them one after another in groups by Psychiatrist team initially and later on with individual counselling sessions. Quarantine people needs to be explained on Universal infection control

measures , personal protective measures, written instructions on Do's and Don'ts in the quarantine zone to be provided to contain and avoid spread of the infection. Importance of frequent Hand washing specially after touching surfaces like door handles, stair railings, bed railings, etc. to be instructed for strict compliance. Everyday quarantine people to be counseled by clinicians regarding day to day queries. If needed, referral to be made to psychiatrist /psychologist team. If there is fear in the surrounding community it needs to be addressed.

16.0 Sample collection and packaging – For baseline testing, Samples (Nasopharyngeal swab and throat swabs) for COVID-19 need to be collected from all quarantine people & sent with triple layer packaging maintained in cold chain (2-8^{o}C) to designated laboratory .

Safe collection & handling of specimens in the Quarantine camp needs to be performed in identified locations as per the SOP. Specimen containers generally used are viral transport medim (VTM vials containing 3 ml medium) with falcon tubes (50 ml) as secondary layer of Triple layer packaging system. Containers needs to be correctly labeled to facilitate proper identification. Specimen request or specification forms to be placed in separate waterproof zip pouch envelopes with locking facility and pasted on the outside walls of the sample transport containers (Performa annexure). Just before the end of the 14 days quarantine period, resampling of nasopharyngeal swabs needs to be done.

17.0 Discharge of quarantine people from Quarantine Facility - The quarantine people needs to be discharged at the end of 14 days of incubation period provided samples are negative on resampling. Instructions should be provided to self-monitor their health at their home (home quarantine) for next 14 days and immediately report to their District Surveillance officer (DSO), in case of development of symptoms suggestive of COVID-19. Written instructions were handed over to them individually. The District Surveillance Units (DSO) and State Surveillance Units (SSO) to be provided with contact details of the quarantine people to conduct active surveillance for next 14 days under intimation to the Central Surveillance Unit, IDSP (NCDC).

18.0 Terminal Disinfection and decontamination procedures: Quarantine facility terminal disinfection procedures to be performed as per guidelines. Cleaning/ decontamination to be performed using the proper
personal protective equipment (PPE) and adopting three bucket system as prescribed in the SOP (at attached annexure).

Spraying of 1% sodium hypochlorite working solution (dilution 1:4 from an initial concentration of 4%) to be done on all the surfaces (protecting electrical points/appliances). This was followed by cleaning with a neutral detergent that is used for removing the traces formed by hypochlorite solution. While

cleaning, windows need to be opened in order to protect the health of cleaning personnel.

All frequently touched areas, such as all accessible surfaces of walls and windows, the toilet bowl and bathroom surfaces needs to be carefully cleaned. All textiles (e.g. pillow linens, curtains, etc.) should be first treated with 1% hypochlorite spray and then, packed and sent to get washed in laundry using a hot-water cycle (90°C) and adding laundry detergent. 1% hypochlorite solution should also sprayed in the PPE doffing area and discard area twice a day on daily basis. Mattresses / pillows after spraying with 1% hypochlorite should be allowed to get dry (both sides) in bright sunlight for upto 3 hrs each.

Annex 1

DAILY REPORTING FORMAT
(Daily Clinical Examination)

COVID-19

Name of the Centre:

Address:

Centre In Charge:

Contact No:

S.no	Date of reporting	Census in the Centre (8 AM)	Clinically examined	Suggestive Symptoms like fever, cough, breathing difficulty, other respiratory problems,	Other clinical cases and non 2019-nCoV	Cases referred to designated hospital	Cumulative cases referred to designated hospital	Cases discharged from designated hospital	Cases still admitted at designated hospital	Census in the Centre (8PM)	Remarks
				etc							

M	FM	FM	F	M	FM	FM	FM	FM	F

Annex 2

Standard Operative Producers for medical personnel

There are shift duties of the doctors may be as under

Morning : 800AM to 200 PM
Afternoon : 200PM to 800 PM
Night : 800PM to 800 AM (next day)

General instructions for medical doctors from designated hospital (s) for performing their duty at Quarantine facility may be as under:

a. The name of the duty officers and duty roster for to be displayed at the control room.
b. Each team to follow the procedure mentioned below:
c. The resident doctors on duty will report to the centre at the reporting time and mark attendance in the register.
d. After that, they will go to clinical area to examine the quarantined people in the centre.

e. The doctors on working duty will team up with medical officers from Quarantine facility to form a paired team (one from hospital and another from the Quarantine facility) to examine the cases.
f. They will examine and assess the patients and report to the In-charge of the Quarantine facility.
g. They will take care of the infection control/protective measures while examining the persons and follow guidelines placed at the door for safety/infection control measures.
h. If any symptomatic case/ additional symptoms are observed/ reported, it should be discussed with the In-charge of the Quarantine facility for referral to the designated hospital, if required.
i. They will complete examination of all patients and report before 12 noon on the same day and handover the report to the Office In-charge for onward transmission to the Ministry.
j. They will not leave till the next relieving team arrived.
k. They will hand over this information to the next relieving team.
l. They will leave the Quarantine facility with due permission of In-charge of the Quarantine facility.
m. If any doctor has not reported due to unavoidable circumstances, present available team will inform to the concerned authority of designated hospital for substitute.
n. In case any patient needs to be transferred due to any eventuality to the referral centre, senior most doctor will accompany the ALS Ambulance to take care of the patient till he/she reaches and handed over to the centre.
o. The medical team may take help of psychiatric/ counsellor team if required, for psychosocial support
p. Team to work in harmony with the Quarantine facility medical team.
θ. The senior most doctor on duty from the designated hospital will take decision of the clinical management.

Annex 3

Standard Operative Producers for Nursing Officer (supervisor)

- Maintain log of medical professionals/staffs entering/exiting in the quarantine facility, where the quarantine people are housed.
- A designated nursing officer (infection prevention & control nurse) has to ensure that the incoming officers/ staff to the quarantine building that are wearing appropriate PPE, and they are aware of universal infection control precautions {hand washing (alcohol/ sanitizers or soap + water; mask, gloves, PPE).
- After this he/she will allow the person to enter.
- The PPE doffed off by the outgoing medical professionals needs to be disposed in the yellow bag and hand sanitization should be ensured after disposing the PPE. **(PPE- donning On / doffing Off enclosed).**
- Yellow bags containing the infected materials placed in the nearby gate should be disposed off daily as per the Biomedical Waste Management Rules.
- The dustbins should be covered at all times. This should be ensured by Nursing officer. If required, disinfection has to be done as advised.
- Black bags (municipal wastes) - to be disposed after proper packaging daily as per the Biomedical Waste Management Rules.
- Supervise IPC in the facility in coordination with Microbiologist/Clinician

Annex 4

Standard Operative Producers for Movement of Health Professionals and Support Staff Inside the Quarantine facility

The movements of health professionals are to be monitored at three vital points considering the control of infection for the prevailing disease-

CONTROL ROOM:

- Health professionals and support staff need to be made aware and trained in correct procedure of wearing mask and gloves.
- They need to be trained to follow the infection control measures as instructed including
    - hand washing with soap and water and sanitizing with alcohol-based sanitizers,
    - cough etiquettes,
    - donning and doffing of PPE etc.
    - before entering the quarantine facility.

Main Gate Security post: To monitor entry of persons/visitors to the facility and ensure that the personnel should comply with instructions / including wear the mask correctly.

Nursing Station at Quarantine building (ground floor):

1. Registration of name with time and purpose for entering the building
2. PPE should be donned here.
3. Nursing officer will check and ensure strict and correct wearing of PPE before entering the main quarantine area
4. After coming out from the main quarantine area, PPE to be doffed properly and placed in the designated bin for infective material (Yellow bag)
5. The hands should be sanitized before exiting the quarantine area
6. Mobile phones are not allowed to be used inside the building
7. Name of doctors to be written on the PPE with permanent marker for identification.

Annexure-5

Standard Operative Producers for Security Personnel at Quarantine facility

1. For security purpose, ensure 24 hours manning of the post of the quarantine facility.
2. The person manning the area must be trained and instructed to wear mask and gloves during the duty period.
3. Instructions for infection control measures like hand washing etc. should be properly briefed.
4. Doctors/Nursing staff/supporting staffs/other entering the quarantine area should wear appropriate PPE before entering the quarantine centers.
5. Log of those entering/exiting the Quarantine facility should be maintained. Only those having specific purpose inside the Quarantine facility should be allowed to enter.
6. The log should be put up daily to the controlling authority.
7. Security guard should have a whistle to give signals to people to not come near the quarantine facility if they do not have any purpose to visit the Quarantine facility.
8. He should report immediately to the officer In-charge controlling the security of the quarantine facility, if anybody does not follow the instructions as directed.
9. The security personnel should not leave after completing his shift till his reliever reports for duty.
10. The officer In-charge controlling the security of the quarantine facility will supervise the duty roster and roles and responsibilities of all the personnel deployed at the quarantine area for smooth functioning.

Annexure-6

Requirements of Equipment for Quarantine Facility

Equipment	Daily Consumption for holding 300 persons
Gloves • reusable vinyl or rubber gloves for environmental cleaning • latex single-use gloves for clinical care	200
Hair covers (optional)	1500
Particulate respirators (N95, FFP2, or equivalent)	150
Medical (surgical or procedure) masks	1500
Gowns and aprons (single-use long-sleeved fluid-resistant or reusable non-fluid-resistant gowns)	150
PPE Kit	130
Alcohol-based hand rub	50
Plain soap (liquid if possible, for washing hands in clean water)	500
Clean single-use towels (e.g. paper towels)	1500
Sharps containers	5
Appropriate detergent for environmental cleaning and disinfectant for disinfection of surfaces, instruments or equipment	20 litres
Large plastic bags	200
Appropriate clinical waste bags	100
Linen bags	500
Collection container for used equipment	200

Annexure - 7

Human Resource requirement for Quarantine Facility

The requisite human resources at a Quarantine Facility can be divided into two broad categories:

General Requirements of medical personnel for the facility as under

Medical personnel- (catering facility of 300 people)

I. On- Duty Doctors in 6 hours shift of 2 doctors
II. Nusring Staff in 6 hours shift of 4 nurses
III. Lab. Technicians in 6 hours shift of 4 technicians

1. Health professionals: (Multi-disciplinary team)

- Medical doctors (Multi-Speciality team)- General duty doctors, Specialists like Medicine, Paediatrician, Psychiatrist / Psychologist, Public Health specialist, Microbiologist etc.
- Nursing officers
- Pharmacists
- Paramedics
- Lab. Technicians (preferably)

2. Supporting staffs like Safai Karamchari, Housekeeping, Laundry workers, Cooks, etc.
3. Security staffs

Annexure- 8

Checklist for screening entry of persons inside the quarantine building

- Only authorised personnel should enter the quarantine facility for carrying out pre-determined activity. While entering the quarantine facility, it should be ensured that personnel are wearing the requisite personal protective equipment

- A pre-identified staff should be designated to screen the personnel entering in the quarantine facility using following check-list.

I. Is the person entering the quarantine building either doctors/nursing officers/ supporting staffs/ Govt. officials etc. posted or authorized to enter the quarantine building in the Centre?

II. Whether the person entering the quarantine building is having duty inside the building during that time?

III. Whether the person entering wear protective suit correctly?

IV. Whether the person entering wear N-95 Mask correctly?

V. Whether the person entering wear goggles correctly?

VI. Whether the person entering wear headgear correctly?

VII. Whether the person entering wear boots correctly?

VIII. Whether PPE has no gaps/physical damages which can be a risk in the disease transmission?

IX. If it is 'YES' in all Qs from 1to 9, then, the person is allowed to enter the quarantine building.

X. If any of the Qs is NO, then , to ask for appropriate donning of PPE initially and if not still then, to contact the concerned officer supervising the

nursing officers and if required, NCDC Team on duty /In-charge of the center.

Annexure – 9

Guidelines for Disinfection of quarantine facility (for COVID-19)

(Refer to NCDC Website for latest updates)

Guidelines for disinfection of quarantine facility (for COVID-19)

Scope*:* This document aims to provide interim guidance about the environmental cleaning / decontamination in quarantine camp facilities (e.g. barracks, cubicles in rooms, offices, and toilets, etc.) where persons with potential exposure to COVID-19 have housed.

The causative agent involved in the current outbreaks of 2019-nCoV acute respiratory disease, the 2019-nCoV (genus: Betacoronavirus), belongs to the family of Coronaviridae, a large family of enveloped, positive-sense single-stranded RNA viruses. Coronaviruses are transmitted in most instances through large respiratory droplets and contact transmission, but other modes of transmission have also been proposed worldwide.

The time of survival and the conditions affecting the 2019-nCoV viability in the environment are currently unknown. According to studies assessing the environmental stability of other coronaviruses, the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) is estimated to survive several days in the environment and the Middle East Respiratory Syndrome-related coronavirus (MERS-CoV) more than 48 hours at an average room temperature (20°C) on different surfaces [1-3].

Environmental cleaning: Due to the potential survival of the virus in the environment for several days, the premises and areas potentially contaminated with the 2019-nCoV should be cleaned before their re-use, using products containing antimicrobial agents known to be effective against coronaviruses. Although there is lack of specific evidence for their effectiveness against 2019-nCoV virus, cleaning with water and household detergents and use of common disinfectant products should be sufficient for general precautionary cleaning. Tests carried out using SARS-CoV showed that sodium hypochlorite is effective.

These guidelines provide guidance for environmental cleaning in quarantine facilities housing people exposed/ potential exposure toCOVID-19 and have been adapted based on the Hospital Infection Prevention and Control guidelines drafted by NCDC in collaboration with WHO and other stakeholders.

Area/Items	Item/Equipment	Process	Method/ Procedure
Clinical Area			
General clinical areas Floors (clinical areas) – daily mopping	Dust mops Mop (No broom will be used for sweeping) Detergent/ sanitizer–hot water, sodium hypochlorite(1%) Three buckets (one with plain water and one with detergent solution; one bucket for sodium hypochlorite(1%)	Sweeping Cleaning Daily mopping	• Sweep with the dust mop or damp mop to remove surface dust. Sweep under the furniture and remove dust from corners. Gathered dust must be removed using a hearth brush and shovel. • The sweep tool should be cleaned or replaced after use. • Prepare cleaning solution using detergent with warm water • Use the three-bucket technique for mopping the floor, one bucket with plain water and one with the detergentsolution. • First mop the area with the warm water and detergent solution. • After mopping clean the mop in plain water and squeeze it. • Repeat this procedure for the remaining area. • Mop area again using sodium hypochlorite 1% after drying the area. • In between mopping if solution or water is dirty change it frequently. • Mop the floor starting at the far corner of the room and work towards thedoor. • Clean articles between cleaning. **Note:** Mopping should be done twice a day
Ceiling and Walls	Sweeping tool Duster Bowl/ small bucket of soap solution Plain water	Damp dusting	• Damp dusting with a long handledtool for the walls and ceiling done with very little moisture, just enough to collect thedust. • Damp dusting should be done in straight lines that overlap one another. • Change the mop head/cover when soiled. **Note:** Should be done once a week or after examining a suspect case

	Care of mop	Hot water Detergent Sodium hypochlorite 1%	• Clean with hot water and detergent solution, disinfect it with sodium hypochlorite and keep for drying upsidedown.
Doors and door knobs	Damp cloth or Sponge squeeze mop Detergent	Thorough washing	• The doors are to be washed with a brush, using detergent and water once a week (on one defined day); gently apply cloth to soiled area, taking care not to remove paint, then wipe with warm water to remove excess cleaningagent. • Door knobs and other frequently touched surfaces should be cleaned daily.
Isolation room	Detergent/ Sanitizer– warm water, sodium hypochlorite (1%) Three buckets (one with plain water and one with detergent solution); separate bucket for sodium hypochlorite (1%)	Terminal cleaning	• Before cleaning an isolation room, liaise with infection control team for details of any special requirements. Staff will be instructed on specific cleaning procedures required with reference to • Safety uniform to be worn. • Chemicals or disinfectants to be used. • Also, if bed screen and shower screen are to be cleaned or changed, refer cleaning in isolation rooms.
All clinical areas/ Laboratories/ Wherever spill care is required	Sodium hypochlorite (1%) Rag piece Absorbent paper Unsterile gloves Spill care kit Mop Hot water	Blood and body fluid spill care	• Wear non-sterile gloves. • For large spills, cover with absorbent paper/ rag piece • if any broken glass and sharps, using a pair of forceps and gloves, carefully retrieve.Use a large amount of folded absorbent paper to collect small glass splinters. Place the broken items into the puncture proof sharps container. • Cover the spill with sodium hypochlorite(1%)for 10–20 minutes contact time. • Clean up spill and discard into infectious waste bin, and mop area with soap and hot water. • Clean the mop and mop area with 1% sodium hypochlorite. • Wash mop with detergent and hot water and allow it to dry.

Stethoscope	Alcohol-based rub/Spirit swab	Cleaning	• Should be cleaned with detergent and water. • Should be wiped with alcohol based rub/spirit swab before each patient contact.
BP cuffs and covers	Detergent Hot water	Washing	• Cuffsshouldbewipedwithalcohol-based disinfectant and regular laundering is recommended for the cover.
Thermometer	Detergent and water Alcohol rub Individual thermometer holder	Cleaning	• Should be stored dry in individual holder. • Clean with detergent and tepid water and wipe with alcohol rub in between patient use. • Store in individual holder inverted. • Preferably one thermometer for each patient.
Injection and dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)	Cleaning	• To be cleaned daily with detergent and water. • After each use should be wiped with disinfectant.
Refrigerators	Detergent and water Absorbent paper or clean cloth	Cleaning (weekly)	• Empty the fridge and store thingsappropriately. • Defrost, decontaminate and clean with detergent. • Dry it properly and replace the things. • Weekly cleaning is recommended.

Area/Items	Item/Equipment	Process	Method/ procedure
Lodging area			
General cleaning	Detergent and warm water Mop Two buckets Clean utility gloves Handmops	Daily mopping floors Thorough washing	• Scrub floors with hot water and detergent with using minimal water. (Do not pour thewater.) • Clean with plainwater. • Allow to dry • Hypochlorite 1% mopping canbe done. **Note:**Recommend general cleaning procedure should be done twice a day
Lockers, tables, cupboard, wardrobes, benches, shelves and cots	Damp duster Warm water Detergent Dry duster	Damp dusting	• Damp dust with warm waterand detergent.
Railings	Detergent/ Sanitizer–hotwater, sodium hypochlorite	Daily dusting	• Damp dust with warm water and detergent followed by disinfection with hypochlorite

	1% Three small buckets/ or big bowls One with plain water One with detergent solution One for sodium hypochlorite 1%		
Mirrors and Glass	Warm water Detergent water/ cleaning solution Damp cloth Wiper	Cleaning	• Using warm water and a small quantity of detergent and using a damp cloth, wipe over the mirror and surround, then using a dry lint-free cloth, buff the mirror and glass to a clean dryfinish.
Sluice room Stainless steel/ Any other sink	Powder cleanser Detergent powder Wiper Cloth	Cleaning	• Sinks are to be cleaned witha powder cleanser. • Firstwetthesink.Sprinkleonalittle powder cleanser and work around the surface with a cloth, include the plughole. • Do not use the powder cleanseron dry sink. • After removing spillage and any stains, flush away with running water. Wipe down the surface of the sink.
Pantry furniture	Duster	Dusting	• Dampdust
Telephone	Warm water detergent solution Duster	General cleaning	• Damp dust with warm waterand detergent. • **Payingspecialattentiontotheear and mouth piece and dry it properly.**
Desks	Damp cloth Furniture polish	Dusting	• Wipe top sides and draw handles with a damp cloth. Wooden desks should be cleaned with furniture polish and buffed to clear glows. Pen holder etc. to be cleaned ordusted.
Chairs (Vinyl)	Warm water and detergent	Cleaning	• Wipe down with warm water and detergent. Remove any marks under arms and seat. Check fordamage to stoppers, if stopper require replacement, report to maintenance department.
Furniture and fittings	Warm water and detergent Rag piece	Dusting	• Using warm water and detergent, damp dust all furniture and fittings, including chairs, stools, beds, tables, cupboards, wardrobes, lockers, trolleys, benches, shelves and storage racks, waste/ bins, fire extinguishers, oxygen cylinders, televisions window sills and dry properly.
Bed tables, bedside lockers	Warm water and detergent Wiper Duster	Cleaning	• Wipe down over bed table. Wipe top and underneath base and stand, using warm water and detergent. Dry oncompletion. • Wipe down the bedside. Remove marks from fronts of draws and sides. Using warm water and detergent, wash the top to remove any sticky marks anddust.
Light switches	Damp cloth (never	Cleaning	• Light switches to be cleaned of dust, spots and finger

and over-bed lights	wet) Detergent Warm water		marks. Clean with a damp cloth (never wet) and detergent. • Over-bed lighting to be damp dusted. Clean with warm water and detergent.
Curtains	Soft clothes Water Mild soap solution	Cleaning	• Clean with water and soap for curtains
White clothes	Sodium hypochlorite 1% Tap water	Washing	• Should be washed under running water and soaked in 1% sodium hypochlorite for 20minutes. **Note:** PPE should be worn while washing soiled linen.
Mattress and pillow covers (cloth)	Tap water	Washing	• Mattress and pillows should be covered with a reusable mattress cover. • It should be changed for each patient and when soiled sent to the laundry according to schedule.
Mattress/ Pillow with rexin cover Normal/ without rexin	Sodium hypochlorite 1% Sunlight	Terminal Damp dusting and cleaning Drying in sunlight	• If with rexin cover, can be cleaned with 1% sodium hypochlorite before use for next patient • If routine mattress, dry it in bright sunlight for 1-2 days before using for next patient
Water jars	Vim powder Soap and water	Cleaning	• Recommended boiled water for drinking • Water jars should be scrubbed/ cleaned with soap and water and boiled water before filling withwater.

Areas	Agents / Toilet cleaner	Procedure
Cleaning of toilets		
Toilet pot/ commode	Sodium hypochlorite 1%/ Soap powder / long handle angular brush	• Inside of toilet pot/commode: • Scrub with the recommended agents and the long handle angular brush. • Outside: Clean with recommended agents; use a nylon scrubber.
Lid/commode	Nylon scrubber and soap powder	• Wet and scrub with soap powder and the nylon scrubber inside and outside
Toilet floor	Soap powder and scrubbing brush/ nylon broom	• Scrub floor with soap powder and the scrubbing brush • Wash with water • Use sodium hypochlorite1% dilution
Tap	Nylon scrubber and soap powder	• Wet and scrub with soap powder and the nylon scrubber.
Outside sink	Soap powder and nylon scrubber	• Scrub with the nylon scrubber.
Showers area / Taps and fittings	Warm water Detergent powder Nylon Scrubber	• Thoroughly scrub the floors/tiles with warm water and detergent • Wipe over taps and fittings with a damp cloth and detergent. • Care should be taken to clean the underside of taps and fittings.

		• Taps should be dried aftercleaning
Soap dispensers	Detergent and water	• Daily dusting • Should be cleaned weeklywith detergent and water and dried.

Note: Dry the floors with a separate drying mop.

Annexure- 10

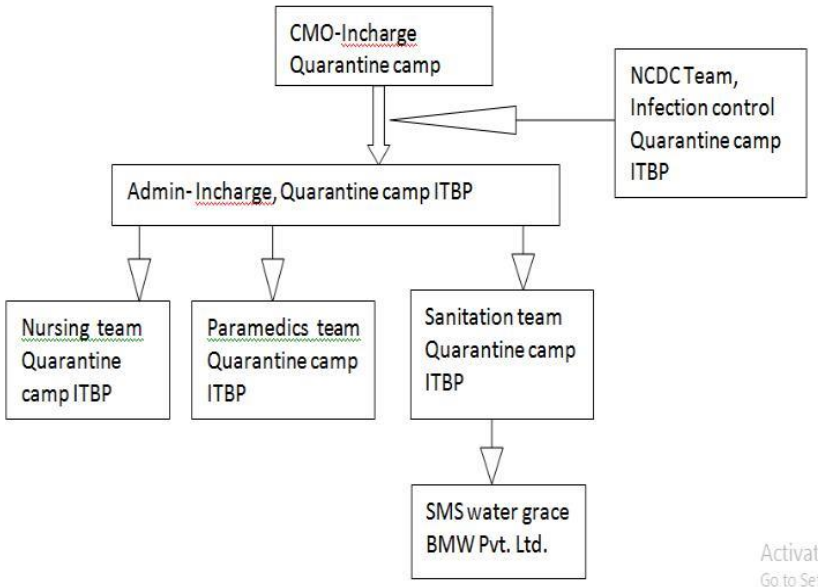
SoPs for Management of Bio-medical Waste (BMW) in the Quarantine Quarantine facility

"Bio-medical waste" means any waste, which is generated during the surveillance, monitoring, diagnosis, treatment or immunization of quarantined personnel in health Quarantine facility. The Bio-medical Waste Management rules are applicable to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form at the quarantine Quarantine facility.

Management of Hospital/Healthcare/Biomedical waste at the quarantine Quarantine facility is of utmost concern having global implications and immediate attention. It is documented that even the general waste generated from Quarantine Quarantine facility is a potential health hazard to the health care workers, public, flora and fauna of the area.

All officials concerned with the Quarantine facility administration and all other health care workers including medical, dental, nursing officers, other paramedical staff and waste handlers such as safai karmacharis, attendants & Sanitation attendants are well oriented to requirements of handling and management of general and biomedical waste generated at the Quarantine facility. Steps in the management of biomedical waste include generation, accumulation, handling, storage, treatment, transport and disposal.

Organogram for Biomedical waste management(ITBP Chhawla):



Bio-medical waste has been classified in to 4 major categories to improve the segregation of waste at the source itself:

Categories	Type of Bags	Type of Waste	Treatment/Disposal
Yellow 	Non chlorinated plastic, autoclavable bags	1. Donned off PPE 2. PPE with spill 3. Gloves 4. Shoe covers 5. Head Covers 6. disposable bed sheets	Incineration or Plasma pyrolysis or deep burial*
Red 	Non chlorinated plastic, autoclavable bags	1. Eye protection goggles 2. recyclable materials like pens 3. plastic water bottles used by quarantine people 4. Bed sheets	Autoclaving/microwaving /hydroclaving and then sent for recyling not be sent to landfill
White 	Puncture, leak, tamper proof containers	1. sharp waste including metals	Auto or Dry Heat Sterilization followed by shredding or mutilation or encapsulation
Blue 	Cardboard boxes with blue coloured marking	Glassware/tubelight/CFL bulbs/LED used in quarantine Quarantine facility	Disinfection or autoclaving, microwaving, hydroclaving and then sent for recycling

Duties of the Quarantine Quarantine facility Authorities:

1. Provide training to all its health care workers and others involved in handling of bio medical waste.
2. To provide a safe, ventilated and secured location for storage of segregated BMW within premises of quarantine Quarantine facility.
3. Provide legal authorization and access to Waste collecting van/vehicle.

Duties of the Bio-medical waste management company (SMS water grace BMW Pvt. Ltd.):

1. Ensure timely collection (atleast twice daily morning & evening) of BMW from Quarantine Quarantine facility
2. Handing over of recyclable waste after treatment by autoclaving and incineration to authorized agencies identified by Government of India.
3. Assist health care facilities in training of workers.

4. Provide PPE kits and other safety measures to their vehicle driver, collector, helper, safai karamchari.
5. Issue authorized Identity card to all the persons coming to the Quarantine Quarantine facilityus.

Treatment and Disposal:
1. Quarantine Quarantine facility does not have an onsite setup for BMW treatment facilities there it should be taken to their designated BMW facility and treatment/disposal must be done as per BMW regulations approved in their contract.
2. No untreated bio-medical waste shall be kept stored beyond a period of 48 hours.
3. All the waste (even the general waste) generated from the quarantine Quarantine facility must be treated as Biomedical waste.

Maintenance of Records:

1. Records in relation to generation, collection, reception, storage, transportation, treatment and disposal shall be maintained as per rules For 5 years.

Accident Reporting: In case of major accident-intimate immediately and submit a report within 24 hours to the Quarantine facility incharge(CMO-Incharge ITBP Quarantine facility).

Implementation:

Efficient implementation of the bio-medical waste management pivots on orientation, training and

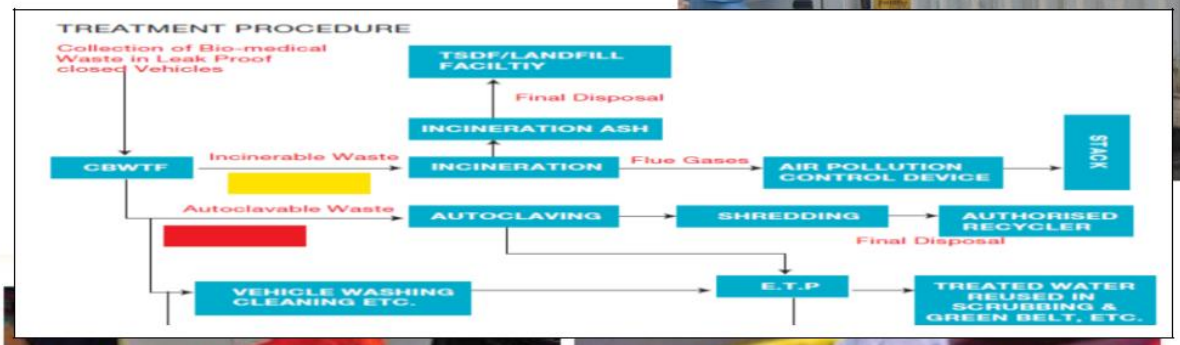
involvement of all the staff in the Quarantine facility. Ensuring proper disposal and segregation at source is the most important step as this is the limiting factor for most health care settings. Continuous training, monitoring & supervision to monitor the implementation must be done on daily basis.

Generation to Disposal process:

1. BMW is collected from various sites in the quarantine facility.

2. All Collected Bags are loaded on to special Bio Medical Waste Trucks/Van and are transported to BMW management facility for treatment and disposal thereafter.

Procedure/ Flowchart for Treatment of Biomedical Waste:



Annex 11

Guidelines for Quarantine facility Incharge, Health professionals, Quarantine people and their family members to guide them with respect to the discharge from Quarantine facility and follow up action in the community.

A. For the Quarantine facility Incharge & Health Professionals at the Quarantine facility:

- The final sample collection for all the travellers shall be taken up on the 13th and 14th day while being in the facility.
- The samples shall be collected and sent to the designated laboratories.
- The reports for the same shall be received latest by 16th/17th day in the facility through ICMR.
- Based on the reports a decision can be taken to discharge the travellers.
- Discharge shall accordingly, if agreed to, will be done on the 18th day from the Quarantine facility. Quarantine facility Incharge shall accordingly intimate the travellers in advance for them to make arrangement for their onward journey.
- A detailed enumeration of the proposed place of stay by the travllers during the next 14 days will be obtained including contact numbers by the Quarantine facility Incharge.
- The Quarantine facility Incharges will plan dropping the travellers in either of the locations i.e. ISBT, Railway Station or Airport as per the preference of the travellers.

B. For the Travellers in the Quarantine facility:

1. While travelling back home:

- Provide details of your stay for next 14 days including the contact numbers.
- Obtain list of District and State Surveillance Officers for follow up and reporting in case of any issue.
- Use triple layer surgical mask (follow correct use and disposal of mask as briefed during the stay in quarantine centre)
- Follow frequent hand-wash with soap and water or use alcohol based hand sanitizer.
- Use respiratory etiquettes (use tissue paper/ hand-kerchief to cover your nose and mouth, turn head away from the person facing of you, while coughing/ sneezing).
- Monitor your temperature twice daily.

- Retain the aircraft boarding pass/ rail ticket/ details of Journey by taxi (including contact number of drivers etc)

2. After reaching home

- Avoid crowded places.
- Monitor your health for a period of next 14 days (after leaving the quarantine centre).
- Monitor body temperature twice daily.
- At all times:
    - Maintain personal hygiene
    - Wash hands with soap and water frequently or use alcohol based hand sanitizer.
    - Use respiratory etiquettes (use tissue paper/ hand-kerchief to cover your nose and mouth, turn head away from the person facing of you, while coughing/ sneezing).
- Report to nearest health facility if you develop fever, cough or difficulty in breathing besides reporting it to the State and District Surveillance Officer.
- Allow attendance by health workers / respond to call received from Health functionaries. Keep their contact numbers handy.
- Inform about your health at the end of 14 days period to the Healthcare worker and State and District Surveillance Officer.

3. In case you develop <u>fever, cough or difficulty in breathing</u> any time after leaving the quarantine Centre (within next 14 days):

- Call the nearest health facility or health worker visiting you/ talking to you besides informing the State and District Surveillance Officer.
- An identified care giver (among family members) will only attend to you. He / she will wear mask and wash hands, every time he/ she comes in contact with you.
- Use surgical triple layer mask immediately on realization of symptoms.
- Get admitted to the identified health facility as advised.
- The vehicle/ ambulance which was used for transportation also needs to be disinfected. (Contact the health facility for the disinfection procedure).
- Follow infection prevention and control practices at all times and places.
- If further assistance is required, call Ministry of Health, Government of India's Control Room no. +91-11-23978046.

C. Advice to other family members at home:

- Wash your hands with soap and water frequently.
- If the person (discharged from the quarantine centre) develops symptoms inform the health worker and also the State and District Surveillance Officer.
- In case advised to shift the patient to a health facility:
    - Share list of all contacts till date with the treating doctor/ health care worker and the State and District Surveillance
    - Family members to be in home quarantine till either medical examination rules out novel coronavirus infection or the result of sample is negative.
    - Proper disinfection of bedding/ clothing/ room/ all personal belongings should be followed with 1% Sodium hypochlorite solution.

CHECKLIST FOR ESTABLISHING A QUARANTINE CENTER

I. Basic Information:

1) Name of the Quarantine Centre_
2) Address: _

3) Officer In charge:_
4) Email address:
5) Phone Number: _
6) GPS Coordinates:_

II. Location of quarantine centre

7) Located away from the residential area? ☐ Yes ☐ No
8) Distance to nearby residential area?
9) Away from an area where gathering expected (Eg: Temples, stadiums, Churches etc):

☐ Yes ☐ No

III. Accessibility to the quarantine centre :

10) How far is it from the nearby airport?
11) How far is from the nearest railway station?
12) How far is the nearest bus station?
13) Is the road to quarantine centre is free from heavy traffic?
14) Is the road to quarantine centre is wide enough to have two vehicles at a time?

☐ Yes ☐ No

15) How far is the nearest tertiary care centre?
16) How far is the nearest District Hospital?

IV. Facilities & basic amenities at quarantine facility:

17) How many floors are there in the quarantine building?
18) How many rooms available at the quarantine facility?
19) How many numbers of beds in each room at quarantine facility?

20) What is the distance between beds in the quarantine room?
21) Is there is 24*7 supply of electricity at the facility? ☐ Yes ☐ No
22) Is there 24*7 supply of water at the facility? ☐ Yes ☐ No
23) Is there air conditioning available? ☐ Yes ☐ No
24) If yes, it is by centralised AC or individual air conditioning in each room?
    i. If individual AC ? a: Split b: Window
25) Does window space covers at least 10% of total area? ☐ Yes ☐ No
26) How many windows in each room?
27) Is there exhaust fans in each room? ☐ Yes ☐ No
    i. If Yes, how much air exchange rate expressed in cubic feet per minute (CFM)?
28) Is there drainage facility available in each floor? ? ☐ Yes ☐ No
29) Is there any separate sewage line from Quarantine areas?
30) Are there separate exit & entry points? ☐ Yes ☐ No
31) Is there availability of 24*7 security services at the quarantine area?
32) Is there any separate door for entry of non-health professionals for housekeeping, catering?
33) ☐ Yes ☐ No
34) Is there any separate washroom facility for each room at the facility? ☐ Yes ☐ No
35) If not, how many wash rooms per person/area?
36) Are the floors washable & easily dried? ☐ Yes ☐ No
37) Is the floor mappable? ☐ Yes ☐ No
38) Is there any in-house mess facility available at quarantine area?
39) Is there any separate room/ resting facility for?
    i. Doctors
    ii. Nurses
    iii. Paramedics
    iv. Cleaning staffs

v. Linen management

40) What is the Frequency of changing linen in Quarantine rooms?
41) Whether disposable of Linen used? ☐ Yes ☐ No
    i. If No then, How they are disinfecting & cleaning linen?
    ii. How frequently linens changed?

42) Is there any curtains available in the quarantine rooms/wards? ☐ Yes ☐ No
    i. If yes frequency of changing them?
    ii. frequency of disinfecting & cleaning?

43) Is there any policy for disinfecting mattress at quarantine facility? ☐ Yes ☐ No

44) Is there any written policy for disinfecting beds at quarantine centres?
☐ Yes ☐ No

45) If yes, please verify policy and elaborate /

VI. Infection control practices

46) Is adequate PPE supply available at the quarantine facility? ☐ Yes ☐ No

47) Is there adequate supply of disinfectants at the centre? ☐ Yes ☐ No

48) Are the staffs in the facility trained in wearing PPE? ☐ Yes ☐ No

49) Is there a separate area for donning & doffing PPE? ☐ Yes ☐ No

50) Is there hand washing facility with soap with dispenser / hand sanitizer available at donning & doffing areas?
☐ Yes ☐ No

51) If yes, what type of hand rub dispensers are available? (select all applicable answers)
    i. Pocket bottle
    ii. Bottle affixed to trolley/tray
    iii. Bottle affixed to bed
    iv. Wall dispenser
    v. Dispenser located on bedside table/trolley

52) Whether all staff has access to hand rub dispensers? ? ☐ Yes ☐ No

53) Are hand rub dispensers replaced when empty?
    i. Always
    ii. Intermittently

iii. Rarely
iv. Never
v. Not applicable

54) Are posters illustrating handwash technique displayed beside each sink?

☐ Yes ☐ No

55) Is there availability of bleaching solution of different strength available?

% of hypochlorite solution	YES	NO
1%		
5%		
10%		

56) Is there any policy for rodent & pest control management? ☐ Yes ☐ No

57) If yes, is it being implemented & followed? ☐ Yes ☐ No

58) Are the staffs trained in infection control practices? ☐ Yes ☐ No

59) Is there a structured curriculum / training module for Infection Control Practices? ? ☐ Yes ☐ No

60) What is the Frequency of cleaning of
   i. floors of quarantine rooms/wards
   ii. Bathrooms
   iii. Ambulatory areas
   iv. Resting rooms
   v. What is the Frequency of cleaning high touch surfaces like door knobs, bed rails etc?

61) Is there any separate sample collection area? ☐ Yes ☐ No

62) Is there is separate thermometer & BP apparatus available at the quarantine centre?

☐ Yes ☐ No

63) Are there colour coded bags available for BMW management?

64) Is the waste being segregated and disposed as per protocol? ☐ Yes ☐ No

65) Are the sharps being disposed as per protocol? ☐ Yes ☐ No

66) How the food waste is being disposed?

VII. Recreational facilities

67) Is there provision for mobile phone or internet at the facility? ☐ Yes ☐ No
68) Are the mobiles phone disinfected?
    i. If Yes how
    ii. How frequently
69) Is there any recreational room / area available? ☐ Yes ☐ No
70) Is there any provision for Television or Radio at the quarantine facility?
    ☐ Yes ☐ No
71) Is there a provision of printed reading materials at the facility? ☐ Yes ☐ No
    i. If Yes how the materials are disposed off?

VIII. Human resources & logistics

72) Is there a dedicated Infection nurse for the quarantine facility to monitor IPC activities?
73) Is there is rotational shift for doctors/nurses/paramedics?
    i. If Yes, how many shifts?
    ii. Doctors in each shift
    iii. Nurses in each shift
    iv. Cleaning staffs in each shift
74) Is there any pulmonologists/physician available when it is needed? ☐ Yes ☐ No
75) Is there a phlebotomist/ lab technician available when it is needed? ☐ Yes ☐ No
76) Is there any availability of clinical psychologist in quarantine facility? ☐ Yes ☐ No

IX. SOP & policies

77) Is there any guidelines/ inhouse SOP for infection control practices? ☐ Yes ☐ No

78) Is there any protocol for limiting the visitors to quarantine area? ☐ Yes ☐ No

79) Is there any written policy for the recreational area? ? ☐ Yes ☐ No

80) Biomedical waste management guidelines 2016 & amendments 2019 available? ☐ Yes ☐ No

81) Does the quarantine health facility in charge aware of National IPC guidelines for healthcare facilities 2020? ☐ Yes ☐ No

82) Is there any linen policy available? ☐ Yes ☐ No

83) Is there any SOP for working of doctors, nurses & paramedics at quarantine facility? ☐ Yes ☐ No

84) Is there any protocol for disinfecting ambulance after transporting patient to isolation centre?

85) Is there any policy for monitoring health of staffs at quarantine area?

86) Is there enough IEC displayed at the quarantine centre?

X. Transporting Patients to Isolation centre

87) Is there any protocol for transfer of patients to tertiary care/transfer of symptomatic cases to isolation centre?

88) Is there separate ambulance available for transporting patients to isolation centre? ☐ Yes ☐ No

89) Are the ambulance staff trained in wearing PPE & infection control practices?

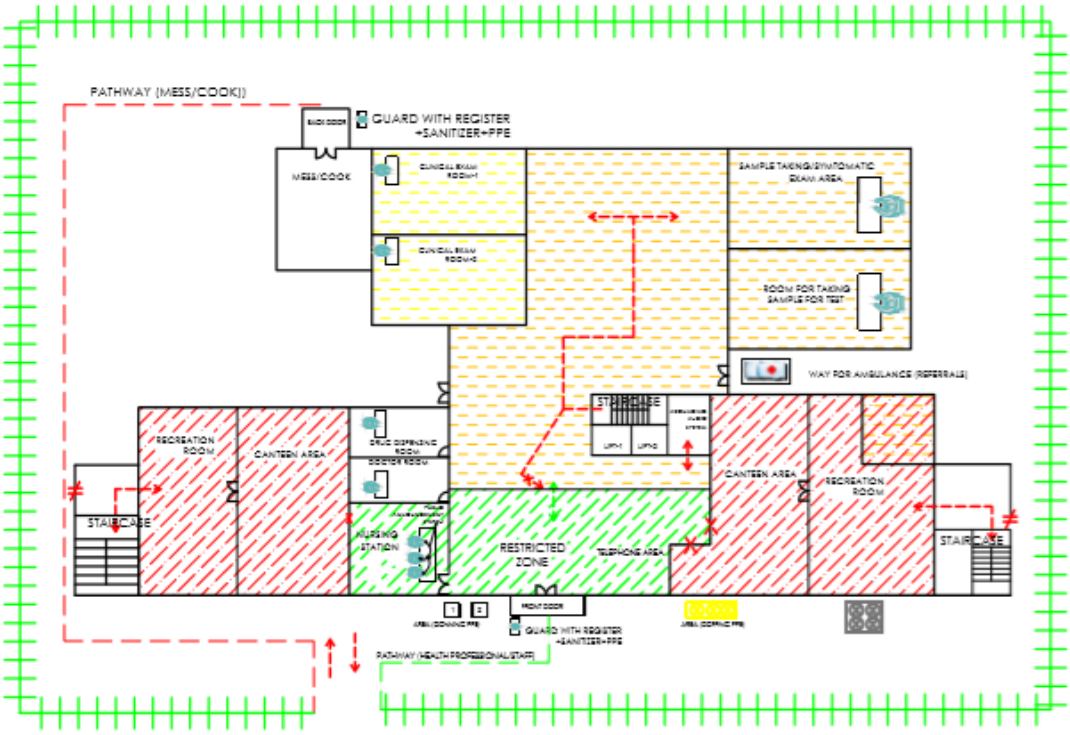
90) How far is the Isolation facility from the quarantine centre

National Centre for Disease Control

National Centre for Disease Control
(formerly National Institute of Communicable Diseases)
Directorate General of Health Services , Ministry of Health & Family Welfare
Government of India
सत्यमेव जयते

MAP SHOWING FUNCTIONAL AREAS IN THE GROUND FLOOR

(QUARANTINE BUILDING) RESTRICTIONS & FLOW OF MOVEMENT OF PEOPLE



CHHAWLA QUARANTINE CENTRE (ITBP CAMP)

LEGENDS:-

1. UNSAFE ZONE(Only people with H/O traveling to China access)

AREA WHERE QUARANTINED PEOPLE ENJOYS IN THE GROUND FLOOR AREA

PATHWAY FOR QUARANTINED PEOPLE

NO ENTRY FOR QUARANTINED PEOPLE

2. SAFE AND RESTRICTED ZONE

SAFE

NO QUARANTINED PEOPLE ENTERS HERE

ONLY HEALTH PROFESSIONALS/ STAFFS STAY

3.ALERT ZONE (Transmission of infection from quarantined people to health professionals can occur here)

AREA WHERE QUARANTINED PEOPLE AND HEALTH PROFESSIONAL OR STAFFS MAY INTERACT (RISK ZONE FOR TRANSMISSION OF INFECTION)

4. BLACK BAG (BMW)

5. YELLOW BAG (BMW)

6. CLOSED DOORS WITH KEYS IN NURSING STATION (In case of emergency to open).

7. INCOMING QUARANTINED PEOPLE (From China) CANENTER FROM THESE DOORS TO THE QUARANTINE BUILDING ON THE DAY OF ARRIVAL

8. PUBLIC ANNOUNCEMENT SYSTEM AT RECEPTION

Guidelines for disinfection of quarantine facility (for COVID-19)

Scope*:* This document aims to provide interim guidance about the environmental cleaning / decontamination in quarantine camp facilities (e.g. barracks, cubicles in rooms, offices, and toilets, etc.) where persons with potential exposure to COVID-19 have housed.

The causative agent involved in the current outbreaks of 2019-nCoV acute respiratory disease, the 2019-nCoV (genus: Betacoronavirus), belongs to the family of Coronaviridae, a large family of enveloped, positive-sense single-stranded RNA viruses. Coronaviruses are transmitted in most instances through large respiratory droplets and contact transmission, but other modes of transmission have also been proposed worldwide.

The time of survival and the conditions affecting the 2019-nCoV viability in the environment are currently unknown. According to studies assessing the environmental stability of other coronaviruses, the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) is estimated to survive several days in the environment and the Middle East Respiratory Syndrome-related coronavirus (MERS-CoV) more than 48 hours at an average room temperature (20°C) on different surfaces [1-3].

Environmental cleaning: Due to the potential survival of the virus in the environment for several days, the premises and areas potentially contaminated with the 2019-nCoV should be cleaned before their re-use, using products containing antimicrobial agents known to be effective against coronaviruses. Although there is lack of specific evidence for their effectiveness against 2019-nCoV virus, cleaning with water and household detergents and use of common disinfectant products should be sufficient for general precautionary cleaning. Tests carried out using SARS-CoV showed that sodium hypochlorite is effective.

These guidelines provide guidance for environmental cleaning in quarantine facilities housing people exposed/ potential exposure toCOVID-19 and have been adapted based on the Hospital Infection Prevention and Control guidelines drafted by NCDC in collaboration with WHO and other stakeholders.

Area/Items	Item/Equipment	Process	Method/ Procedure
Clinical Area			
General clinical areas Floors (clinical areas) – daily mopping	Dust mops Mop (No broom will be used for sweeping) Detergent/ sanitizer–hot water, sodium hypochlorite(1%) Three buckets (one with plain water and one with detergent solution; one bucket for sodium hypochlorite(1%)	Sweeping Cleaning Daily mopping	• Sweep with the dust mop or damp mop to remove surface dust. Sweep under the furniture and remove dust from corners. Gathered dust must be removed using a hearth brush and shovel. • The sweep tool should be cleaned or replaced after use. • Prepare cleaning solution using detergent with warm water • Use the three-bucket technique for mopping the floor, one bucket with plain water and one with the detergentsolution. • First mop the area with the warm water and detergent solution. • After mopping clean the mop in plain water and squeeze it. • Repeat this procedure for the remaining area. • Mop area again using sodium hypochlorite 1% after drying the area. • In between mopping if solution or water is dirty change it frequently. • Mop the floor starting at the far corner of the room and work towards thedoor. • Clean articles between cleaning. **Note:** Mopping should be done twice a day
Ceiling and Walls	Sweeping tool Duster Bowl/ small bucket of soap solution Plain water	Damp dusting	• Damp dusting with a long handledtool for the walls and ceiling done with very little moisture, just enough to collect thedust. • Damp dusting should be done in straight lines that overlap one another. • Change the mop head/cover when soiled. **Note:** Should be done once a week or after examining a suspect case
	Care of mop	Hot water Detergent Sodium hypochlorite 1%	• Clean with hot water and detergent solution, disinfect it with sodium hypochlorite and keep for drying upsidedown.

Doors and door knobs	Damp cloth or Sponge squeeze mop Detergent	Thorough washing	• The doors are to be washed with a brush, using detergent and water once a week (on one defined day); gently apply cloth to soiled area, taking care not to remove paint, then wipe with warm water to remove excess cleaningagent. • Door knobs and other frequently touched surfaces should be cleaned daily.
Isolation room	Detergent/ Sanitizer–warm water, sodium hypochlorite (1%) Three buckets (one with plain water and one with detergent solution); separate bucket for sodium hypochlorite (1%)	Terminal cleaning	• Before cleaning an isolation room, liaise with infection control team for details of any special requirements. Staff will be instructed on specific cleaning procedures required with reference to • Safety uniform to be worn. • Chemicals or disinfectants to be used. • Also, if bed screen and shower screen are to be cleaned or changed, refer cleaning in isolation rooms.
All clinical areas/ Laboratories/ Wherever spill care is required	Sodium hypochlorite (1%) Rag piece Absorbent paper Unsterile gloves Spill care kit Mop Hot water	Blood and body fluid spill care	• Wear non-sterile gloves. • For large spills, cover with absorbent paper/ rag piece • if any broken glass and sharps, using a pair of forceps and gloves, carefully retrieve.Use a large amount of folded absorbent paper to collect small glass splinters. Place the broken items into the puncture proof sharps container. • Cover the spill with sodium hypochlorite(1%)for 10–20 minutes contact time. • Clean up spill and discard into infectious waste bin, and mop area with soap and hot water. • Clean the mop and mop area with 1% sodium hypochlorite. • Wash mop with detergent and hot water and allow it to dry.
Stethoscope	Alcohol-based rub/Spirit swab	Cleaning	• Should be cleaned with detergent and water. • Should be wiped with alcohol based rub/spirit swab before each patient contact.
BP cuffs and covers	Detergent Hot water	Washing	• Cuffsshouldbewipedwithalcohol-based disinfectant and regular laundering is recommended for the cover.

Thermometer	Detergent and water Alcohol rub Individual thermometer holder	Cleaning	• Should be stored dry in individual holder. • Clean with detergent and tepid water and wipe with alcohol rub in between patient use. • Store in individual holder inverted. • Preferably one thermometer for each patient.
Injection and dressing trolley	Detergent and water Duster Disinfectant (70% alcohol)	Cleaning	• To be cleaned daily with detergent and water. • After each use should be wiped with disinfectant.
Refrigerators	Detergent and water Absorbent paper or clean cloth	Cleaning (weekly)	• Empty the fridge and store thingsappropriately. • Defrost, decontaminate and clean with detergent. • Dry it properly and replace the things. • Weekly cleaning is recommended.

Area/Items	Item/Equipment	Process	Method/ procedure
Lodging area			
General cleaning	Detergent and warm water Mop Two buckets Clean utility gloves Handmops	Daily mopping floors Thorough washing	• Scrub floors with hot water and detergent with using minimal water. (Do not pour thewater.) • Clean with plainwater. • Allow to dry • Hypochlorite 1% mopping canbe done. **Note:**Recommend general cleaning procedure should be done twice a day
Lockers, tables, cupboard, wardrobes, benches, shelves and cots	Damp duster Warm water Detergent Dry duster	Damp dusting	• Damp dust with warm waterand detergent.
Railings	Detergent/ Sanitizer–hotwater, sodium hypochlorite 1% Three small buckets/ or big bowls One with plain water One with detergent solution One for sodium hypochlorite 1%	Daily dusting	• Damp dust with warm water and detergent followed by disinfection with hypochlorite
Mirrors and Glass	Warm water Detergent water/ cleaning solution Damp cloth Wiper	Cleaning	• Using warm water and a small quantity of detergent and using a damp cloth, wipe over the mirror and surround, then using a dry lint-free cloth, buff the mirror and glass to a clean dryfinish.
Sluice room Stainless steel/ Any other sink	Powder cleanser Detergent powder Wiper Cloth	Cleaning	• Sinks are to be cleaned witha powder cleanser. • Firstwetthesink.Sprinkleonalittle powder cleanser and work around the surface with a cloth, include the plughole. • Do not use the powder cleanseron dry sink. • After removing spillage and any stains, flush away with running water. Wipe down the surface of the sink.
Pantry furniture	Duster	Dusting	• Dampdust
Telephone	Warm water detergent solution Duster	General cleaning	• Damp dust with warm waterand detergent. • **Payingspecialattentiontotheear and mouth piece and dry it properly.**
Desks	Damp cloth Furniture polish	Dusting	• Wipe top sides and draw handles with a damp cloth. Wooden desks should be cleaned with furniture polish and buffed to clear glows. Pen holder etc. to be cleaned ordusted.

Chairs (Vinyl)	Warm water and detergent	Cleaning	• Wipe down with warm water and detergent. Remove any marks under arms and seat. Check fordamage to stoppers, if stopper require replacement, report to maintenance department.
Furniture and fittings	Warm water and detergent Rag piece	Dusting	• Using warm water and detergent, damp dust all furniture and fittings, including chairs, stools, beds, tables, cupboards, wardrobes, lockers, trolleys, benches, shelves and storage racks, waste/ bins, fire extinguishers, oxygen cylinders, televisions window sills and dry properly.
Bed tables, bedside lockers	Warm water and detergent Wiper Duster	Cleaning	• Wipe down over bed table. Wipe top and underneath base and stand, using warm water and detergent. Dry oncompletion. • Wipe down the bedside. Remove marks from fronts of draws and sides. Using warm water and detergent, wash the top to remove any sticky marks anddust.
Light switches and over-bed lights	Damp cloth (never wet) Detergent Warm water	Cleaning	• Light switches to be cleaned of dust, spots and finger marks. Clean with a damp cloth (never wet) and detergent. • Over-bed lighting to be damp dusted. Clean with warm water and detergent.
Curtains	Soft clothes Water Mild soap solution	Cleaning	• Clean with water and soap for curtains
White clothes	Sodium hypochlorite 1% Tap water	Washing	• Should be washed under running water and soaked in 1% sodium hypochlorite for 20minutes. **Note:** PPE should be worn while washing soiled linen.
Mattress and pillow covers (cloth)	Tap water	Washing	• Mattress and pillows should be covered with a reusable mattress cover. • It should be changed for each patient and when soiled sent to the laundry according to schedule.
Mattress/ Pillow with rexin cover Normal/ without rexin	Sodium hypochlorite 1% Sunlight	Terminal Damp dusting and cleaning Drying in sunlight	• If with rexin cover, can be cleaned with 1% sodium hypochlorite before use for next patient • If routine mattress, dry it in bright sunlight for 1-2 days before using for next patient
Water jars	Vim powder Soap and water	Cleaning	• Recommended boiled water for drinking • Water jars should be scrubbed/ cleaned with soap and water and boiled water before filling withwater.

Areas	Agents / Toilet cleaner	Procedure
Cleaning of toilets		
Toilet pot/ commode	Sodium hypochlorite 1%/ Soap powder / long handle angular brush	• Inside of toilet pot/commode: • Scrub with the recommended agents and the long handle angular brush. • Outside: Clean with recommended agents; use a nylon scrubber.
Lid/commode	Nylon scrubber and soap powder	• Wet and scrub with soap powder and the nylon scrubber inside and outside
Toilet floor	Soap powder and scrubbing brush/ nylon broom	• Scrub floor with soap powder and the scrubbing brush • Wash with water • Use sodium hypochlorite1% dilution
Tap	Nylon scrubber and soap powder	• Wet and scrub with soap powder and the nylon scrubber.
Outside sink	Soap powder and nylon scrubber	• Scrub with the nylon scrubber.
Showers area / Taps and fittings	Warm water Detergent powder Nylon Scrubber	• Thoroughly scrub the floors/tiles with warm water and detergent • Wipe over taps and fittings with a damp cloth and detergent. • Care should be taken to clean the underside of taps and fittings. • Taps should be dried aftercleaning
Soap dispensers	Detergent and water	• Daily dusting • Should be cleaned weeklywith detergent and water and dried.

Note: Dry the floors with a separate drying mop.

References:

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सत्यमेव जयते

COVID -19 Outbreak

Guidelines for Setting up Isolation Facility/Ward

National Centre for Disease Control

22 Sham Nath Marg, Delhi 110054

Directorate General of Health Services

Ministry of Health and Family Welfare

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WHO has declared the COVID-19 (SARS-CoV-2) outbreak as Public Health Emergency of international concern and has raised the risk assessment of China, Regional Level and Global Level to Very High and "all countries should be prepared for containment, including active surveillance, early detection, isolation and case management, contact tracing and prevention of onward spread of SARS-CoV-2 infection. Among the factors affecting cluster containment, Isolation of cases and quarantine of contacts is the mainstay of outbreak containment.

Scope of document: This guidance document has been prepared to establish an isolation facility at the level of district hospital, a secondary health care facility.

A. Quarantine and isolation

Quarantine and Isolation are important mainstay of cluster containment. These measures help by breaking the chain of transmission in the community.

Quarantine

Quarantine refers to separation of individuals who are not yet ill but have been exposed to COVID-19 and therefore have a potential to become ill. There will be voluntary home quarantine of contacts of suspect /confirmed cases. The guideline on home quarantine available on the website of the Ministry provides detail guidance on home quarantine.

Isolation refers to separation of individuals who are ill and suspected or confirmed of COVID-19. All suspect cases detected in the containment/buffer zones (till a diagnosis is made), will be hospitalized and kept in isolation in a designated facility till such time they are tested negative. Persons testing positive for COVID-19 will remain to be hospitalized till such time 2 of their samples are tested negative as per MoHFW's discharge policy. About 15% of the patients are likely to develop pneumonia, 5 % of whom requires ventilator management.

Hence dedicated Intensive care beds need to be identified earmarked. Some among them may progress to multi organ failure and hence critical care facility/ dialysis facility/ and Salvage therapy [Extra Corporeal Membrane Oxygenator (ECMO)] facility for managing the respiratory/renal complications/ multi-organ failure shall be required. If such facilities are not available in the containment zone, nearest tertiary care facility in Government / private sector needs to be identified, that becomes a part of the micro-plan.

There are various modalities of isolating a patient. Ideally, patients can be isolated in individual isolation rooms or negative pressure rooms with 12 or more air-changes per hour.

In resource constrained settings, all positive COVID-19 cases can be cohorted in a ward with good ventilation. Similarly, all suspect cases should also be cohorted in a separate

ward. However under no circumstances these cases should be mixed up. A minimum distance of 1 meter needs to be maintained between adjacent beds. All such patients need to wear a triple layer surgical mask at all times.

Nosocomial infection in fellow patients and attending healthcare personnel are well documented in the current COVID-19 outbreak as well. There shall be strict adherence to Infection prevention control practices in all health facilities. IPC committees would be formed (if not already in place) with the mandate to ensure that all healthcare personnel are well aware of IPC practices and suitable arrangements for requisite PPE and other logistic (hand sanitizer, soap, water etc.) are in place. The designated hospitals will ensure that all healthcare staff is trained in washing of hands, respiratory etiquettes, donning/doffing & proper disposal of PPEs and bio-medical waste management.

At all times doctors, nurses and para-medics working in the clinical areas will wear three layered surgical mask and gloves. The medical personnel working in isolation and critical care facilities will wear full complement of PPE (including N95 masks).

The support staff engaged in cleaning and disinfection will also wear full complement of PPE. Environmental cleaning should be done twice daily and consist of damp dusting and floor mopping with Lysol or other phenolic disinfectants and cleaning of surfaces with sodium hypochlorite solution. Detailed guidelines available on MoHFW's website may be followed.

B. Setting up isolation facility/ward

An isolation facility aims to control the airflow in the room so that the number of airborne infectious particles is reduced to a level that ensures cross-infection of other people within a healthcare facility is highly unlikely.

- At State level, a minimum of **50** bed isolation ward should be established.
- At District level, a minimum of **10** bed isolation ward should be established.
  - Post signages on the door indicating that the space is an isolation area.
  - Remove all non-essential furniture and ensure that the remaining furniture is easy to clean, and does not conceal or retain dirt or moisture within or around it.
  - COVID-19 patients should be housed in single rooms.
  - However, if sufficient single rooms are not available, beds could be put with a spatial separation of at least 1 meter (3 feet) from one another.
  - To create a 10 bed facility, a minimum space of 2000 sq. feet area clearly segregated from other patientcare areas is required.
  - Preferably the isolation ward should have a separate entry/exit and should not be co-located with post-surgical wards/dialysis unit/SNCU/labour room etc.
  - It should be in a segregated area which is not frequented by outsiders.
  - The access to isolation ward should be through dedicated lift/guarded stairs.

- There should be double door entry with changing room and nursing station. Enough PPE should be available in the changing room with waste disposal bins to collect used PPEs.Used PPEs should be disposedas per the BMWM guidelines.
- Stock the PPE supply and linen outside the isolation room or area (e.g. in the change room). Setup a trolley outside the door to hold PPE. A checklist may be useful to ensure that all equipment is available.
- Place appropriate waste bags in a bin. If possible, use a touch-free bin. Ensure that used (i.e. dirty) bins remain inside the isolation rooms.
- Place a puncture-proof container for sharps disposal inside the isolation room/area and bio-medical waste should be managed as per the BMWM guidelines.
- Keep the patient's personal belongings to a minimum. Keep water pitchers and cups, tissue wipes, and all items necessary for attending to personal hygiene within the patient's reach.
- Non-critical patient-care equipment (e.g. stethoscope, thermometer, blood pressure cuff, and sphygmomanometer) should be dedicated for the patient, if possible. Any patient-care equipment that is required for use by other patients should be thoroughly cleaned and disinfected before use.
- Place an appropriate container with a lid outside the door for equipment that requires disinfection or sterilization.
- Ensure that appropriate hand washing facilities and hand-hygiene supplies are available. Stock the sink area with suitable supplies for hand washing, and with alcohol-based hand rub, near the point of care and the room door.
- Ensure adequate room ventilation. If room is air-conditioned, ensure 12 air changes/ hour and filtering of exhaust air. A negative pressure in isolation rooms is desirable for patients requiring aerosolization procedures (intubation, suction nebulisation). These rooms may have standalone air-conditioning. These areas should not be a part of the central air-conditioning.
- If air-conditioning is not available negative pressure could also be created through putting up 3-4 exhaust fans driving air out of the room.
- In **district hospital**, where there is sufficient space, natural ventilation may be followed. Such isolation facility should have large windows on opposite walls of the room allowing a natural unidirectional flow and air changes. The principle of natural ventilation is to allow and enhance the flow of outdoor air by natural forces such as wind and thermal buoyancy forces from one opening to another to achieve the desirable air change per hour.
- The isolation ward should have a separate toilet with proper cleaning and supplies.
- Avoid sharing of equipment, but if unavoidable, ensure that reusable equipment is appropriately disinfected between patients.

- Ensure regular cleaning and proper disinfection of common areas, and adequate hand hygiene by patients, visitors and care givers.Keep adequate equipment required for cleaning or disinfection inside the isolation room or area, and ensure scrupulous daily cleaning of the isolation room or area.
- **Visitors to the isolation facility should be restricted /disallowed**. For unavoidable entries, they should use PPE according to the hospital guidance, and should be instructed on its proper use and in hand hygiene practices prior to entry into the isolation room/area.
- Ensure that visitors consult the health-care worker in charge (who is also responsible for keeping a visitor record) before being allowed into the isolation areas. Keep a roster of all staff working in the isolation areas, for possible outbreak investigation and contact tracing.
- Doctors, nurses and paramedics posted to isolation facility **need to be dedicated** and not allowed to work in other patient-care areas.
- Consider having designated portable X-ray and portable ultrasound equipment.
- Corridors with frequent patient transport should be well-ventilated.
- All health staff involved in patient care should be well trained in the use of PPE.
- Set up a telephone or other method of communication in the isolation room or area to enable patients, family members or visitors to communicate with health-care workers. This may reduce the number of times the workers need to don PPE to enter the room or area.

C. Checklist for isolation rooms

- Eye protection (visor or goggles)
- Face shield (provides eye, nose and mouth protection)
- Gloves
- reusable vinyl or rubber gloves for environmental cleaning
- latex single-use gloves for clinical care
- Hair covers
- Particulate respirators (N95, FFP2, or equivalent)
- Medical (surgical or procedure) masks
- Gowns and aprons
- single-use long-sleeved fluid-resistant or reusable non-fluid-resistant gowns
- plastic aprons (for use over non-fluid-resistant gowns if splashing is anticipated and if fluid-resistant gowns are not available)
- Alcohol-based hand rub
- Plain soap (liquid if possible, for washing hands in clean water)
- Clean single-use towels (e.g. paper towels)
- Sharps containers

- Appropriate detergent for environmental cleaning and disinfectant for disinfection of surfaces, instruments or equipment
- Large plastic bags
- Appropriate clinical waste bags
- Linen bags
- Collection container for used equipment
- Standard IEC
- Standard protocols for hand hygiene, sample collection and BMW displayed clearly
- Standard Clinical management protocols

D. Wearing and removing Personal Protective Equipment (PPE)

Before entering the isolation room or area:

- Collect all equipment needed;
- Perform hand hygiene with an alcohol-based hand rub (preferably when hands are not visibly soiled) or soap and water;
- Put on PPE in the order that ensures adequate placement of PPE items and prevent self-contamination and self-inoculation while using and taking off PPE; an example of the order in which to don PPE when all PPE items are needed is hand hygiene, gown, mask or respirator, eye protection and gloves

Leaving the isolation room or area

- Either remove PPE in the anteroom or, if there is no anteroom, make sure that the PPE will not contaminate either the environment outside the isolation room or area, or other people.
- Remove PPE in a manner that prevents self-contamination or self-inoculation with contaminated PPE or hands. General principles are:
  - remove the most contaminated PPE items first;
  - perform hand hygiene immediately after removing gloves;
  - remove the mask or particulate respirator last (by grasping the ties and discarding in a rubbish bin);
  - discard disposable items in a closed rubbish bin;
  - put reusable items in a dry (e.g. without any disinfectant solution) closed container; an example of the order in which to take off PPE when all PPE items are needed is gloves (if the gown is disposable, gloves can be peeled off together with gown upon removal), hand hygiene, gown, eye protection, mask or respirator, and hand hygiene
  - Perform hand hygiene with an alcohol-based hand rub (preferably) or soap and water whenever un-gloved hands touch contaminated PPE items.

E. Transport of Infectious Patients

It is recommended that transport of infectious patients is limited to movement considered medically essential by the clinicians, e.g. for diagnostic or treatment purposes. Where infectious patients are required to be transported to other units within the hospital or outside the following precautions may be implemented:

- Infected or colonised areas of the patient's body are covered: - For contact isolation this may include a gown, sheets or dressings to surface wounds; these patients are transferred to a Standard Pressure or Protective Environment Isolation room - For respiratory isolation the patient is dressed in a mask, gown and covered in sheets; these patients are accommodated in a Negative Pressure Isolation Room - For quarantine isolation the patient may be transported in a fully enclosed transport cell or isolator with a filtered air supply and exhaust; these patients are accommodated in a high level quarantine isolation suite.
- The transport personnel remove existing PPE, cleanse hands and transport the patient on a wheelchair, bed or trolley, applying clean PPE to transport the patients and when handling the patient at the destination. Gown-up and gown-down rooms located at the entry to a Unit will assist the staff to enter and exit the facility according to the strict infection control protocols required, thereby reducing the risk of contamination
- The destination unit should be contacted and notified prior to the transfer to ensure suitable accommodation on arrival.
- It is preferred that the patient is transported through staff and service corridors, not public access corridors During planning stages, design can assist transfer of infectious patients by providing service corridors and strategically placed lifts, capable of separation from other lifts. The nominated lift may be isolated from public and staff transit through access control measures and cleaned following transit of the infectious patient.
- Design may also incorporate a designated floor for horizontal bed transfers of infectious patients away from busy clinical areas. The designated floor may be located at mid-level in the hospital
- A combination of nominated lifts, corridors and a bed transfer floor would assist in the movement of infectious patients through the hospital and minimise the risk of spread of infection.

Annexure I

Checklist for isolation rooms

- Eye protection (visor or goggles)
- Face shield (provides eye, nose and mouth protection)
- Gloves
- reusable vinyl or rubber gloves for environmental cleaning
- latex single-use gloves for clinical care
- Hair covers
- Particulate respirators (N95, FFP2, or equivalent)
- Medical (surgical or procedure) masks
- Gowns and aprons
- single-use long-sleeved fluid-resistant or reusable non-fluid-resistant gowns
- plastic aprons (for use over non-fluid-resistant gowns if splashing is anticipated and if fluid-resistant gowns are not available)
- Alcohol-based hand rub
- Plain soap (liquid if possible, for washing hands in clean water)
- Clean single-use towels (e.g. paper towels)
- Sharps containers
- Appropriate detergent for environmental cleaning and disinfectant for disinfection of surfaces, instruments or equipment
- Large plastic bags
- Appropriate clinical waste bags
- Linen bags
- Collection container for used equipment
- Standard IEC
- Standard protocols for hand hygiene, sample collection and BMW displayed clearly
- Standard Clinical management protocols

Annexure II

Hospital Preparedness & Isolation Facility Assessment Checklist - COVID19

I . GENERAL INFORMATION

1. Name of the healthcare facility (HCF)				
2. Type	☐Public ☐Private			
3. Category of HCF	☐Primary ☐Secondary ☐Tertiary			
4. Subcategory	☐PHC ☐UPHC ☐CHC ☐Taluk/Sub-District Hospital ☐ District Hospital ☐General Hospital ☐Medical College Hospital ☐ Multi-Speciality Hospital ☐Nursing Home ☐ Dispensary ☐Clinic			
5. Address of the health facility a) Block b) District c) State d) Email ID e) Contact no.				
6. Name of Director/ Principal/Medical superintendent a) Email ID b) Contact no.				
7. Name of RMO/Hospital In-charge a) Email ID b) Contact no				
8. Total number of inpatient beds				
9. Total number of ICU beds				
10. Average number of OPD attendance per month				
11. Average number of new admissions /months				
12. Bed occupancy rate (Annual)				
13. Total staff strength	Doctors – MBBS			
	Doctors- AYUSH			
	Clinical Specialists other than Intensivist/Pulmonologist			
	Non-Clinical specialists other than Microbiologist			
	Microbiologists			
	Intensivists #	Pulmonologist #	Int	Pulm
	Senior Resident #	Junior Resident #	SR	JR
	Interns			
	Nurses			
	Lab technicians			

	Pharmacists	
	Laboratory Technicians	
	Cleaning staff	
	Ambluance drivers	
14. Does this HCF have a designated COVID 19 isolation facility		☐Yes☐No

II. HCF PREPAREDNESS TO MANAGE MAJOR EPIDEMICS & PANDEMICS

15. Core Emergency Response / Rapid Response Team for outbreak management identified?	☐Available ☐In progress☐ Not started
16. Roles and responsibilities of RRT/ERT clearly defined?	☐Available ☐In progress☐ Not started
17. Is there a contingency plan for covering for a core team member who is absent?	☐Available ☐In progress☐ Not started
18. Monitoring and managing Health Care Personnel (HCP) a) The facility follows the Central/State public health policies/procedures for monitoring and managing HCP with potential for exposure to COVID-19 b) The facility have a process to conduct symptom and temperature checks prior to the start of duty shift for HCP	☐Yes ☐No ☐Yes ☐No
19. Training for Healthcare Personnel (HCP) a) Education and job-specific training to HCP regarding • Signs and symptoms of infection • Triage procedures including patient placement and filling the CIF • Safely collect clinical specimen • Correct infection control practices and PPE use • HCP sick leave policies • Recommended actions for not using recommended PPE • How and to whom suspected cases (COVID-19)should be reported	☐Completed ☐In Progress☐ Not Started ☐Completed ☐In Progress☐ Not Started ☐Completed ☐In Progress☐ Not Started ☐Completed ☐In Progress☐ Not Started ☐Completed ☐In Progress☐ Not Started ☐Completed ☐In Progress☐ Not Started ☐Completed ☐In Progress☐ Not Started

III. TRIAGE

20. Triage protocols available at the healthcare facility?	☐Available ☐In progress ☐ Not started
21. Availability of telemedicine facility as a way to provide clinical support without direct interaction with the patient	☐Available ☐In progress ☐ Not started
22. Is there specific waiting area for people with respiratory symptoms?	
23. Availability of designated ARI/COVID-19 triage area	☐Available ☐In progress ☐ Not started
24. Do they have non-contact Infra-Red thermometer available near the registration desk?	
25. Availability of signage directing to triage area and signage to instruct patients to alert staff if they have symptoms of COVID-19	☐Available ☐In progress ☐ Not started
26. Do they have dedicated/single examination rooms in Triage area? (Dedicated room should satisfy criteria of one patient per room with door closed for examination)	☐Yes ☐No
27. Triage area has signs/alerts about respiratory etiquette and hand hygiene?	☐Yes ☐No
28. Does the HCF provide masks for patients with respiratory symptoms?	☐Yes ☐No

29. Triage staff trained on revised COVID19 case definition and identify suspected cases ?	☐Yes ☐No
30. Screening questionnaire and algorithm for triage available with staff	☐Available ☐In progress ☐ Not started
31. Infrared thermometer available with the triage staff	☐Available ☐In progress ☐ Not started
32. Waste bins and access to cleaning/ disinfection supplies available in Triage area	☐Available ☐In progress ☐ Not started
33. Physical barriers (e.g., glass or plastic screens) at reception areas available to limit close contact between triage staff and potentially infectious patients	☐Available ☐In progress ☐ Not started
34. Does the patient waiting area have cross ventilation	☐Yes ☐No
35. Waiting area cleaned at least twice daily with 0.5% hypochlorite solution (or) 70% alcohol for surfaces that do not tolerate chlorine	☐Yes ☐No
36. Does the hospital have dedicated infrastructure for isolation facility? (If No skip to Section IV)	☐Yes ☐No
37. Type of isolation Facility	☐Temporary ☐ Permanent
IV Isolation Facility	
38. Is the isolation facility near OPD/IPD/other crowded area?	☐Yes ☐No
39. Screening rooms identified and available at the isolation area?	☐Available ☐In progress☐ Not started
40. Is there separate entry to the isolation area?	☐Yes ☐No
41. Dedicated space for staff to put on PPE while entering the isolated area	☐Available ☐In progress☐ Not started
42. Is there separate exit for isolation area?	☐Yes ☐No
43. Dedicated space for staff to take off PPE near exit?	☐Available ☐In progress☐ Not started
44. Isolation facility is separate and has rooms/wards?	☐Rooms☐Wards
45. Are washrooms available as 1 toilet per 20 persons?	☐Yes ☐No
46. Number of beds in each isolation rooms/wards	
47. Is the distance between two beds in isolation wards/rooms more than 1 meter?	☐Yes ☐No
48. Do the hospital have policy to segregate clinical staff (e.g. nurses) for care of COVID19 cases?	☐Yes ☐No
49. Whether PPEs available and located near point of use? a. Gloves b. Gowns c. Face masks d. 95 respirators	 ☐Yes ☐No ☐Yes ☐No ☐Yes ☐No ☐Yes ☐No
50. Whether the hospital limits the movement of patients in the isolation facility outside for medically necessary purposes only?	☐Yes ☐No
51. Are the known or suspected COVID19 patients placed on contact and droplet precautions?	☐Yes ☐No
52. If a patient leaves their room for medical purposes, are they provided face mask ?	☐Yes ☐No
53. Do staff transporting the patient wear PPE?	☐Yes ☐No
54. While transporting patients are specific routes used to minimize contact with other patients and staff?	☐Yes ☐No
55. For a patient on Airborne Precautions, air pressure is monitored daily with visual indicators (e.g., smoke tubes, flutter strips), regardless of the presence of differential pressure sensing devices (e.g., manometers):	☐Yes ☐No

56. Are these isolation rooms/wards satisfying the criteria of negative pressure class N? (Applicable if an aerosol generating procedure is performed)	☐Yes ☐No
57. Is there Provision food in the isolation area?	☐Available ☐In progress☐ Not started
58. Policy for leftover food waste management?	☐Available ☐In progress☐ Not started
59. Is there an ICU facility attached to isolation area?	☐Yes ☐No
60. Availability of cross ventilation	☐Yes ☐No
61. Is there any designated area for sample collection?	☐Yes ☐No
62. Are they following standard precautions and PPE while taking sample?	☐Yes ☐No
63. Does the facility have a written policy for sample collection and transport?	☐Yes ☐No
64. Are these sample transported in triple packing?	☐Yes ☐No
65. Does the transportation package contain IATA DG code (UN3373)?	☐Yes ☐No
66. Are they following standard precautions while transporting the sample?	☐Yes ☐No
67. Are the floors of isolation facility suitable for moping?	☐Yes ☐No
68. Is drinking water available at isolation area?	☐Yes ☐No
69. Availability of management protocols for COVID19	☐Available ☐In progress☐ Not started
70. Is rotation roster of duty shift for staff posted at isolation facility	☐Available ☐In progress☐ Not started
71. Is there any protocol for limiting the entry of visitors at isolation area?	☐Available ☐In progress☐ Not started
72. Availability of separate Thermometers BP apparatus with adult & Pediatric cuffs?	☐Yes ☐No
73. Availability of discharge policy for COVID19	☐Available ☐In Progress☐ Not Started

IV. INFECTION PREVENTION AND CONTROL PRACTICES

74. Does the hospital have Hospital Infection control Committee (HICC)?	☐Yes ☐No
75. Are there any infection control protocols/guidelines available?	☐Available ☒In progress☐ Not started
76. Functioning hand washing stations (including water, soap and paper towel or air dry) at isolation area?	
77. Does the facility have uninterrupted running water supply?	☐Yes ☐No
78. Is alcohol based hand sanitizer available at isolation area?	☐Yes ☐No
79. Are the staff following five movements of hand washing?	☐Yes ☐No
80. Are the staff following six steps of hand washing?	☐Yes ☐No
81. Is there posters to reinforce hand washing and PPE at hand washing stations	☐Available ☐In progress☐ Not started

VI. ENVIRONMENTAL CLEANING

82. Are objects and environmental surfaces in patient care areas touched frequently (e.g., bed rails, overbed table, bedside commode, lavatory surfaces) are cleaned	☐Yes ☐No
83. Are they disinfected with an approved disinfectant frequently (at least daily) and when visibly soiled?	☐Yes ☐No
84. Is there cleaning chart?	☐Yes ☐No
85. Frequency of cleaning of high touch areas, Bed rails, Tables, Chairs, Keyboards etc.,	
86. Is there any housekeeping policy available at isolation area?	☐Yes ☐No

87. Availability of terminal cleaning checklist	☐Available ☐In progress☐ Not started
88. Availability of three bucket system	☐Yes ☐No
89. Are they following correct contact time for disinfection with hypochlorite solution? (10 minutes for non-porous surfaces)	☐Yes ☐No
90. Are the staff following outward mopping technique	☐Yes ☐No
91. Availability of separate mops for each area	☐Yes ☐No
92. Frequency of cleaning of isolation rooms?	
93. Frequency of cleaning of ambulatory areas?	
94. Frequency of cleaning of bathrooms of isolation areas?	
95. Staff wearing PPE while cleaning a. Gloves b. Masks c. Apron	☐Yes ☐No ☐Yes ☐No ☐Yes ☐No
96. Are the staff trained in housekeeping and infection control practices?	☐Yes ☐No
97. Doctors, nurses & cleaning staff available/ shift at isolation area?	☐Yes ☐No
98. Barrier nursing practiced at isolation area in 1:1 ratio?	☐Yes ☐No
99. Is there any policy for linen management for isolation facility?	☐Available ☐In progress☐ Not started
100. What is the frequency of changing linen in isolation rooms?	☐Daily ☐Alternate Days ☐Weekly ☐When Soiled
101. Type of linen used	☐ Disposable ☐Reusable

VII. BIOMEDICAL WASTE MANAGEMENT (BMWM)

102. Availability of SOP for BMW management?	☐Available ☐In progress☐ Not started
103. Availability of agreement with CWTF	☐Available ☐In progress☐ Not started
104. Are they following color codes bins in BMW management?	☐Yes ☐No
105. Is there sufficient quantity color coded bags available?	☐Yes ☐No
106. Are they disinfecting the waste before it is disposed?	☐Yes ☐No
107. Method of disposing biomedical wastes?	☐CWTF ☐Deep burial ☐Incineration
108. Disposal of sharps as per the standard protocol?	☐Yes ☐No
109. Availability of biomedical waste trolley?	☐Yes ☐No
110. Availability of dedicated BMW collection area?	☐Yes ☐No
111. BMW collected from isolation facility within 48hrs?	☐Yes ☐No

VIII. ICU FACILITY

112. Are there any beds dedicated for COVID 19 infection?	☐Yes ☐No
113. If Yes, Number of beds dedicated to COVID 19 cases?	
114. Is the distance between beds in ICU more than 1 meter?	☐Yes ☐No
115. Is the oxygen supply is by cylinder or central connection?	
116. Are there any separate Ventilators, nebulizers, Infusion pumps in ICU?	☐Yes ☐No
117. Adequate supply of masks, ET tubes, PPE kits available at ICU?	☐Yes ☐No
118. All ICU Staff received training in donning & doffing of PPE?	☐Completed ☐In progress☐ Not started
119. Are there separate area for donning & doffing of PPE?	☐Yes ☐No
120. Hand washing facility & hand sanitizer available at donning & doffing areas?	☐Yes ☐No

XII.OTHER ESSENTIAL SERVICES

121.Is there strategy available for optimizing the PPE supply	☐Available ☐In progress☐ Not started
122.Are there any stockout experience for PPEs in the las year.	☐Yes ☐No
123.Designated ambulance facility for transporting patients from isolation area?	☐Yes ☐No
124.list of contact numbers of ambulance drivers displayed at isolation area?	☐Available ☐In progress☐ Not started
125.Ambulance staff trained in wearing PPE & and other Infection control practices?	☐Yes ☐No
126.SOP for disinfecting ambulance after transporting confirmed case/dead body?	☐Available ☐In progress☐ Not started
127.Written protocol available for disposing dead bodies of confirmed cases?	☐Available ☐In progress☐ Not started
128.Is there enough availability of body bags?	☐Yes ☐No
129.Are the staff trained in handling dead bodies and wearing PPE?	☐Yes ☐No

Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services
(EMR Division)

Guidelines on Clinical Management of COVID – 19

This document is intended for clinicians taking care of hospitalised adult and paediatric patients of COVID – 19. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and provide to up-to-date guidance. Best practices for COVID - 19 including IPC and optimized supportive care for severely ill patients are essential.This document aims to provide clinicians with updated interim guidance on timely, effective, and safe supportive management of patients with COVID - 19, particularly those with severe acute respiratory illness and critical ill

17th March 2020

Triage: Early recognition of patients with COVID - 19

The purpose of triage is to recognize and sort all patients with COVID - 19 at first point of contact with health care system (such as the emergency department). Consider COVID - 19 as a possible etiology under certain conditions (see Table 1). Triage patients and start emergency treatments based on disease severity.

Table 1: Definitions of patients with COVID - 19

SARI	An ARI with history of fever or measured temperature ≥38 C° and cough; onset within the last ~10 days; and requiring hospitalization.
Surveillance case definitions for SARI	**1.** SARI in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation[1] (clinicians should also be alert to the possibility of atypical presentations in patients who are immune-compromised); AND any of the following: a) A history of international travel in 14 days prior to symptom onset; or **b) the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel; or** **c)** the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation **2.** A person with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures: a) close physical contact[2] with a confirmed case of COVID - 19 infection, while that patient was symptomatic; or b) a healthcare facility in a country where hospital-associated COVID - 19 infections have been reported;

*** see https://mohfw.gov.in/media/disease-alerts for latest case definition**

1- Testing should be according to local guidance for management of community-acquired pneumonia. Examples of other etiologies include Streptococcus pneumoniae, Haemophilus influenza type B, Legionella pneumophila, other recognized primary bacterial pneumonias, influenza viruses, and respiratory syncytial virus.

2- CLOSE CONTACT IS DEFINED AS:

- Health care associated exposure, including providing direct care for COVID – 19 patients, working with health care workers infected with COVID – 19**,** visiting patients or staying in the same close environment of a COVID - 19 patients.
- Working together in close proximity or sharing the same classroom environment with a COVID - 19 patient
- Travelling together with COVID - 19 patient in any kind of conveyance.
- Living in the same household as a COVID - 19 patients.

The epidemiological link may have occurred within a 14-day period before or after the onset of illness in the case under consideration

COVID–19 may present with mild, moderate, or severe illness; the latter includes severe pneumonia, ARDS, sepsis and septic shock. Early recognition of suspected patients allows for timely initiation of IPC (see Table 2). Early identification of those with severe manifestations (see Table 2) allows for immediate optimized supportive care treatments and safe, rapid admission (or referral) to intensive care unit according to national protocols. For those with mild illness, hospitalization may not be required unless there is concern for rapid deterioration. All patients discharged for home should be instructed to return to hospital if they develop any worsening of illness.

Table 2: Clinical syndromes associated with COVID - 19 infection

Uncomplicated illness	**Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache. The elderly and immunosuppressed may present with atypical symptoms. These patients do not have any signs of dehydration, sepsis or shortness of breath.**
Mild pneumonia	Patient with pneumonia and no signs of severe pneumonia. Child with non-severe pneumonia has cough or difficulty in breathing/ fast breathing: (fast breathing - in breaths/min): <2 months, ≥60; 2–11 months, ≥50; 1–5 years, ≥40 and no signs of severe pneumonia

Severe pneumonia	Adolescent or adult: fever or suspected respiratory infection, plus one of the following; respiratory rate >30 breaths/min, severe respiratory distress, SpO2 <90% on room air Child with cough or difficulty in breathing, plus at least one of the following: central cyanosis or SpO2 <90%; severe respiratory distress (e.g. grunting, chest in-drawing); signs of pneumonia with any of the following danger signs: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. Other signs of pneumonia may be present: chest indrawing, fast breathing (in breaths/min): <2 months ≥60; 2–11 months ≥50; 1–5 years ≥40. The diagnosis is clinical; chest imaging can exclude complications.
Acute Respiratory Distress Syndrome	**Onset**: new or worsening respiratory symptoms within one week of known clinical insult. **Chest imaging (radiograph, CT scan, or lung ultrasound)**: bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules. **Origin of oedema**: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present. **Oxygenation (adults)**: • Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥5 cm H_2O, or non-ventilated) • Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤200 mmHg with PEEP ≥5 cm H_2O, or non-ventilated) • Severe ARDS: PaO2/FiO2 ≤ 100 mmHg with PEEP ≥5 cm H2O, or non-ventilated) • When PaO_2 is not available, SpO_2/FiO_2 ≤315 suggests ARDS (including in non-ventilated patients) Oxygenation (children; note OI = Oxygenation Index and OSI = Oxygenation Index using SpO_2) • Bilevel NIV or CPAP ≥5 cm H2O via full face mask: PaO_2/FiO_2 ≤ 300 mmHg or SpO_2/FiO_2 ≤264 • Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5 • Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3 • Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3

Sepsis	**Adults**: life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction. Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyperbilirubinemia. **Children**: suspected or proven infection and ≥2 SIRS criteria, of which one must be abnormal temperature or white blood cell count
Septic shock	**Adults**: persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate level < 2 mmol/L **Children**: any hypotension (SBP <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; bradycardia or tachycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia

A. Immediate implementation of appropriate IPC measures

IPC is a critical and integral part of clinical management of patients and should be initiated at the point of entry of the patient to hospital (typically the Emergency Department). Standard precautions should always be routinely applied in all areas of health care facilities. Standard precautions include hand hygiene; use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also include prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.

Table 3: How to implement infection prevention and control measures for patients with suspected or confirmed COVID - 19 infection

At triage	• Give suspect patient a triple layer surgical mask and direct patient to separate area, an isolation room if available. Keep at least 1meter distance between suspected patients and other patients. Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others. Perform hand hygiene after contact with respiratory secretions

Apply droplet precautions	• Droplet precautions prevent large droplet transmission of respiratory viruses. Use a triple layer surgical mask if working within 1-2 metres of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients wear triple layer surgical masks when outside their rooms
Apply contact precautions	• Droplet and contact precautions prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces). Use PPE (triple layer surgical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use. Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene.
Apply airborne precautions when performing an aerosol generating procedure	• Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95). (The scheduled fit test should not be confused with user seal check before each use.) Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures, meaning negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation. Avoid the presence of unnecessary individuals in the room. Care for the patient in the same type of room after mechanical ventilation commences

Abbreviations: ARI, acute respiratory infection; PPE, personal protective equipment

B. Early supportive therapy and monitoring

a. Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia, or shock: Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO_2 ≥90% in non-pregnant adults and SpO_2 ≥92-95 % in pregnant patients. Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive oxygen therapy during resuscitation to target SpO_2 ≥94%; otherwise, the target SpO_2 is ≥90%. All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, simple face mask, and mask with reservoir bag). Use contact precautions when handling contaminated oxygen interfaces of patients with COVID – 19.

b. Use conservative fluid management in patients with SARI when there is no evidence of shock: Patients with SARI should be treated cautiously with intravenous fluids, because aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation.

c. Give empiric antimicrobials to treat all likely pathogens causing SARI. Give antimicrobials within one hour of initial patient assessment for patients with sepsis: Although the patient may be suspected to have COVID - 19, Administer appropriate empiric antimicrobials within ONE hour of identification of sepsis. Empirical antibiotic treatment should be based on the clinical diagnosis (community-acquired pneumonia, health care-associated pneumonia [if infection was acquired in healthcare setting], or sepsis), local epidemiology and susceptibility data, and treatment guidelines. Empirical therapy includes a neuraminidase inhibitor for treatment of influenza when there is local circulation or other risk factors, including travel history or exposure to animal influenza viruses. Empirical therapy should be de-escalated on the basis of microbiology results and clinical judgment

d. Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason: A systematic review of observational studies of corticosteroids administered to patients with SARS reported no survival benefit and possible harms (avascular necrosis, psychosis, diabetes, and delayed viral clearance). A systematic review of observational studies in influenza found a higher risk of mortality and secondary infections with corticosteroids; the evidence was

judged as very low to low quality due to confounding by indication. A subsequent study that addressed this limitation by adjusting for time-varying confounders found no effect on mortality. Finally, a recent study of patients receiving corticosteroids for MERS used a similar statistical approach and found no effect of corticosteroids on mortality but delayed lower respiratory tract (LRT) clearance of MERS-CoV. Given lack of effectiveness and possible harm, routine corticosteroids should be avoided unless they are indicated for another reason. See section F for the use of corticosteroids in sepsis.

e. Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately: Application of timely, effective, and safe supportive therapies is the cornerstone of therapy for patients that develop severe manifestations of COVID – 19.

f. Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis: During intensive care management of SARI, determine which chronic therapies should be continued and which therapies should be stopped temporarily.

g. Communicate early with patient and family: Communicate pro-actively with patients and families and provide support and prognostic information. Understand the patient's values and preferences regarding life-sustaining interventions.

C. Collection of specimens for laboratory diagnosis

Guidance on specimen collection, processing, transportation, including related biosafety procedures, is available on **https://mohfw.gov.in/media/disease-alerts**

Points to remember

- Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy. DO NOT delay antimicrobial therapy to collect blood cultures
- Collect specimens of nasopharyngeal and oro – pharyngeal swab for RT - PCR. Clinicians may also collect LRT (Lower Respiratory Tract) samples when these are readily available (for example, in mechanically ventilated patients).
- Use appropriate PPE for specimen collection (droplet and contact precautions for URT specimens; airborne precautions for LRT specimens). When collecting URT samples, use viral swabs (sterile Dacron or rayon, not cotton) and viral transport media. Do not sample

the nostrils or tonsils. In a patient with suspected COVID - 19, especially with pneumonia or severe illness, a single URT sample does not exclude the diagnosis, and additional URT and LRT samples are recommended. Sputum induction should be avoided due to increased risk of increasing aerosol transmission.

- Dual infections with other respiratory viral infections have been found in SARS and MERS cases. At this stage we need detailed microbiologic studies in all suspected COVID - 19 cases. Both URT and LRT specimens can be tested for other respiratory viruses, such as influenza A and B (including zoonotic influenza A), respiratory syncytial virus, parainfluenza viruses, rhinoviruses, adenoviruses, enteroviruses (e.g. EVD68), human metapneumovirus, and endemic human coronaviruses (i.e. HKU1, OC43, NL63, and 229E). LRT specimens can also be tested for bacterial pathogens, including *Legionella pneumophila*.
- In hospitalized patients with confirmed COVID - 19 infection, repeat URT samples should be collected to demonstrate viral clearance. The frequency of specimen collection will depend on local circumstances but should be done at least every 2 to 4 days until there are two consecutive negative results (of URT samples) in a clinically recovered patient at least 24 hours apart.

D. Management of hypoxemic respiratory failure and ARDS

- Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy. Patients may continue to have increased work of breathing or hypoxemia even when oxygen is delivered via a face mask with reservoir bag (flow rates of 10-15 L/min, which is typically the minimum flow required to maintain bag inflation; FiO_2 0.60-0.95). Hypoxemic respiratory failure in ARDS commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation.
- High – flow nasal catheter oxygenation or non – invasive mechanical ventilation: When respiratory distress and/or hypoxemia of the patient cannot be alleviated after receiving standard oxygen therapy, high – flow nasal cannula oxygen therapy or non – invasive ventilation can be considered. If conditions do not improve or even get worse within a short time (1 – 2 hours), tracheal intubation and invasive mechanical ventilation should be

used in a timely manner. Compared to standard oxygen therapy, HFNO reduces the need for intubation. Patients with hypercapnia (exacerbation of obstructive lung disease, cardiogenic pulmonary oedema), hemodynamic instability, multi-organ failure, or abnormal mental status should generally not receive HFNO, although emerging data suggest that HFNO may be safe in patients with mild-moderate and non-worsening hypercapnia[25]. Patients receiving HFNO should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hr).

- NIV guidelines make no recommendation on use in hypoxemic respiratory failure (apart from cardiogenic pulmonary oedema and post-operative respiratory failure) or pandemic viral illness (referring to studies of SARS and pandemic influenza). Risks include delayed intubation, large tidal volumes, and injurious transpulmonary pressures. Limited data suggest a high failure rate when MERS patients received NIV. Patients receiving a trial of NIV should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hr). Patients with hemodynamic instability, multiorgan failure, or abnormal mental status should not receive NIV.
- Recent publications suggest that newer HFNO and NIV systems with good interface fitting do not create widespread dispersion of exhaled air and therefore should be associated with low risk of airborne transmission.
- Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions. Patients with ARDS, especially young children or those who are obese or pregnant, may de-saturate quickly during intubation. Pre-oxygenate with 100% FiO_2 for 5 minutes, via a face mask with reservoir bag, bag-valve mask, HFNO, or NIV. Rapid sequence intubation is appropriate after an airway assessment that identifies no signs of difficult intubation.
- Implement mechanical ventilation using lower tidal volumes (4–8 ml/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH_2O). This is a strong recommendation from a clinical guideline for patients with ARDS, and is suggested for patients with sepsis-induced respiratory failure. The initial tidal volume is 6 ml/kg PBW; tidal volume up to 8 ml/kg PBW is allowed if undesirable side effects occur (e.g. dyssynchrony, pH <7.15). Hypercapnia is permitted if meeting the pH goal of 7.30-

7.45. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets.

- In patients with severe ARDS, prone ventilation for >12 hours per day is recommended. Application of prone ventilation is strongly recommended for adult and paediatric patients with severe ARDS but requires sufficient human resources and expertise to be performed safely.
- Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.
- In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested. PEEP titration requires consideration of benefits (reducing atelectrauma and improving alveolar recruitment) vs. risks (end-inspiratory overdistension leading to lung injury and higher pulmonary vascular resistance). Tables are available to guide PEEP titration based on the FiO_2 required to maintain SpO_2. A related intervention of recruitment manoeuvres (RMs) is delivered as episodic periods of high continuous positive airway pressure [30–40 cm H_2O], progressive incremental increases in PEEP with constant driving pressure, or high driving pressure; considerations of benefits vs. risks are similar. Higher PEEP and RMs were both conditionally recommended in a clinical practice guideline. In patients with moderate-severe ARDS (PaO_2/FiO_2 <150), neuromuscular blockade by continuous infusion should not be routinely used.
- In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation. ECLS should only be offered in expert centres with a sufficient case volume to maintain expertise and that can apply the IPC measures required for COVID – 19 patients
- Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis. Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required (for example, transfer to a transport ventilator)

E. Management of septic shock

- Recognize septic shock in adults when infection is suspected or confirmed AND vasopressors are needed to maintain mean arterial pressure (MAP) ≥65 mmHg AND

lactate is < 2 mmol/L, in absence of hypovolemia. Recognize septic shock in children with any hypotension (systolic blood pressure [SBP] <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.

- In the absence of a lactate measurement, use MAP and clinical signs of perfusion to define shock. Standard care includes early recognition and the following treatments within 1 hour of recognition: antimicrobial therapy and fluid loading and vasopressors for hypotension. The use of central venous and arterial catheters should be based on resource availability and individual patient needs. Detailed guidelines are available for the management of septic shock in adults and children.
- In resuscitation from septic shock in adults, give at least 30 ml/kg of isotonic crystalloid in adults in the first 3 hours. In resuscitation from septic shock in children in well-resourced settings, give 20 ml/kg as a rapid bolus and up to 40-60 ml/kg in the first 1 hr. Do not use hypotonic crystalloids, starches, or gelatins for resuscitation.
- Fluid resuscitation may lead to volume overload, including respiratory failure. If there is no response to fluid loading and signs of volume overload appear (for example, jugular venous distension, crackles on lung auscultation, pulmonary oedema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration. This step is particularly important where mechanical ventilation is not available. Alternate fluid regimens are suggested when caring for children in resource-limited settings.
- Crystalloids include normal saline and Ringer's lactate. Determine need for additional fluid boluses (250-1000 ml in adults or 10-20 ml/kg in children) based on clinical response and improvement of perfusion targets. Perfusion targets include MAP (>65 mmHg or age-appropriate targets in children), urine output (>0.5 ml/kg/hr in adults, 1 ml/kg/hr in children), and improvement of skin mottling, capillary refill, level of consciousness, and lactate. Consider dynamic indices of volume responsiveness to guide volume administration beyond initial resuscitation based on local resources and experience. These indices include passive leg raises, fluid challenges with serial stroke volume measurements, or variations in systolic pressure, pulse pressure, inferior vena

cava size, or stroke volume in response to changes in intrathoracic pressure during mechanical ventilation.

- **Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP ≥65 mmHg in adults and age-appropriate targets in children.**
- If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseous needles.
- If signs of poor perfusion and cardiac dysfunction persist despite achieving MAP target with fluids and vasopressors, consider an inotrope such as dobutamine

F. Other Therapeutic Measures:

For patients with progressive deterioration of oxygenation indicators, rapid worsening on imaging and excessive activation of the body's inflammatory response, glucocorticoids can be used for a short period of time (3 to 5 days). It is recommended that dose should not exceed the equivalent of methylprednisolone 1 – 2mg/kg/day. Note that a larger dose of glucocorticoid will delay the removal of coronavirus due to immunosuppressive effects. For pregnant severe and critical cases, pregnancy should be preferably terminated. Consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential. Patients often suffer from anxiety and fear and they should be supported by psychological counselling.

G. Prevention of complications

Implement the following interventions (Table 4) to prevent complications associated with critical illness. These interventions are based on Surviving Sepsis or other guidelines, and are generally limited to feasible recommendations based on high quality evidence.

Table 4: Prevention of complications

Anticipated Outcome	**Interventions**
Reduce days of invasive mechanical ventilation	• Use weaning protocols that include daily assessment for readiness to breathe spontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions

Reduce incidence of ventilator associated pneumonia	• Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45º) • Use a closed suctioning system; periodically drain and discard condensate in tubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days
Reduce incidence of venous thromboembolism	• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).
Reduce incidence of catheter related bloodstream infection	• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure ulcers	• Turn patient every two hours
Reduce incidence of stress ulcers and gastrointestinal bleeding	• Give early enteral nutrition (within 24–48 hours of admission) • Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal replacement therapy, liver disease, multiple co-morbidities, and higher organ failure score
Reduce incidence of ICU-related weakness	• Actively mobilize the patient early in the course of illness when safe to do so

H. Specific COVID - 19 treatments and clinical research

There is no current evidence from RCTs to recommend any specific treatment for suspected or confirmed patients with COVID - 19. No specific anti–virals are recommended for treatment of COVID – 19 due to lack of adequate evidence from literature. The use of Lopinavir/ Ritonavir in PEP regimens for HIV (4 weeks) is also associated with significant adverse events which many a times leads to discontinuation of therapy. In light of the above, Lopinavir/ Ritonavir should ONLY be used with proper informed expressed consent on a

case to case basis for severe cases, within the under-mentioned framework along with supportive treatment as per need.

a) Administration of Lopinavir/ Ritonavir

Administration of Lopinavir/ Ritonavir to be considered in Laboratory confirmed cases of COVID – 19 when the following criteria are met:

- Symptomatic patients with any of the following:
  i. hypoxia,
  ii. hypotension,
  iii. new onset organ dysfunction (one or more)
    - Increase in creatinine by 50% from baseline, GFR reduction by >25% from baseline or urine output of <0.5 ml/kg for 6 hours.
    - Reduction of GCS by 2 or more
    - Any other organ dysfunction

  iv. High Risk Groups:
    - Age> 60 yrs
    - Diabetes Mellitus, Renal Failure, Chronic Lung disease
    - Immuno – compromised persons

- Dosage:

  i. Lopinavir/ Ritonavir (200 mg/ 50 mg) – 2 tablets twice daily
  ii. For patients unable to take medications by mouth: Lopinavir 400mg/ Ritonavir 100 mg – 5ml suspension twice daily

- Duration: 14 days or for 7 days after becoming asymptomatic.

b) **Support to Treating Physicians**

AIIMS, New Delhi is running a 24x7 helpline to provide support to the treating physicians on clinical management. The helpline number is 99711876591. The identified nodal doctor of the State, appointed for clinical management of COVID – 19 should only contact AIIMS Call Centre.

Guidelines on Clinical management of severe acute respiratory illness (SARI) in suspect/confirmed novel coronavirus (nCoV) cases

An infection with a novel coronavirus has been reported from China. As 25th January 2020, a total of 1287 cases and 41 deaths were reported in 29 provinces (districts and cities) of China. In addition, 28 cases have been confirmed outside Chinese mainland: 5 cases in Hong Kong, 2 cases in Macao, 3 cases in Taiwan, 4 cases in Thailand (2 cases cured), 2 cases in Japan (1 case cured), 2 cases in South Korea, 2 cases in the United States, 2 cases in Vietnam, 3 cases in Singapore, 1 case in Nepal and 2 cases in France.

Purpose and scope of document

This document is intended for clinicians taking care of hospitalised adult and paediatric patients with severe acute respiratory infection (SARI) when an nCoV infection is suspected. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen clinical management of these patients and provide to up-to-date guidance. Best practices for SARI including IPC and optimized supportive care for severely ill patients are essential.

This document aims to provide clinicians with updated interim guidance on timely, effective, and safe supportive management of patients with nCoV and SARI, particularly those with critical illness. The recommendations in this document are derived from WHO publications.

A. Triage: Early recognition of patients with SARI associated with nCoV infection.

The purpose of triage is to recognize and sort all patients with SARI at first point of contact with health care system (such as the emergency department). Consider nCOV as a possible etiology of SARI under certain conditions (see Table 1). Triage patients and start emergency treatments based based on disease severity.

Table 1: Definitions of patients with SARI, suspected of nCoV*

SARI	An ARI with history of fever or measured temperature ≥38 C° and cough; onset within the last ~10 days; and requiring hospitalization. However, the absence of fever does NOT exclude viral infection.
Surveillance case definitions for nCoV*	**1.** Severe acute respiratory infection (SARI) in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation[1] (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised); AND any of the following: a) A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset; or **b) the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel; or** **c)** the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation **2.** A person with acute respiratory illness of any degree of severity who,

	within 14 days before onset of illness, had any of the following exposures: a) close physical contact[2] with a confirmed case of nCoV infection, while that patient was symptomatic; or b) a healthcare facility in a country where hospital-associated nCoV infections have been reported;

*** see https://mohfw.gov.in/media/disease-alerts for latest case definition**

1- Testing should be according to local guidance for management of community-acquired pneumonia. Examples of other etiologies include Streptococcus pneumoniae, Haemophilus influenza type B, Legionella pneumophila, other recognized primary bacterial pneumonias, influenza viruses, and respiratory syncytial virus.

2- Close contact is defined as:

- Health care associated exposure, including providing direct care for nCoV patients, working with health care workers infected with nCoV, visiting patients or staying in the same close environment of a nCoV patient
- Working together in close proximity or sharing the same classroom environment with a with nCoV patient
- Traveling together with nCoV patient in any kind of conveyance
- Living in the same household as a nCoV patient

The epidemiological link may have occurred within a 14-day period before or after the onset of illness in the case under consideration

Novel Coronavirus may present with mild, moderate, or severe illness; the latter includes severe pneumonia, ARDS, sepsis and septic shock. Early recognition of suspected patients allows for timely initiation of IPC (see Table 2). Early identification of those with severe manifestations (see Table 2) allows for immediate optimized supportive care treatments and safe, rapid admission (or referral) to intensive care unit according to institutional or national protocols. For those with mild illness, hospitalization may not be required unless there is concern for rapid deterioration. All patients discharged home should be instructed to return to hospital if they develop any worsening of illness.

Table 2: Clinical syndromes associated with nCoV infection

Uncomplicated illness	Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache, muscle pain or malaise. The elderly and immunosuppressed may present with atypical symptoms. These patients do not have any signs of dehydration, sepsis or shortness of breath
Mild pneumonia	Patient with pneumonia and no signs of severe pneumonia. Child with non-severe pneumonia has cough or difficulty breathing + fast breathing: fast breathing (in breaths/min): <2 months, ≥60; 2–11 months, ≥50; 1–5 years, ≥40 and no signs of severe pneumonia
Severe pneumonia	Adolescent or adult: fever or suspected respiratory infection, plus one of respiratory rate >30 breaths/min, severe respiratory distress, or SpO2 <90% on room air Child with cough or difficulty in breathing, plus at least one of the following: central cyanosis or SpO2 <90%; severe respiratory distress (e.g. grunting, very severe chest indrawing); signs of pneumonia with a general danger sign: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions. Other signs of pneumonia may be present: chest indrawing, fast breathing (in breaths/min): <2 months, ≥60; 2–11 months, ≥50; 1–5 years, ≥40. The diagnosis is clinical; chest imaging can exclude complications.
Acute Respiratory Distress Syndrome	**Onset**: new or worsening respiratory symptoms within one week of known clinical insult. **Chest imaging (radiograph, CT scan, or lung ultrasound)**: bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules.

	Origin of oedema: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present. **Oxygenation (adults)**: • Mild ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥5 cm H_2O, or non-ventilated) • Moderate ARDS: 100 mmHg < PaO2/FiO2 ≤200 mmHg with PEEP ≥5 cm H_2O, or non-ventilated) • Severe ARDS: PaO2/FiO2 ≤ 100 mmHg with PEEP ≥5 cmH2O, or non-ventilated) • When PaO_2 is not available, SpO_2/FiO_2 ≤315 suggests ARDS (including in non-ventilated patients) Oxygenation (children; note OI = Oxygenation Index and OSI = Oxygenation Index using SpO_2) • Bilevel NIV or CPAP ≥5 cmH2O via full face mask: PaO_2/FiO_2 ≤ 300 mmHg or SpO_2/FiO_2 ≤264 • Mild ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5 • Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3 • Severe ARDS (invasively ventilated): OI ≥ 16 or OSI ≥ 12.3
Sepsis	**Adults**: life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction. Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyperbilirubinemia. **Children**: suspected or proven infection and ≥2 SIRS criteria, of which one must be abnormal temperature or white blood cell count
Septic shock	**Adults**: persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP ≥65 mmHg and serum lactate level >2 mmol/L **Children**: any hypotension (SBP <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia

B. Immediate implementation of appropriate IPC measures

IPC is a critical and integral part of clinical management of patients and should be initiated at the point of entry of the patient to hospital (typically the Emergency Department). Standard precautions should always be routinely applied in all areas of health care facilities. Standard precautions include hand hygiene; use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also include prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.

Table 3: How to implement infection prevention and control measures for patients with suspected or confirmed nCoV infection

At triage	• Give suspect patient a medical mask and direct patient to separate area, an isolation room if available. Keep at least 1meter distance between suspected patients and other patients. Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others. Perform

	hand hygiene after contact with respiratory secretions
Apply droplet precautions	• Droplet precautions prevent large droplet transmission of respiratory viruses. Use a medical mask if working within 1-2 metres of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms
Apply contact precautions	• Droplet and contact precautions prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces). Use PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use. Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene
Apply airborne precautions when performing an aerosol generating procedure	• Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95 or equivalent, or higher level of protection). (The scheduled fit test should not be confused with user seal check before each use.) Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures, meaning negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation. Avoid the presence of unnecessary individuals in the room. Care for the patient in the same type of room after mechanical ventilation commences

Abbreviations: ARI, acute respiratory infection; PPE, personal protective equipment

C. Early supportive therapy and monitoring

a. Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia, or shock: Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO_2 ≥90% in non-pregnant adults and SpO_2 ≥92-95 % in pregnant patients. Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive oxygen therapy during resuscitation to target SpO_2 ≥94%; otherwise, the target SpO_2 is ≥90%. All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, simple face mask, and mask with reservoir bag). Use contact precautions when handling contaminated oxygen interfaces of patients with nCoV infection
b. Use conservative fluid management in patients with SARI when there is no evidence of shock: Patients with SARI should be treated cautiously with intravenous fluids, because aggressive fluid

resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation

c. Give empiric antimicrobials to treat all likely pathogens causing SARI. Give antimicrobials within one hour of initial patient assessment for patients with sepsis: Although the patient may be suspected to have nCoV, administer appropriate empiric antimicrobials within ONE hour of identification of sepsis. Empiric antibiotic treatment should be based on the clinical diagnosis (community-acquired pneumonia, health care-associated pneumonia [if infection was acquired in healthcare setting], or sepsis), local epidemiology and susceptibility data, and treatment guidelines. Empiric therapy includes a neuraminidase inhibitor for treatment of influenza when there is local circulation or other risk factors, including travel history or exposure to animal influenza viruses.18 Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment
d. Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason: A systematic review of observational studies of corticosteroids administered to patients with SARS reported no survival benefit and possible harms (avascular necrosis, psychosis, diabetes, and delayed viral clearance). A systematic review of observational studies in influenza found a higher risk of mortality and secondary infections with corticosteroids; the evidence was judged as very low to low quality due to confounding by indication. A subsequent study that addressed this limitation by adjusting for time-varying confounders found no effect on mortality. Finally, a recent study of patients receiving corticosteroids for MERS used a similar statistical approach and found no effect of corticosteroids on mortality but delayed lower respiratory tract (LRT) clearance of MERS-CoV. Given lack of effectiveness and possible harm, routine corticosteroids should be avoided unless they are indicated for another reason. See section F for the use of corticosteroids in sepsis.
e. Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately: Application of timely, effective, and safe supportive therapies is the cornerstone of therapy for patients that develop severe manifestations of nCoV
f. Understand the patient's co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis: During intensive care management of SARI, determine which chronic therapies should be continued and which therapies should be stopped temporarily
g. Communicate early with patient and family: Communicate proactively with patients and families and provide support and prognostic information. Understand the patient's values and preferences regarding life-sustaining interventions

D. Collection of specimens for laboratory diagnosis

Guidance on specimen collection, processing, transportation, including related biosafety procedures, is available on **https://mohfw.gov.in/media/disease-alerts**

Points to remember

- Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy. DO NOT delay antimicrobial therapy to collect blood cultures
- Collect specimens from BOTH the upper respiratory tract (URT; nasopharyngeal and oropharyngeal) AND lower respiratory tract (LRT; expectorated sputum, endotracheal aspirate, or bronchoalveolar lavage) for nCoV testing by RT-PCR. Clinicians may elect to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients)

- Use appropriate PPE for specimen collection (droplet and contact precautions for URT specimens; airborne precautions for LRT specimens). When collecting URT samples, use viral swabs (sterile Dacron or rayon, not cotton) and viral transport media. Do not sample the nostrils or tonsils. In a patient with suspected novel coronavirus, especially with pneumonia or severe illness, a single URT sample does not exclude the diagnosis, and additional URT and LRT samples are recommended. LRT (vs. URT) samples are more likely to be positive and for a longer period. Clinicians may elect to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients). Sputum induction should be avoided due to increased risk of increasing aerosol transmission.

Dual infections with other respiratory viral infections have been found in SARS and MERS cases. At this stage we need detailed microbiologic studies in all suspected cases. Both URT and LRT specimens can tested for other respiratory viruses, such as influenza A and B (including zoonotic influenza A), respiratory syncytial virus, parainfluenza viruses, rhinoviruses, adenoviruses, enteroviruses (e.g. EVD68), human metapneumovirus, and endemic human coronaviruses (i.e. HKU1, OC43, NL63, and 229E). LRT specimens can also be tested for bacterial pathogens, including Legionella pneumophila

In hospitalized patients with confirmed nCoV infection, repeat URT and LRT samples should be collected to demonstrate viral clearance. The frequency of specimen collection will depend on local circumstances but should be at least every 2 to 4 days until there are two consecutive negative results (both URT and LRT samples if both are collected) in a clinically recovered patient at least 24 hours apart. If local infection control practice requires two negative results before removal of droplet precautions, specimens may be collected as often as daily

E. Management of hypoxemic respiratory failure and ARDS

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy. Patients may continue to have increased work of breathing or hypoxemia even when oxygen is delivered via a face mask with reservoir bag (flow rates of 10-15 L/min, which is typically the minimum flow required to maintain bag inflation; FiO_2 0.60-0.95). Hypoxemic respiratory failure in ARDS commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation

High-flow nasal oxygen (HFNO) or non-invasive ventilation (NIV) should only be used in selected patients with hypoxemic respiratory failure. The risk of treatment failure is high in patients with MERS treated with NIV, and patients treated with either HFNO or NIV should be closely monitored for clinical deterioration. HFNO systems can deliver 60 L/min of gas flow and FiO_2 up to 1.0; paediatric circuits generally only handle up to 15 L/min, and many children will require an adult circuit to deliver adequate flow. Compared to standard oxygen therapy, HFNO reduces the need for intubation. Patients with hypercapnia (exacerbation of obstructive lung disease, cardiogenic pulmonary oedema), hemodynamic instability, multi-organ failure, or abnormal mental status should generally not receive HFNO, although emerging data suggest that HFNO may be safe in patients with mild-moderate and non-worsening hypercapnia.25 Patients receiving HFNO should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hr). Evidence-based guidelines on HFNO do not exist, and reports on HFNO in MERS patients are limited.

NIV guidelines make no recommendation on use in hypoxemic respiratory failure (apart from cardiogenic pulmonary oedema and post-operative respiratory failure) or pandemic viral illness (referring to studies of SARS and pandemic influenza). Risks include delayed intubation, large tidal volumes, and injurious transpulmonary pressures. Limited data suggest a high failure rate when MERS patients receive NIV. Patients receiving a trial of NIV should be in a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case the patient acutely deteriorates or does not improve after a short trial (about 1 hr). Patients with hemodynamic instability, multiorgan failure, or abnormal mental status should not receive NIV.

Recent publications suggest that newer HFNO and NIV systems with good interface fitting do not create widespread dispersion of exhaled air and therefore should be associated with low risk of airborne transmission.

Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions. Patients with ARDS, especially young children or those who are obese or pregnant, may desaturate quickly during intubation. Pre-oxygenate with 100% FiO_2 for 5 minutes, via a face mask with reservoir bag, bag-valve mask, HFNO, or NIV. Rapid sequence intubation is appropriate after an airway assessment that identifies no signs of difficult intubation.

Implement mechanical ventilation using lower tidal volumes (4–8 ml/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH_2O). This is a strong recommendation from a clinical guideline for patients with ARDS, and is suggested for patients with sepsis-induced respiratory failure who do not meet ARDS criteria. The initial tidal volume is 6 ml/kg PBW; tidal volume up to 8 ml/kg PBW is allowed if undesirable side effects occur (e.g. dyssynchrony, pH <7.15). Hypercapnia is permitted if meeting the pH goal of 7.30-7.45. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets. Although high driving pressure (plateau pressure−PEEP) may more accurately predict increased mortality in ARDS compared to high tidal volume or plateau pressure, RCTs of ventilation strategies that target driving pressure are not currently available.

In patients with severe ARDS, prone ventilation for >12 hours per day is recommended. Application of prone ventilation is strongly recommended for adult and paediatric patients with severe ARDS but requires sufficient human resources and expertise to be performed safely.

Use a conservative fluid management strategy for ARDS patients without tissue hypoperfusion.

In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested. PEEP titration requires consideration of benefits (reducing atelectrauma and improving alveolar recruitment) vs. risks (end-inspiratory overdistension leading to lung injury and higher pulmonary vascular resistance). Tables are available to guide PEEP titration based on the FiO_2 required to maintain SpO_2. A related intervention of recruitment manoeuvres (RMs) is delivered as episodic periods of high continuous positive airway pressure [30–40 cm H_2O], progressive incremental increases in PEEP with constant driving pressure, or high driving pressure; considerations of benefits vs. risks are similar. Higher PEEP and RMs were both conditionally recommended in a clinical practice guideline. For PEEP, the guideline considered an individual patient data meta-analysis of 3 RCTs. However, a subsequent RCT of high PEEP and prolonged high-pressure RMs showed harm, suggesting that the protocol in this RCT should be avoided. Monitoring of patients to identify those who respond to the

initial application of higher PEEP or a different RM protocol, and stopping these interventions in non-responders, is suggested.

In patients with moderate-severe ARDS (PaO_2/FiO_2 <150), neuromuscular blockade by continuous infusion should not be routinely used. One trial found that this strategy improved survival in patients with severe ARDS (PaO2/FiO2 <150) without causing significant weakness, but results of a recent larger trial found that use of neuromuscular blockage with high PEEP strategy was not associated with survival when compared to a light sedation strategy without neuromuscular blockade. Continuous neuromuscular blockade may still be considered in patients with ARDS in certain situations: ventilator dyssnchony despite sedation, such that tidal volume limitation cannot be reliably achieved; or refractory hypoxemia or hypercapnia.

In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation. A recent guideline made no recommendation about ECLS in patients with ARDS. Since then, an RCT of ECLS for patients with ARDS was stopped early and found no statistically significant difference in the primary outcome of 60-day mortality between ECLS and standard medical management (including prone positioning and neuromuscular blockade). However, ECLS was associated with a reduced risk of the composite outcome of mortality and crossover to ECLS, and a post hoc Bayesian analysis of this RCT showed that ECLS is very likely to reduce mortality across a range of prior assumptions. In patients with MERS-CoV infection, ECLS vs. conventional treatment was associated with reduced mortality in a cohort study. ECLS should only be offered in expert centres with a sufficient case volume to maintain expertise and that can apply the IPC measures required for nCoV patients

Avoid disconnecting the patient from the ventilator, which results in loss of PEEP and atelectasis. Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required (for example, transfer to a transport ventilator)

F. Management of septic shock

Recognize septic shock in adults when infection is suspected or confirmed AND vasopressors are needed to maintain mean arterial pressure (MAP) ≥65 mmHg AND lactate is ≥2 mmol/L, in absence of hypovolemia. Recognize septic shock in children with any hypotension (systolic blood pressure [SBP] <5th centile or >2 SD below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <90 bpm or >160 bpm in infants and HR <70 bpm or >150 bpm in children); prolonged capillary refill (>2 sec) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia.

In the absence of a lactate measurement, use MAP and clinical signs of perfusion to define shock. Standard care includes early recognition and the following treatments within 1 hour of recognition: antimicrobial therapy and fluid loading and vasopressors for hypotension. The use of central venous and arterial catheters should be based on resource availability and individual patient needs. Detailed guidelines are available for the management of septic shock in adults and children.

In resuscitation from septic shock in adults, give at least 30 ml/kg of isotonic crystalloid in adults in the first 3 hours. In resuscitation from septic shock in children in well-resourced settings, give 20 ml/kg as a rapid bolus and up to 40-60 ml/kg in the first 1 hr.

Do not use hypotonic crystalloids, starches, or gelatins for resuscitation.

Fluid resuscitation may lead to volume overload, including respiratory failure. If there is no response to fluid loading and signs of volume overload appear (for example, jugular venous distension, crackles on lung auscultation, pulmonary oedema on imaging, or hepatomegaly in children), then reduce or discontinue fluid administration. This step is particularly important where mechanical ventilation is not available. Alternate fluid regimens are suggested when caring for children in resource-limited settings.

Crystalloids include normal saline and Ringer's lactate. Determine need for additional fluid boluses (250-1000 ml in adults or 10-20 ml/kg in children) based on clinical response and improvement of perfusion targets. Perfusion targets include MAP (>65 mmHg or age-appropriate targets in children), urine output (>0.5 ml/kg/hr in adults, 1 ml/kg/hr in children), and improvement of skin mottling, capillary refill, level of consciousness, and lactate. Consider dynamic indices of volume responsiveness to guide volume administration beyond initial resuscitation based on local resources and experience. These indices include passive leg raises, fluid challenges with serial stroke volume measurements, or variations in systolic pressure, pulse pressure, inferior vena cava size, or stroke volume in response to changes in intrathoracic pressure during mechanical ventilation.

Starches are associated with an increased risk of death and acute kidney injury vs. crystalloids. The effects of gelatins are less clear, but they are more expensive than cyrstalloids. Hypotonic (vs. isotonic) solutions are less effective at increasing intravascular volume. Surviving Sepsis also suggests albumin for resuscitation when patients require substantial amounts of crystalloids, but this conditional recommendation is based on low-quality evidence.

Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP ≥65 mmHg in adults and age-appropriate targets in children.

If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseous needles.

If signs of poor perfusion and cardiac dysfunction persist despite achieving MAP target with fluids and vasopressors, consider an inotrope such as dobutamine

Vasopressors (i.e. norepinephrine, epinephrine, vasopressin, and dopamine) are most safely given through a central venous catheter at a strictly controlled rate, but it is also possible to safely administer them via peripheral vein and intraosseous needle. Monitor blood pressure frequently and titrate the vasopressor to the minimum dose necessary to maintain perfusion and prevent side effects. Norepinephrine is considered first-line in adult patients; epinephrine or vasopressin can be added to achieve the MAP target. Because of the risk of tachyarrhythmia, reserve dopamine for selected patients with low risk of tachyarrhythmia or those with bradycardia. In children with cold shock (more common), epinephrine is considered first-line, while norepinephrine is used in patients with warm shock (less common).

G. Prevention of complications

Implement the following interventions (Table 4) to prevent complications associated with critical illness. These interventions are based on Surviving Sepsis or other guidelines, and are generally limited to feasible recommendations based on high quality evidence.

Table 4: Prevention of complications

Anticipated Outcome	Interventions
Reduce days of invasive mechanical ventilation	• Use weaning protocols that include daily assessment for readiness to breathe spontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions
Reduce incidence of ventilator associated pneumonia	• Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45º) • Use a closed suctioning system; periodically drain and discard condensate in tubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely • Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days
Reduce incidence of venous thromboembolism	• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).
Reduce incidence of catheter related bloodstream infection	• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure ulcers	• Turn patient every two hours
Reduce incidence of stress ulcers and gastrointestinal bleeding	• Give early enteral nutrition (within 24–48 hours of admission) • Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal replacement • therapy, liver disease, multiple comorbidities, and higher organ failure score
Reduce incidence of ICU-related weakness	• Actively mobilize the patient early in the course of illness when safe to do so

H. Specific anti-Novel-CoV treatments and clinical research

There is no current evidence from RCTs to recommend any specific anti-nCoV treatment for patients with suspected or confirmed nCoV. Unlicensed treatments should be administered only in the context of ethically-approved clinical trials or the Monitored Emergency Use of Unregistered Interventions Framework (MEURI), with strict monitoring.

Clinical characterization protocols are available, including the SPRINT-SARI https://isaric.tghn.org/sprint-sari/ and WHOISARIC forms available at https://isaric.tghn.org/protocols/severe-acute-respiratory-infection-data-tools/.

I. Special considerations for pregnant patients

Pregnant women with suspected or confirmed nCoV should be treated with supportive therapies as described above, taking into account the physiologic adaptations of pregnancy.

The use of investigational therapeutic agents outside of a research study should be guided by individual risk-benefit analysis based on potential benefit for mother and safety to fetus, with consultation from an obstetric specialist and ethics committee.

Emergency delivery and pregnancy termination decisions are challenging and based on many factors: gestational age, maternal condition, and fetal stability. Consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential.

Note: These guidelines are preliminary in nature and will be updated as soon as more information on clinical profile and treatment are available.

Guidelines for Handling, Treatment, and Disposal of Waste Generated during Treatment/Diagnosis/ Quarantine of COVID-19 Patients

March, 2020

Central Pollution Control Board

(Ministry of Environment, Forest & Climate Change)

Parivesh Bhawan, East Arjun Nagar

Delhi – 110032

In order to deal with COVID-19 pandemic, State and Central Governments have initiated various steps, which include setting up of quarantine centers/camps, Isolation wards, sample collection centers and laboratories.

Following specific guidelines for management of waste generated during diagnostics and treatment of COVID-19 suspected / confirmed patients, are required to be followed by all the stakeholders including isolation wards, quarantine centers, sample collection centers, laboratories, ULBs and common biomedical waste treatment and disposal facilities, in addition to existing practices under BMW Management Rules, 2016.

These guidelines are based on current knowledge on COVID-19 and existing practices in management of infectious waste generated in hospitals while treating viral and other contagious diseases like HIV, H1N1, etc. These guidelines will be updated if need arises.

Guidelines brought out by WHO, MoH&FW, ICMR and other concerned agencies from time to time may also be referred.

Guidelines for handling, treatment and disposal of COVID-19 waste at Healthcare Facilities, Quarantine Camps/Home-care, Sample Collection Centers, Laboratories, SPCBs/PCCs, ULBs and CBWTFs :

(a) COVID-19 Isolation wards:

Healthcare Facilities having isolation wards for COVID-19 patients need to follow these steps to ensure safe handling and disposal of biomedical waste generated during treatment;

- Keep separate color coded bins/bags/containers in wards and maintain proper segregation of waste as per BMWM Rules, 2016 as amended and CPCB guidelines for implementation of BMW Management Rules.

- As precaution double layered bags (using 2 bags) should be used for collection of waste from COVID-19 isolation wards so as to ensure adequate strength and no-leaks;

- Collect and store biomedical waste separately prior to handing over the same CBWTF. Use a dedicated collection bin labelled as "COVID-19" to store COVID-19 waste and keep separately in temporary storage room prior to handing over to authorized staff of CBWTF. Biomedical waste collected in such isolation wards can also be lifted directly from ward into CBWTF collection van.

- In addition to mandatory labelling, bags/containers used for collecting biomedical waste from COVID-19 wards, should be labelled as "COVID-19 Waste". This marking would enable CBWTFs to identify the waste easily for priority treatment and disposal immediately upon the receipt.

- General waste not having contamination should be disposed as solid waste as per SWM Rules, 2016;

- Maintain separate record of waste generated from COVID-19 isolation wards

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- Use dedicated trolleys and collection bins in COVID-19 isolation wards. A label "COVID-19 Waste" to be pasted on these items also.

- The (inner and outer) surface of containers/bins/trolleys used for storage of COVID-19 waste should be disinfected with 1% sodium hypochlorite solution.

- Report opening or operation of COVID-19 ward to SPCBs

- Depute dedicated sanitation workers separately for BMW and general solid waste so that waste can be collected and transferred timely to temporary waste storage area.

(b) Sample Collection Centers and Laboratories for COVID-19 suspected patients

Report opening or operation of COVID-19 sample collection centers and laboratories to concerned SPCB. Guidelines given at section (a) for isolation wards should be applied suitably in in case of test centers and laboratories also.

(c) Quarantine Camps/Home Care for COVID-19 suspected patients

Less quantity of biomedical waste is expected from quarantine centers. However, quarantine camps/centers/home-care for suspected COVID-19 cases need to follow these steps to ensure safe handling and disposal of waste;

- Treat the routine waste generated from quarantine centers or camps as general solid waste and the same need to be disposed as per SWM Rules, 2016. However, biomedical waste if any generated from quarantine centers/camps should be collected separately in yellow coloured bags and bins.

- Quarantine camps/centers shall inform CBWTF operator as and when the waste is generated so that waste can be collected for treatment and disposal at CBWTFs.

- In case of home-care for suspected patients, biomedical waste should be collected separately in yellow bags and the same shall be handed over to authorized waste collectors engaged by local bodies. ULB should engage CBWTFs to pick-up such waste either directly from such quarantined houses or from identified collection points.

(d) Duties of Common Biomedical Waste Treatment Facility (CBWTF):

- Report to SPCBs/PCCs about receiving of waste from COVID-19 isolation wards / Quarantine Camps / Quarantined homes / COVID-19 Testing Centers;

- Operator of CBWTF shall ensure regular sanitization of workers involved in handling and collection of biomedical waste;

- Workers shall be provided with adequate PPEs including three layer masks, splash proof aprons/gowns, nitrile gloves, gum boots and safety goggles;

- Use dedicated vehicle to collect COVID-19 ward waste. It is not necessary to place separate label on such vehicles;

- Vehicle should be sanitized with sodium hypochlorite or any appropriate chemical disinfectant after every trip.

- COVID-19 waste should be disposed-off immediately upon receipt at facility.
- In case it is required to treat and dispose more quantity of biomedical waste generated from COVID-19 treatment, CBWTF may operate their facilities for extra hours, by giving information to SPCBs/PCCs.
- Operator of CBWTF shall maintain separate record for collection, treatment and disposal of COVID-19 waste.
- Do not allow any worker showing symptoms of illness to work at the facility. May provide adequate leave to such workers and by protecting their salary.

(e) Duties of SPCBs/PCCs

- Shall maintain records of COVID-19 treatment wards / quarantine centers / quarantines homes in respective States.
- Ensure proper collection and disposal of biomedical waste as per BMW Rules, 2016 and SoPS given in this guidance document;
- Allow CBWTFs to operate for extra hours as per requirement;
- May not insist on authorisation of quarantine camps as such facilities does not qualify as health facilities. However, may allow CBWTFs to collect biomedical waste as and when required;

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HOSPITAL INFECTION PREVENTION AND CONTROL GUIDELINES

CONTENTS

Chapters

1. INTRODUCTION

Healthcare-associated infection (HCAI) is one of the most common complications of health care management. It is a serious health hazard as it leads to increased patients' morbidity and mortality, length of hospital stay and the costs associated with hospital stay.
Effective infection prevention and control is central to providing high quality health care for patients and a safe working environment for those that work in healthcare settings.

It is important to minimize the risk of spread of infection to patients and staff in hospital by implementing good infection control programme.

This document outlines the broad principles and practices of infection Control that are essential for the prevention and management of infection.

The following Hospital Infection Control Policies are needed to be framed and practiced and monitored by the **Hospital Infection Control Team (HICT)** and **Hospital Infection Control Committee (HICC).**

1. Guidelines for prevention & control of infections
2. Antimicrobial policy
3. Surveillance policy
4. Disinfection policy
5. Isolation policy
6. Policy for investigation of an outbreak of infection

The overall aim of this document is to provide evidence based information in the prevention and control of infection. It is relevant to all staff including doctors, nurses, other clinical professionals and managers working in the hospital. This document will be updated as and when required.

2. HOSPITAL INFECTION CONTROL PROGRAM

Prevention of HCAI in patients is a concern of everyone in the facility and is the responsibility of all individuals and services providing health care. Risk prevention for patients and staff must be supported at the level of senior administration.

The role of the hospital infection control committee (HICC) is to implement the annual infection control programme and policies.

- Commitment towards Maintenance of Surveillance over HCAIs.
- Develop a system for identifying, reporting, analyzing, investigating and controlling HCAIs.
- Develop and implement preventive and corrective programs in specific situations where infection hazards exist.
- Advice the Medical Superintendent on matters related to the proper use of antibiotics, develop antibiotic policies and recommend remedial measures when antibiotic resistant strains are detected.
- Review and update hospital infection control policies and procedures from time to time.
- Help to provide employee health education regarding matters related to HCAIs.

HICC shall meet regularly - once a month and as often as required. The Committee is responsible for establishing and maintaining infection prevention and control, its monitoring, surveillance, reporting, research and education.

2.1 Infection Control Committee

The Committee is an integral component of the patient safety programme of the health care facility, and is responsible for establishing and maintaining infection prevention and control, its monitoring, surveillance, reporting, research and education. This committee should include wide representation from all relevant disciplines or departments in the facility. The committee has one elected chairperson who is the hospital administrator or a person who has direct access to the head of the hospital.

Structure

i. **Chairperson**: Head of the Institute (preferably)
ii. **Member Secretary**: Senior Microbiologist
iii. **Members**: Representation from Management/Administration (Dean/Director of Hospital; Nursing Services; Medical Services; Operations)
iv. Relevant **Medical** Faculties
v. **Support Services**: (OT/CSSD, House-keeping/Sanitation, Engineering, Pharmacologist, Store Officer / Materials Department)
vi. **Infection Control Nurse (s)**
vii. **Infection Control–officer**

2.2 Infection Control Team

The Infection control team should comprise of at minimum an infection control officer, a microbiologist (if ICO is not a microbiologist), and infection control nurse. ICT takes daily measures for the prevention and control of infection in hospital.

Responsibilities of the Infection Control Team

- **Develop a manual of policies and procedures for aseptic, isolation and antiseptic techniques**.
- Carry out targeted surveillance of HAIs, data analysis for presentation in HICC meeting and take corrective steps
- Advise staff on all aspects of infection control and maintain a safe environment for patients and staff.
- Supervise and monitor cleanliness and hygienic practices
- Oversee sterilization and disinfection and monitor the use and quality control of disinfectants
- Advise management of at risk patients and supervision of isolation procedures.
- Investigate outbreaks of infection and take corrective measures for control and prevention of outbreak.
- Waste management
- Provide relevant information on infection problems to management.
- Assist in training of all new employees as to the importance of infection control and the relevant policies and procedures.
- Organize regular training programme for the staff to ensure implementation of infection control practices
- Audit infection control procedures and antimicrobial usage
- Monitors Health care workers safety Programme.

3. SURVEILLANCE OF HEALTHCARE ASSOCIATED INFECTIONS

3.1 Introduction

Surveillance is one of the most important components of an effective infection control program. It is defined as the systematic collection, analysis, interpretation, and dissemination of data about the occurrence of HCAIs in a definite patient population.

3.2 Purpose of Surveillance

1. To establish and maintain a database describing endemic rates of HCAIs. Once endemic rates are known then the occurrence of an epidemic can be detected when infection rates exceed baseline values.
2. To identify trends manifested over a finite period, such as shifts in microbial pathogen spectrum, infection rates, etc.
3. To provide continuous observation of HCAIs cases for the purpose of prevention and control.
4. To obtain useful information for establishing priorities for infection control activities.

3.3 Main components of Surveillance system

1. Definition of HCAI

Infections that occur more than 48 hours after admission (It must be taken into account that different infections have different incubation periods, so that each occurrence must be evaluated individually to determine the relationship between its occurrence and hospitalization).

2. Case Definition

Each case definition must be standardized and consistent.

3.4 ACTIVE SURVEILLANCE

Active surveillance of Healthcare associated Infections (HCAI)

Active surveillance shall be done at least for high risk areas.

High risk areas under various setting include:

- Intensive care units (Neonatal ICU, Pediatric ICU, ICUs – Cardio-Thoracic Vascular Surgery, Respiratory infections (H1N1) units).
- Operation Theatres
- Dialysis Unit
- Burns Unit
- Transfusion services unit
- Food handlers
- Drinking water
- Central Sterile Services Department

3.4.1 Operation Theatres

No routine fogging is recommended. Any civil or engineering works should invite fogging of OTs. If Culture swabs and air sampling plates are sent from Operation Theatres for investigating surface contamination and air quality, fogging of OTs may be done on the basis of these reports and/or clinical procedures carried out in the operating areas

3.4.2 Intensive care units

Monitoring of device associated infections needs to be done on regular basis. The basic indicators required to be monitored are ventilator associated pneumonia (VAP), Catheter linked blood stream infections

(CLBSI) and catheter associated urinary tract infections (CAUTI).

Active surveillance is recommended through the emergence /clustering of positive cultures cases or similar clinical case clustering.

4. HOSPITAL OUTBREAK MANAGEMENT

4.1 Introduction

The occurrence of two or more similar cases relating to place and time is identified as a cluster or an outbreak and needs investigation to discover the route of transmission of infection, and possible sources of infection in order to apply measures to prevent further spread. If the cases occur in steadily increasing numbers and are separated by an interval approximating the incubation period, the spread of the disease is probably due to person to person spread. On the other hand if a large number of cases occur following a shared exposure e.g. an operation, it is termed a common source outbreak, implying a common source for the occurrence of the disease.

4.2 Epidemiological methods

The investigation of an outbreak may require expert epidemiological advice on procedures. Formulation of a hypothesis regarding source and spread is made before undertaking microbiological investigations in order that the most appropriate specimens are collected.

4.3 Steps to be taken to investigate an outbreak

Step 1

- Recognition of the outbreak. Is there an increase in the number of cases of a particular infection or a rise in prevalence of an organism? Such findings indicate a possible outbreak.
- Preliminary investigation must begin by developing a case definition, identifying the site, pathogen and affected population. Define the outbreak in time, person and place.

- Determination of the magnitude of the problem and if immediate control measures are required. If so general control measures such as isolation or cohorting of infected cases; strict hand washing and asepsis should be immediately applied.
- Verification of the diagnosis. Each case should be reviewed to meet the definition.
- Confirmation that an outbreak exists by comparing the present rate of occurrence with the endemic rate should be made.

Step 2

- The appropriate departments, personnel and the hospital administration should be notified and involved.

Step 3

- Additional cases must be searched for by examining the clinical and microbiological records.
- Line listing for every case, patient details, place and time of occurrence and infection details should be developed.
- An epidemic curve based on place and time of occurrence should be developed, the date analyzed, the common features of the cases e.g. age, sex, exposure to various risk factors, underlying diseases etc. should be identified.
- A hypothesis based on literature search and the features common to the cases; should be formulated about suspected causes of the outbreak.
- Microbiological investigations depending upon the suspected epidemiology of the causative organism should be carried out. This will include (a) microbial culture of cases, carriers and environments (b) epidemiological typing of the isolates to identify clonal relatedness.
- The hypothesis should be tested by reviewing additional cases in a case control study, cohort study, and microbiological study.

Step 4

- Specific control measures should be implemented as soon as the cause of outbreak is identified.
- Monitoring for further cases and effectiveness of control measures should be done.
- A report should be prepared for presentation to the HICC,

departments involved in the outbreak and administration.

Immediate control measures

Control measures should be initiated during the process of investigation. An intensive review of infection control measures should be made and general control measures initiated at once. General measures include:

- Strict hand washing
- Intensification of environmental cleaning and hygiene
- Adherence to aseptic protocols
- Strengthening of disinfection and sterilization

Microbiological Study

The study to be carried out to identify possible sources and routes of transmission. The investigation may include cultures from other body sites of the patient, other patients, staff and environment. Careful selection of specimens to be cultured is essential to obtain meaningful data.

Specific control measures

Specific control measures need to be instituted on the basis of nature of agent and characteristics of the high-risk group and the possible sources. These measures may include:

- Identification and elimination of the contaminated product
- Modification of nursing procedures
- Identification and treatment of carriers
- Rectification of lapse in clinical technique or procedure

Evaluation of efficacy of control measures

- The efficacy of control measures should be evaluated by a continued follow-up of cases after outbreak, as well as microbiologically. Control measures are clinically effective if cases cease to occur or return to the endemic level.

The outbreak should be documented and the records should be kept with HICC and should be presented in HICC meeting.

5. INFECTION CONTROL PROCESSES

5.1 Standard Precautions

Standard Precautions are designed to reduce the risk of transmission of micro-organisms from both recognized and unrecognized sources of infection in the hospital. **Standard Precautions applies to all patients regardless of their diagnosis.** Standard Precautions shall be implemented when contact with any of the following are anticipated:

- Blood
- All body fluids, secretions and excretions**,** with the exception of sweat regardless of whether or not they contain visible blood.
- Non-intact skin (this includes rashes)
- Mucous membranes

5.2 Standard Precautions Requirements

A. Hand hygiene:

Pathogenic organisms from colonized and infected patients (and sometimes from the environment) transiently contaminate the hands of staff during normal clinical activities and can then be transferred to other patients. Hand transmission is one of the most important methods of spread of infectious agents in health care facilities. Proper hand hygiene is an effective method for preventing the transfer of microbes between staff and patients. Increasing hand-washing compliance by 1.5 – 2 folds would result in a 25-50-% decrease in the incidence of healthcare associated infections.

Wash hands with plain or antimicrobial soap and water or rub hands with an alcohol-based formulation before handling medication or preparing food (steps shown in figure1 a, b)

Five (5) Moments in Hand Hygiene-

Hand hygiene must be practiced (Figure 2) –

1. Before touching a patient.
2. Immediately before performing a clean or aseptic procedure, including handling an invasive device for patient care, regardless of whether or not gloves are used.
3. Promptly after contact with body fluids, excretions, mucous membranes, non-intact skin, or wound dressings regardless of whether or not gloves were used.
4. After touching a patient and his/her immediate surroundings, even when leaving the patient's side.
5. After contact with inanimate objects (including medical equipment and furniture) in the immediate vicinity of the patient.

Perform hand wash when hands are visibly dirty.

Surgical Hand Scrub:

1. Surgical hand scrub with medicated soap or surgical handrub with alcohol-based formulations - Either method is suitable for the prevention of surgical site infection. The combined effect – rapid action at the beginning and inhibition of regrowth of bacteria under the gloved hands – is best achieved by using an alcohol-based compound containing chlorhexidine, or with the addition of a quaternary ammonium compound such as mecetronium sulfate.

2. **STEPS FOR SURGICAL HAND PREPARATION** -

Steps before starting surgical hand preparation -

- Keep nails short and pay attention to them when washing your hands – most microbes on hands come from beneath the fingernails.

- Do not wear artificial nails or nail polish.
- Remove all jewellery (rings, watches, bracelets) before entering the operating room suite.
- Wash hands and arms up to elbows with a non-medicated soap before entering the operating room area or if hands are visibly soiled.
- Clean subungual areas with a nail file. Nailbrushes should not be used as they may damage the skin and encourage shedding of cells. Nailbrushes, if used, must be sterile and used only once. Reusable autoclavable nail brushes are available commercially.

A. Protocol for surgical scrub with a medicated soap -

- Start timing. Scrub each side of each finger, between the fingers, and the back and front of the hand for two minutes.
- Proceed to scrub the arms, keeping the hand higher than the arm at all times. This helps to avoid recontamination of the hands by water from the elbows and prevents bacteria-laden soap and water from contaminating the hands.
- Wash each side of the arm from wrist to the elbow for one minute. •
- Repeat the process on the other hand and arm, keeping hands above elbows at all times. If the hand touches anything except the brush at any time, the scrub must be lengthened by one minute for the area that has been contaminated.
- Rinse hands and arms by passing them through the water in one direction only, from fingertips to elbow. Do not move the arm back and forth through the water.
- Proceed to the operating room suite holding hands above elbows.

- At all times during the scrub procedure, care should be taken not to splash water onto surgical attire.
- Once in the operating room suite, hands and arms should be dried using a sterile towel and aseptic technique before putting on gown and gloves.

B. Protocol for surgical scrub with an alcohol-based preparation –

- Start timing. Use sufficient product to keep hands and forearms wet with the handrub throughout the procedure.
- After application of the alcohol-based product, allow hands and forearms to dry thoroughly before donning sterile gloves.
- Proceed to the operating room suite holding hands above elbows.
- If hands are visibly soiled, wash hands with plain soap before surgical hand scrub.

- Training and compliance for hand-hygiene needs to be monitored. Availability of hand rubs, Soaps hand towels and water should be ensured. Foot operated and wall mounted dispensing stations are required. Hand hygiene training programme for doctors, nursing staff, and housekeeping staff needs to be done regularly for each category of staff. Hand hygiene compliance need to be monitored.

B. Personal protective equipment-

1. Use of Gloves:

Clean gloves must be worn when touching blood, body fluids, excretions, secretions and contaminated items and when performing venipuncture.

2. Face Mask, eye protection & face shield:

Face Mask must be worn during procedures or patient care activities that are expected to generate splashes or sprays of blood, body fluids,

secretions and excretions. For example, suctioning, irrigating a wound, performing certain laboratory tests, etc.

N95 Respirators-

Respirators are masks specifically designed to filter small particles spread by the airborne route, such as tuberculosis, measles and varicella. They are used for aerosol generating procedures that have been shown to expose staff, including:

- Sputum induction
- Diagnostic bronchoscopy
- Autopsy examination
- Laboratory handling of Mycobacterium tuberculosis such as concentrating respiratory samples for smear and culture.

Staff required to wear N95 Respirators must undergo fitting

3. **Gown or Apron**:

Gown/apron must be worn to protect skin and to prevent soiling of clothing during procedures or patient care activities that are expected to generate splashes or sprays of blood, body fluid, secretions and excretions.

Respiratory hygiene/cough etiquette:

Instruct symptomatic persons and health care workers to cover their mouths/noses when coughing or sneezing, use and dispose of tissues, perform hand hygiene after hands have been in contact with respiratory secretions and wear surgical mask if tolerated or maintain spatial separation, >3 feet if possible.

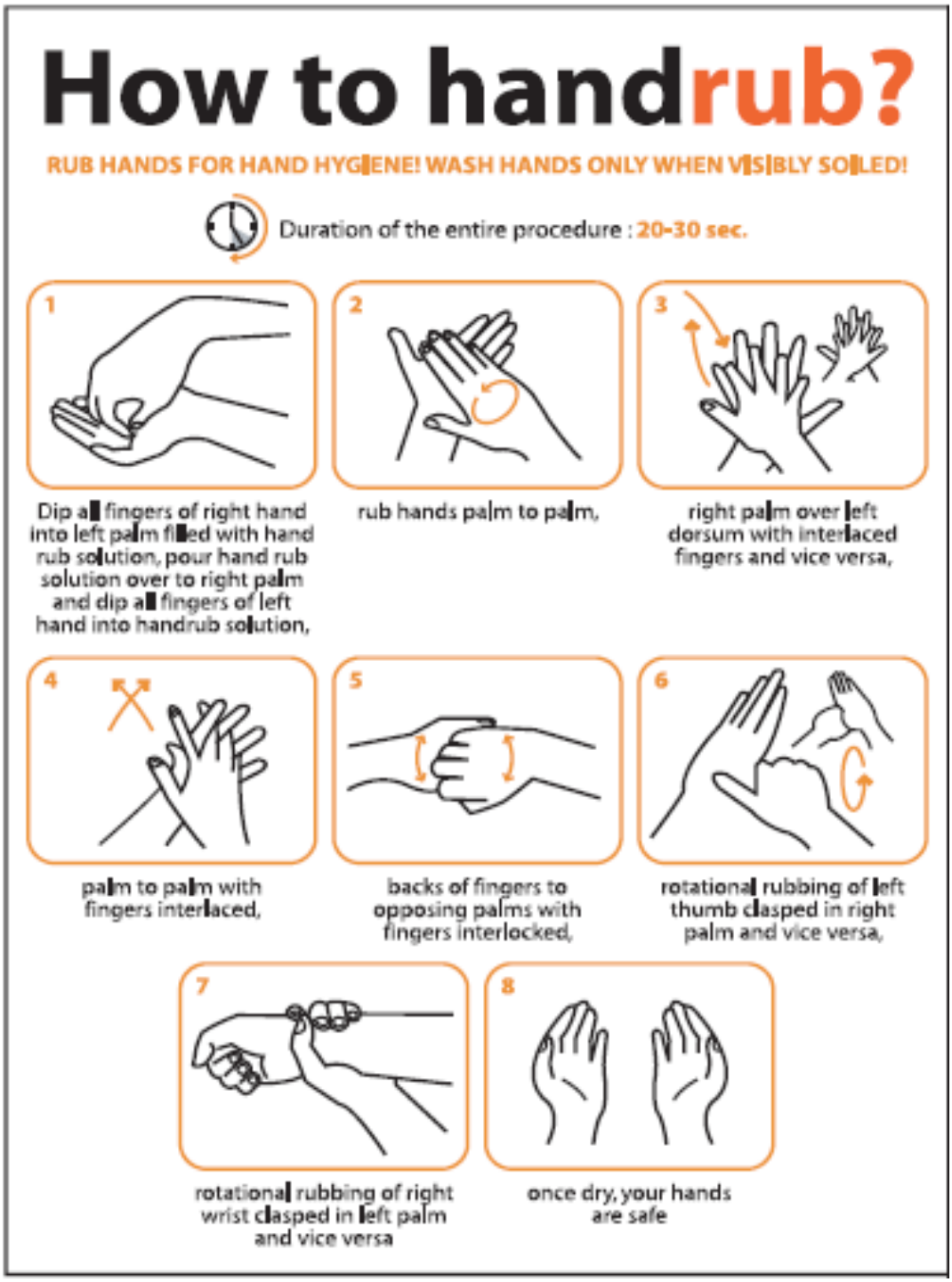


Figure 1a shows steps of hand-rubbing

Figure 1b shows steps of hand-washing

Figure 2 shows five moments of hand hygiene when hands should be washed.

6. PREVENTION OF HEALTHCARE ASSOCIATED INFECTIONS

6.1 The four major HCAIs are:

1. Catheter associated Urinary tract infection (CAUTI)
2. Surgical site Infection (SSI)
3. Catheter related blood stream infection (CRBSI)
4. Ventilator Associated Pneumonia (VAP)

A. CATHETER-ASSOCIATED URINARY TRACT INFECTION

Introduction

Urinary tract infections (UTIs) are one of the commonest types of HCAIs. One of the common reasons is the use of urinary catheters.

Indications for Catheterization-

Placement of an indwelling catheter should be performed only when indicated. It should be removed as soon as possible.

The accepted indications for catheterization are:

1. Patient requiring prolonged immobilization, such as in the setting of unstable lumbar/thoracic spine injuries, or multiple traumatic injuries including pelvic fracture For short-term (days) management of incontinence (the inability to control urination) needed to assist in healing of sacral or perineal wounds or for retention (the inability to pass urine) not helped by other methods.
2. To measure urine output over several days in critically ill patients

3. For treatment of bladder outlet obstruction
4. For post-operative management of surgical patients with impaired bladder function.

Recommendations to Prevent Catheter-associated UTI-

1. **Personnel**
   Only persons who know the correct technique of aseptic insertion and maintenance of the catheter should handle catheters.

2. **Catheter Use**

   Urinary catheters should be inserted only when necessary and left in place only for as long as it is required. They should not be used solely for the convenience of patient-care personnel.

   For selected patients, other methods of urinary drainage such as condom catheter drainage, suprapubic catheterization, and intermittent urethral catheterization may be more appropriate.

3. **Hand hygiene**

   Hand hygiene should be done immediately before and after any manipulation of the catheter site or apparatus.

4. **Catheter Insertion**

   Catheters should be inserted using aseptic technique and sterile equipment.

   Gloves, drapes, sponges, an appropriate antiseptic solution for peri-urethral cleaning, and a single-use packet of lubricant jelly should be used for insertion.

   As small a catheter as possible, consistent with good drainage, should be used to minimize bladder neck and urethral trauma. Indwelling catheters should be properly secured after insertion to prevent movement and urethral traction.

5. Closed Sterile Drainage

The catheter collection system should remain closed and not be opened unless absolutely necessary for diagnostic or therapeutic reasons eg irrigation.

If breaks in aseptic technique, disconnection, or leakage occur, the catheter and collecting system should be replaced using aseptic technique and sterile equipment.

6. Irrigation

Continuous irrigation should be avoided unless indicated (e.g. after prostatic or bladder surgery).
Continuous irrigation of the bladder with antimicrobials has not proven to be useful and should not be performed as a routine infection prevention measure.

7. Specimen Collection

If small volumes of fresh urine are needed for examination, the distal end of the catheter, or preferably the sampling port if present, should be cleansed with a disinfectant, and urine then aspirated with a sterile needle and syringe.

Larger volumes of urine for special analysis should be obtained aseptically from the drainage bag.

8. Urinary Flow

Unobstructed flow should be maintained.

The catheter and collecting tube should be kept free from kinking. Collecting bags should always be kept below the level of the bladder. Do not rest the collecting bag on the floor.

9. Meatal Care

Cleansing of the meatal surface during daily bathing or showering is appropriate.

10. Catheter Change Interval

Indwelling catheters should not be changed at arbitrary fixed intervals.

B. SURGICAL SITE INFECTIONS (SSI)

The common source of pathogens is the endogenous flora of the patient's skin, mucous membranes, or hollow viscera. Therefore, the pathogens isolated from infection differ, primarily depending on the type of surgical procedure. In clean surgical procedures, in which the gastrointestinal, gynaecologic, and respiratory tracts have not been entered; *Staphylococcus aureus* from the exogenous environment or patient's skin flora is the usual cause of infection. In other categories of surgical procedures, including clean contaminated, contaminated, and dirty, the polymicrobial aerobic and anaerobic flora closely resembling the normal endogenous microflora of the surgically excised organ are the most frequently isolated pathogens.

Other sources of SSI pathogens are from distance focus such as in patients with prosthesis or implant place during the surgery, surgical personnel, operating environment, surgical tools, instruments, and materials brought to the field during an operation.

Surgical site infection prevention-

Preparation of the patient:

1. Whenever possible, identify and treat all infections remote to the surgical site before elective operation and postpone elective surgeries on patients with remote site infections until the infection has resolved.
2. Keep preoperative hospital stays as short as possible while allowing for adequate preoperative preparation.
3. Do not remove hair preoperatively unless the hair at or around the incision site will interfere with the operation.
4. If hair needs to be removed, it is done immediately before operation, preferably using electric clippers and not razor blade.

5. Adequately control blood glucose levels in all diabetic patients.
6. Encourage nonsmoking/use of cigarettes, cigars, pipes, or any other form of tobacco consumption for at least 30 days prior to the surgery.
7. Do not withhold necessary blood products transfusion.
8. Encourage patients to shower or bathe at least the night before the operative day.
9. Use an appropriate antiseptic agent for skin preparation.
10. Apply preoperative antiseptic skin preparation in concentric circles moving towards the periphery. The prepared area should be large enough to extend the incision or create new incisions or drain sites, if necessary.

Antimicrobial prophylaxis

1. Administer a prophylactic antibiotic agent only when indicated, and select it based on its efficacy against the most common pathogens causing SSI for a specific operation.
2. Administer by IV route the initial dose of prophylactic antibiotic agent, timed such that a bactericidal concentration of the drug is established in serum and tissues when the incision is made. Maintain therapeutic levels of the agent in serum and tissues throughout the operation and until at most a few hours after the incision is closed in the operating room. In most cases, antibiotic should be given within 60 minutes before the incision and the antibiotics should be stopped within 24 hours after surgery.

Microbiological sampling

Routine environment sampling of the Operation Room (OR) is not required. Perform microbiologic sampling of OR environment surfaces or air as part of an epidemiologic investigation.

Cleaning and disinfection of environmental surfaces

1. When visible soiling or contamination with blood or other body fluids of surfaces or equipment occurs during an operation, use approved hospital disinfectant to clean the affected areas before the next operation.

2. Do not perform special cleaning or closing of OR after contaminated or dirty operation.
3. Clean the operating room floor after the last operation of the day or night with an approved hospital disinfectant.

Asepsis and surgical technique

1. Adhere to principles of asepsis when intravascular devices, spinal or epidural anesthesia catheters, or when dispensing and administering intravenous drugs.
2. Assemble sterile equipment and solutions immediately prior to use

Sterilization of surgical instruments

Sterilize all surgical instruments according to guidelines.

Surgical attire and drapes

1. Wear a surgical mask that fully covers the mouth and nose when entering the operating room if an operation is about to begin or already under way, or if sterile instruments are exposed. Wear the mask throughout the operation.
2. Wear a cap or hood to fully cover the hair on the head and face when entering the operating room.
3. Wear sterile gloves if a scrubbed surgical team member. Put on gloves after donning a sterile gown.
4. Using surgical gowns and drapes that are effective barriers when wet.
5. Change scrub suits that are visibly soiled, contaminated, and/or penetrated by blood or other potentially infectious materials.

Postoperative incision care

1. Protect with a sterile dressing 24 to 48 hours postoperatively an incision that has been closed primarily.
2. Wash hands before and after dressing changes and any contact with the surgical site.
3. Use sterile technique to change incision dressing.
4. Educate the patient and family regarding proper incision care, symptoms of surgical site infection, and the need to report such symptoms.

Develop a good surveillance system to study the incidence of SSI.

1. Use standardized case definitions without modifications for identifying SSI among surgical inpatients and outpatients.
2. Use methods for inpatient and outpatient case-finding that accommodate available resources and data needs.
3. Assign surgical wound classification upon completion of an operation.
4. For each patient undergoing an operation chosen for surveillance, record those variables shown to be associated with increased SSI risk, such as surgical wound class and duration of operation.
5. Periodically calculates operation-specific SSI rates stratified by variables shown to be associated with increased SSI risk.
6. Report stratified operation-specific rates to surgical team members.

C. VENTILATOR-ASSOCIATED PNEUMONIA

Pneumonia is one of the three most common HCAIs. Patients who are mechanically ventilated are at risk for ventilator-associated pneumonia (VAP).

Most bacterial nosocomial pneumonias occur by aspiration of bacteria colonizing the oropharynx or upper gastrointestinal tract of the patient. Intubation and mechanical ventilation greatly increase the risk of nosocomial bacterial pneumonia because they alter first-line patient defenses.

Prevention of VAP-

1. Adhere to hand-hygiene guidelines.
2. Health-care worker should ear a mask and an apron or gown when anticipates soiling of respiratory secretions from a patient (e.g. intubation, tracheal suctioning, tracheostomy, and

bronchoscopy) and change it after the procedure and before providing care to another patient.

3. Elevate the head of the bed 30 – 45 degrees of a patient on mechanical ventilation or at high risk for aspiration (e.g. on oro or nasoenteral tube)
4. Remove devices such as endotracheal, tracheostomy, oro/ nasogastric tubes from patients as soon as they are not indicated.
5. Perform orotracheal rather than nasotracheal intubation unless contraindicated.
6. Use non-invasive ventilation whenever possible.
7. Perform daily assessments of readiness to wean and use weaning protocols.
8. Avoid unplanned extubation and reintubation.
9. Use a cuffed endotracheal tube with in-line or subglottic suctioning.
10. Avoid histamine receptor blocking agents and proton pump inhibitors for patients who are not at high risk for developing a stress ulcer or stress gastritis.
11. Perform regular oral care with an antiseptic solution.
12. Avoid gastric overdistension.
13. Remove condensate from ventilatory circuits. Keep the ventilatory circuit closed during condensate removal.
14. Change the ventilatory circuit only when visibly soiled or malfunctioning.
15. Store and disinfect respiratory therapy equipment properly.
16. Educate healthcare workers who provide care for patients undergoing ventilation about VAP.

Develop a surveillance system to study the incidence of VAP.

1. Conduct active surveillance for VAP in units that care for patients undergoing ventilation who are known or suspected to be at high risk for VAP.
2. Collect data that will support the identification of patients of VAP and calculation of VAP rates.

D. CATHETER-RELATED BLOOD STREAM INFECTIONS

Hand hygiene

1. Observe proper hand hygiene.
2. Palpation of the insertion site should not be performed after the application of antiseptic, unless aseptic technique is maintained.

Aseptic technique during catheter insertion and care

1. Maintain aseptic technique for the insertion and care of intravascular catheters. Wearing clean gloves rather than sterile gloves is acceptable for the insertion of peripheral intravascular catheters if the access site is not touched after the application of skin antiseptics.
2. Sterile gloves should be worn for the insertion of arterial, central, and midline catheters.
3. Change the dressing on intravascular catheters using aseptic technique.

Maximal sterile barrier precautions during catheter insertion

Use aseptic technique including the use of a cap, masks, sterile gown, sterile gloves, and a large sterile sheet for the insertion of Central venous catheter (CVCs, including peripherally inserted central catheter-[PICC]) or guidewire exchange.

Catheter Site Dressing Regimens

1. Use either sterile gauze or sterile, transparent, semipermeable dressing to cover the catheter site.
2. Replace the catheter site dressing if the dressing becomes damp, loosened, or visibly soiled.
3. Replace dressings used on short-term CVC sites every 2 days for gauze dressings.
4. Replace dressings used on short-term CVC sites at least every 7 days for transparent dressings, except in those pediatric patients in which the risk for dislodging the catheter may outweigh the benefit of changing the dressing.
5. Monitor the catheter sites visually or by palpation through the intact dressing on a regular basis, depending on the clinical

situation of individual patients. If patients have tenderness at the insertion site, fever without obvious reasons, or other manifestations suggesting local or BSI (Blood Stream infections), the dressing should be removed to allow thorough examination of the site.

Prevention of CRBSI

1. Select the catheter, insertion technique, and insertion site with the lowest risk for complications (infectious and noninfectious) for the anticipated type and duration of IV therapy.
2. Avoid using the femoral vein for central venous access in adult patients.
3. Use a subclavian, rather than a jugular or a femoral site, in adult patients to minimize infection risk for nontunneled CVC placement.
4. Promptly remove any intravascular catheter that is no longer essential. Do not routinely replace central venous or arterial catheters solely for the purposes of reducing the incidence of infection.
5. There is no need to replace peripheral venous catheters more frequently than 72—96 hours to reduce the risk of infection and phlebitis in adults. Leave peripheral venous catheters in place in children until IV therapy is completed, unless complications (e.g: phlebitis and infiltration) occur.

Develop a surveillance system to study the incidence of CRBSI.

1. Conduct active surveillance for CRBSI in units that care for patients undergoing ventilation who are known or suspected to be at high risk for CRBSI.
2. Collect data that will support the identification of patients of CRBSI and calculation of CRBSI rates.

7. CLEANING, DISINFECTION AND STERILIZATION

7.1 DISINFECTION

Disinfection is a process where most microbes are removed from defined object or surface, except spores.

7.2 Disinfectants can be classified according to their ability to destroy different categories of micro-organisms:

- High Level disinfectants : Glutaraldehyde 2%, Ethylene Oxide
- Intermediate Level disinfectant : Alcohols, chlorine compounds, hydrogen Peroxide, chlorhexidine,
- Low level disinfectants : Benzalkonium chloride, some soaps

7.3 GENERAL GUIDELINES FOR DISINFECTION:

Critical instruments/equipment (that are those penetrating skin or mucous membrane) should undergo sterilization before and after use. e.g. surgical instruments.

Semi-critical instruments /equipments (that are those in contact with intact mucous membrane without penetration) should undergo high level disinfection before use and intermediate level disinfection after use. e.g. endotracheal tubes.

Non-critical instruments /equipments (that are those in contact with intact skin and no contact with mucous membrane) require only intermediate or low level disinfection before and after use. e.g. ECG electrodes.

7.4 Endoscopes - cleaning and disinfection

1. Clean: mechanically clean internal and external surfaces, including brushing internal channels and flushing each internal channel with water and a detergent or enzymatic cleaners
2. Disinfect: immerse endoscope in high-level disinfectant such as 2% glutaraldehyde and perfuse disinfectant into all accessible channels, such as the suction/biopsy channel and air/water channel and expose for a time recommended for specific products (20 minutes for 2% glutaraldehyde).
3. Rinse: rinse the endocope and all channels with sterile or filtered water followed by 70-90% ethyl or isopropyl alcohol to remove all traces of disinfectant.
4. Drying: After rinsing, purge the channels using forced air. Hang endoscopes in a vertical position to facilitate drying.

7.5 STEAM STERILIZATION

Use biological indicators, such as a commercial preparation of spores of *Geobacillus stearothermophilus*, at least weekly to monitor the effectiveness of steam sterilization.

7.6 FOGGING:

In patient care areas regular fogging is not recommended.

Necessary decision is taken by in charge of concerned patient care area.

7.7 ENVIRONMENTAL SURFACES

Clean housekeeping surfaces (e.g., floors, walls, tabletops) on a regular basis, when spills occur, and when these surfaces are visibly soiled.

Disinfect environmental surfaces (e.g., bedside tables, bedrails, and laboratory surfaces) on a regular basis and when surfaces are visibly soiled.

Clean walls, blinds, and window curtains in patient-care areas when these surfaces are visibly contaminated or soiled.

Decontaminate mops heads and cleaning cloths regularly to prevent contamination (e.g., launder and dry at least daily).

Do not use high-level disinfectants or liquid chemical sterilants for disinfection of non-critical surfaces.

7.8 Bedding and blanket

Clean and disinfect mattress impermeable covers.

Launder pillow covers, washable pillows, and blankets between patients or when they become contaminated with body substances.

7.9 Monitoring of biomedical waste management practices

A person or persons should be designated to be responsible for establishing, monitoring, reviewing, and administering a plan for the collection, handling, predisposal treatment, and terminal disposal of regulated medical wastes.

Preparing Household Bleach as a Disinfectant Household Bleach is 5.25% sodium hypochlorite solution (50,000 ppm)			
Level Required	**What For**	**How to make**	**Contact time**
1:10 Dilution (1 part bleach in 9 parts water) 5000 ppm	Large blood spill (after surface cleaning)	25 ml bleach in 225 ml water Same as 5 tsp bleach in 1 cup water	20 minutes
1:50 Dilution (1 part bleach in 49 parts water) 1000ppm	Surface cleaning	10 ml bleach in 490 ml water Same as 2 tsp bleach in 2 cups water	10 minutes
1:100 Dilution (1 part bleach in 99 parts water) 500ppm	Minor blood spill	5ml bleach in 495 ml water Same as 1 tsp bleach in 2 cups water	10 minutes

- Precautions for preparing and using sodium hypochlorite solutions from bleach:
- Follow the safety precautions and the manufacturer's directions when working with concentrated solutions of bleach (sodium hypochlorite). Use PPE when handling.
- Chlorine bleach can stain and damage some surfaces (e.g. metals, some plastics)
- Add bleach to water, not water to bleach
- Allow the bleach solution to sit for the full contact time to ensure it is effective.
- Don NOT mix bleach solution with ammonia products – this can produce chlorine gas which is toxic
- Check the expiry date of the concentrated solution
- Make a fresh bleach solution daily
- Pre-clean surfaces to allow bleach solution to be effective

Antimicrobial Activity of Disinfectants

Anti-microbial activity					
Disinfectant	Spores	Mycobacteria	Other bacteria	Viruses	
				Enveloped	Non- enveloped
Glutaraldehyde 2% (3h-10 min)	Good 3 h	Good* 20 min	Good 10 min	Good 10 min	Good 10 min
Peracetic acid 0.2-0.35% (10 min)	Good	Good	Good	Good	Good
Alcohol 60-70% (ethanol or isopropanol) (1-10 min)	None	Moderate	Good	Good	Moderate
Peroxygen compounds 3-6% (20 min)	None	Poor	Good	Good	Moderate
Chlorine releasing agents >1000 ppm Cl2 (15-60 min)	Good	Good	Good	Good	Good
Clear soluble phenolics 1-2% **	None	Good	Good	Poor	None
Quaternary ammonia components 0.1-0.5%***	None	Variable	Moderate	Moderate	Poor

*Less active against M. avium intracellulare.

**Potentially toxic. Should not be used in neonatal wards.

***Dilute solutions may allow the growth of Gram-negative bacilli.

7.10 DEALING WITH SPILLAGE:

a. LIQUID SPILL MANAGEMENT:

1. Promptly clean and decontaminate spills of blood and other potentially infectious materials.
2. Wear protective gloves.
3. Using a pair of forceps and gloves, carefully retrieve broken glass and sharps if any, and use a large amount of folded absorbent paper to collect small glass splinters. Place the broken items into the puncture proof sharps container.
4. Cover spills of infected or potentially infected material on the floor with paper towel/ blotting paper/newspaper. Pour 0.5%freshly prepared sodium hypochlorite.
5. Leave for 30 minutes for contact
6. Place all soiled absorbent material and contaminated swabs into a designated waste container.
7. Then clean the area with gauze or mop with water and detergent with gloved hands.

NB: Any material treated with hypo-chlorite solution should never be sent for incineration

b.MERCURY SPILL MANAGEMENT:

If accidental spill of mercury occurs it is to be collected in a special manner as follows:

1. Spilled mercury should be collected with a ‘‘mercury spill kit’’-containing nitrile gloves, N-95 face mask, 2 pieces of cardboards, 2 plastic containers, cello tape, and flashlight.
2. Do not touch mercury.
3. Remove all jewelry, wear gloves, masks.
4. Use flashlight to locate and cardboards to bring mercury beads together.

5. Collect with an eyedropper of a syringe and carefully place it or ‘contain’ in a bottle containing water.
6. Any remaining beads of mercury should be picked up with a sticky tape and place
7. in the plastic bag, properly labeled.
8. The bottle should be sealed with a tape, labeled as hazardous waste and securely stored inside another plastic container; awaiting final disposal to Govt. nominated or authorized mercury dealers.
9. After mercury has been recovered the spill area should be covered with calcium sulfide or sodium thiosulfate to neutralize it.
10. Reporting formats will be used to report and register any mercury spills/leakages.

8. ISOLATION PRECAUTIONS

8.1 Introduction

Isolation precautions are needed to prevent the transmission of pathogenic microorganisms within the healthcare setting.

The patients of following disease categories should be treated under isolation.

- Severe influenza cases, Subacute respiratory Syndrome (SARS), Open case of tuberculosis, Anthrax, diphtheria, Pertussis, Pneumonic plague, Chicken pox, and patients infected with multidrug resistant bacterial pathogens.

8.2 Patient placement

- Appropriate patient placement is a significant component of isolation precautions.

Determine patient placement based on the following principles:

- Route(s) of transmission of the infectious agent
- Risk factors for transmission in the infected patient
- Risk factors for adverse outcomes resulting from healthcare-associated infection in other patients in the area.
- Availability of single-patient rooms
- Patient options for room-sharing

Contact Precautions:

1. **Required for patients with enteric infections, diarrhea that cannot be controlled, or skin lesions that cannot be contained.**
2. **Patient placement:**
    a. Place patients who require Contact Precautions in a single-patient room when available; if single-patient rooms are unavailable, then place patients infected with

the same pathogen in the same room.

b. If it becomes necessary to place a patient who requires Contact Precautions in a room with a patient who is not infected or colonized with the same infectious agent:
    i. Avoid placing patients on Contact Precautions in the same room with patients who have conditions that may increase the risk of adverse outcome from infection or that may facilitate transmission.
    ii. Ensure that patients are physically separated (i.e., >3 feet apart) from each other. Draw the privacy curtain between beds to minimize opportunities for direct contact.
    iii. Change protective attire and perform hand hygiene between contacts with patients in the same room, regardless of whether one or both patients are on Contact Precautions.

3. Use of personal protective equipment

a. Wear gloves whenever touching the patient's intact skin or surfaces and articles in close proximity to the patient. Don gloves upon entry into the room or cubicle.
b. Wear gown whenever anticipating that clothing will have direct contact with the patient or potentially contaminated environmental surfaces or equipment in close proximity to the patient. Don gown upon entry into the room or cubicle. Remove gown and observe hand hygiene before leaving the patient-care environment.

4. Patient transport

a. Limit transport and movement of patients outside of the room to medically-necessary purposes.
b. When transport or movement in any healthcare setting is necessary, ensure that infected or colonized areas of the patient's body are contained and covered.
c. Remove and dispose of contaminated PPE and perform hand hygiene prior to transporting patients on Contact Precautions.
d. Don clean PPE to handle the patient at the transport destination.

5. Patient-care equipment and instruments/devices

a. Handle patient-care equipment and instruments/devices according to Standard Precautions

b. Use disposable noncritical patient-care equipment (e.g., blood pressure cuffs) or implement patient-dedicated use of such equipment. If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment before use on another patient.

6. **Environmental measures**
   a. Ensure that rooms of patients on Contact Precautions are prioritized for frequent cleaning and disinfection with a focus on frequently-touched surfaces and equipment in the immediate vicinity of the patient.

Droplet precautions:

1. **Required for patients known or Suspected to be infected with pathogens transmitted by respiratory droplets that are generated by a patient who is coughing, sneezing, or talking, Acute respiratory infection, undiagnosed or meningitis and/or sepsis with petechial rash .**
2. **Patient placement:**
   a. Place patients who require Droplet Precautions in a single-patient room when available; if single-patient rooms are unavailable, then place patients infected with the same pathogen in the same room.
   b. If it becomes necessary to place a patient who requires Droplet Precautions in a room with a patient who does not have the same infection:
      i. Avoid placing patients on Droplet Precautions in the same room with patients who have conditions that may increase the risk of adverse outcome from infection or that may facilitate transmission.
      ii. Ensure that patients are physically separated (i.e., >3 feet apart) from each other. Draw the privacy curtain between beds to minimize opportunities for direct contact.
      iii. Change protective attire and perform hand hygiene between contact with patients in the same room, regardless of whether one or both patients are on Droplet Precautions.

3. **Use of personal protective equipment**
    a. Don a mask upon entry into the patient room or cubicle.
4. **Patient transport**
    a. Limit transport and movement of patients outside of the room to medically-necessary purposes.
    b. When transport or movement in any healthcare setting is necessary, instruct patient to wear a mask and follow Respiratory Hygiene / Cough Etiquette.
    c. No mask is required for persons transporting patients on Droplet Precautions.

Airborne precautions:

1. **Required for patients known or suspected to be infected with infectious agents transmitted person-to-person by the airborne route, such as *M. tuberculosis*, measles, chickenpox, disseminated herpes zoster.**
2. Develop systems (e.g., triage, signage) to identify patients with known or suspected infections that requires Airborne Precautions upon entry into the health facility.
3. **Patient placement**
    a. Place patients who require Airborne Precautions in an airborne infection isolation room (AIIR) that has been constructed with the following conditions
        i. Provides 6-12 air changes per hour.
        ii. Directs exhaust or air to the outside, or through HEPA filters if exhausting to the outside is not possible.
        iii. Has a monitor for air pressure with visual indicators.
        iv. Can be closed with a door when not required for entry and exit.
    b. If an AIIR is not available and transfer to a facility with AIIR is not possible, place a surgical mask on the patient and place him/her in a single room. Once the patient leaves, the room should remain vacant for the appropriate time, generally one hour, to allow for a full exchange of air.
    c. Instruct patients with a known or suspected airborne infection to wear a surgical mask and observe Respiratory Hygiene/Cough Etiquette. Once in AIIR,

the mask may be removed.

4. **Personnel restrictions**
    a. Restrict susceptible healthcare personnel from entering the rooms of patients known or suspected to have measles, varicella, disseminated zoster, or smallpox if other immune healthcare personnel are available.
5. **Use of personal protective equipment**
    a. Healthcare personnel should use a fit-tested respiratory, such as an N95, before entering the room of a patient with known or suspected tuberculosis or smallpox.
    b. A fit-tested N95 or surgical mask may be appropriate for healthcare personnel to wear while caring for patients with known or suspected measles, chickenpox, or disseminated herpes zoster.
6. **Patient transport**
    a. Limit transport and movement of patients outside of the room to medically-necessary purposes.
    b. If transport or movement outside an AIIR is necessary, instruct patients to wear a surgical mask, if possible, and observe Respiratory Hygiene/Cough Etiquette.
    c. For patients with skin lesions associated with varicella or smallpox or draining skin lesions caused by M. tuberculosis, cover the affected areas to prevent aerosolization or contact with the infectious agent in skin lesions.
    d. Healthcare personnel transporting patients who are on Airborne Precautions do not need to wear a mask or respirator during transport if the patient is wearing a mask and infectious skin lesions are covered.
7. **Exposure management**
    a. Administer measles vaccine to exposed susceptible persons within 72 h after the exposure or administer immune globulin within six days of the exposure event for high-risk persons in whom vaccine is contraindicated.
    b. Administer varicella vaccine to exposed susceptible persons within 120 h after the exposure or administer varicella immune globulin, when available, within 96 h for high-risk persons in whom vaccine is contraindicated (e.g., immunocompromised patients,

pregnant women, newborns whose mother's varicella onset was <5 d before or within 48 h after delivery).

c. Administer smallpox vaccine to exposed susceptible persons within 4 days after exposure.

9. ANTIMICROBIAL POLICY AND ANTIMICROBIAL STEWARDSHIP

9.1 Introduction

The annual antibiogram should be prepared by microbiology department. Antibiotic susceptibility profile may be is analyzed regularly and the common resistance patterns of the bacterial isolates to be reported and discussed in the HICC meetings and the antibiotic policy to be reviewed accordingly.

Antibiotic policy need to be prepared in consultation with respective clinical departments.

9.2 Antibiotic policy shall be prepared using following general principles:

1. **Data is analyzed on a quarterly basis as per hospital records)**
   (a) Common etiological agents as per
      (i) site of infection
      (ii) age groups
      (iii) patient location – outdoor (OPD), indoor (wards & critical care areas)
   (b) Antibiogram data as per
      (i) site of infection
      (ii) age groups
      (iii) patient location – outdoor (OPD), indoor (wards & critical care areas)
   (c) Unusually resistant organisms to be confirmed and submitted for further characterization to National Centre for Disease Control (NCDC) for
2. **Standard treatment guidelines [categorization of patients as**

per age and Community acquired infections (CAI) / Health care associated infections (HCAI)]

(a) Guidelines for empirical antimicrobial therapy as per common clinical syndrome

(i) Adults & older children

1. Blood Stream Infections (BSI)
2. Meningitis
3. UTI
4. Pneumonia
   (a) Community Acquired Pneumonia (CAP)
   (b) Ventilator Associated Pneumonia (VAP)
5. GIT Infections
6. Conjunctivitis
7. Otitis Media
8. Tonsilltitis / Pharyngitis
9. Skin and Soft Tissue Infection (SSTI)
10. Genital Infections
11. Osteomyelitis

(ii) Neonates (special conditions)

1. Sepsis
2. Meningitis

(iii) Infants & Small Children (special conditions)

1. Meningitis
2. Sepsis
3. Pneumonia

(b) Classification of Antimicrobials into first line, second line and reserve group of drugs

(c) Chemoprophylaxis

(i) Pre-operative antimicrobials

(ii) Other invasive procedures

(iii) Special high risk groups e.g. Prophylaxis for rheumatic fever, splenectomy patients, and immuno-compromised patients

(d) Special clinical syndromes (e.g. STIs)

4. **Prescription auditing**
5. **Review of surveillance data generated from antibiograms & prescription auditing.**
6. **Education and training for all infection control activities in collaboration with the Hospital Infection Control Committee.**

9.3 Measures to control spread of antibiotic resistance-

i. Appropriate antimicrobial use

1. Each health care facility should have an antimicrobial use programme. The goal is to ensure effective economical prescribing to minimize the selection of resistant microorganisms.
2. Formulation of guidelines with a multidisciplinary approach using the local antibiogram.
3. Provide ongoing education on rational use of antibiotics to clinicians and ensure implementation of antibiotic policies.
4. Restricted antibiotic use-
5. Use must be justifiable based on clinical diagnosis.
6. Before initiating antibiotic treatment, appropriate specimens for bacteriological examination must be submitted to laboratory and selection of an antibiotic must be based on the sensitivity pattern, patient tolerance, and cost
7. An agent with as narrow a spectrum as possible should be used with appropriate dosage and duration of antimicrobial therapy.
8. The correct dose must be used.
9. Control antibiotic use - Selected antibiotics may be restricted in use.
   -Cyclic rotation of antibiotics in a class
   - Discontinuation of antimicrobial therapy based on predefined criteria
10. Carry out periodic prescription audits.
11. Restriction of hospital formulary through pharmacy.
12. Standard and contact Precautions including rigorous adherence to hand hygiene, appropriate use of PPE.

13. Isolation and cohorting of patients infected or colonized with Multi-drug resistant organisms (MDROs).
14. Education and training of HCP.
15. Increased environmental cleaning and patient-dedicated equipment.
16. Proper sterilization and disinfection.
17. Surveillance for Multidrug resistant organisms especially in high risk areas.

9.4 Control of spread of specific organisms (MDROs)

a. Methicillin Resistant *Staphylococcus aureus* (MRSA)

MRSA strains are resistant to the penicillin's-resistant penicillins (methicillin) and cephalosporins and are often resistant to multiple classes of drugs and occasionally are sensitive only to Vancomycin and teicoplanin. MRSA are highly-transmissible strains and have a high potential to spread across hospitals. Since there are few therapeutic options available for treatment of this resistant organism, the best strategy to control the spread are the preventive measures. Transient carriage of the organism on hands of HCWs accounts for major route of transmission from infected/colonized inpatients to other patients. Transmission from environmental surfaces and airborne routes is known to occur. The measures to control MRSA in hospitals are screening for MRSA carriage or infection in certain high risk patients or units at admission, standard and contact precautions, isolation and cohorting of patients, treatment of infected/colonized patients, environmental cleaning, education and training of staff.

b. Vancomycin – Resistant Enterococcus (VRE)

Enterococcal infections are difficult to treat because of their intrinsic resistance to many antimicrobial agents and easily acquire resistance to almost all antimicrobials including Vancomycin. Transmission of VRE can occur by direct contact or indirectly via transient carriage on hands of HCW, contaminated surfaces or patient-care equipment. To prevent and control the nosocomial transmission of VRE, judicious use of antibiotics especially

Vancomycin, education of HCW, implementation of hospital infection control practices, equipment and environmental cleaning, using patient-dedicated or single-use non-critical patient-care equipment, isolation and cohorting of infected/colonized patients, use of PPE, and surveillance for VRE infection/colonization should be implemented.

c. MDR Gram negative (MDRGN) bacteria

MDRGN includes organisms producing ESBLs, plasmid-mediated AmpC and carbapenemases. Screening of patients in high risk units and those at high risk of carriage such as recent broad spectrum antibiotic therapy (carbapenem, quinolones, and 3rd and 4th generation cephalosporins), long duration of stay and severity of illness, chronic disease and impaired functional status and presence of invasive medical devices should be carried out for infection/colonization with MDRGN organisms. Multiple sites including rectal or perianal swabs, should be screened. Measures to prevent spread of MDRGN organisms include stringent hand hygiene, contact precautions (gloves and gown), isolating, and cohorting, increased environmental cleaning and dedicated patient equipment and judicious use of antibiotics.

In healthcare facilities:

Antibiotic usage rates in healthcare facilities are high for some classes of drugs, and there is considerable unexplained variation between hospitals in the use of certain antibiotics, particularly broad-spectrum antibiotics. Problems resulting from inappropriate use of antibiotics apply to both current and future healthcare facility patients due to changes in healthcare facility microbial ecology resulting from the resistance.

Additional costs of infections caused by resistant organisms include:

- The need for more expensive and broader spectrum antibiotics to treat the infections.
- The need to isolate patients colonized with resistant organisms in order to minimize cross-infection.

In the community:

Community antibiotic use is high and there is irrational use of antibiotics including the over the counter sales due to lack of monitoring mechanism in spite of the existing laws. Thus multi-resistant bacteria, such as community strains of MRSA(CA-MRSA) and extended-spectrum beta-lactamase-producing Gram-negative bacteria are causing increasing human morbidity and there is concern that past excessive antibiotic use in the community or in animal production systems (or both) is responsible.

9.5 Antimicrobial Stewardship

This aims to optimize antimicrobial use among patients in order to reduce antibiotic resistance, improve patient outcomes and safety, and ensure cost-effective therapy.

At the healthcare facility level, antibiotic stewardship involves:
• Implementing an antibiotic stewardship program; and
• Continuous monitoring and analysis of antibiotic usage, to track changes in antibiotic resistance and to monitor effects of containment strategies.

Key requirements of a healthcare facility antibiotic stewardship program:

1. A multidisciplinary antibiotic stewardship team with core membership of an infectious diseases physician (lead doctor) and a clinical pharmacist. Microbiologist, and infection control professional may also be included.
2. Antibiotic stewardship should be available within the healthcare facilities for quality improvement and patient safety governance structure. There should be collaboration between the stewardship team and drug and therapeutics and infection prevention and control committees.
3. Implementation of clinical guidelines that comply with national treatment guidelines and incorporate changes regularly based on resistance patterns prevailing in the health facility as

reported regularly by microbiology department.

4. Microbiology services reporting patient-specific culture and sensitivity results to optimize individual antibiotic management.
5. Review of antibiotic prescribing with intervention and direct feedback to the prescriber.
6. Activities according to local priorities and resources & Provision of effective & regular education of prescribers and pharmacists about antibiotic usage, development of resistance and judicious prescribing. Of the antibiotics.
7. Point of care interventions including: streamlining or de-escalation of therapy, dose optimization, parenteral to oral conversion.
8. Use of information technology such as electronic prescribing with clinical decision support, on-line approval systems.
9. Monitor antibiotic prescribing by measuring antibiotic consumption; drug use evaluations and using quality Use of Medicine indicators.
10. Support and collaboration of hospital administration including allocation of resources to provide education and measure and monitor antibiotic usage.
11. Antibiotic stewardship surveillance methods should be established at patient level as well as population or community level.

10. BIOMEDICAL WASTE MANAGEMENT

10.1 INTRODUCTION

The Ministry of Environment and Forests, Govt. of India notified the Bio-Medical Waste (Management and Handling) Rules on 27th July, 1998; under the provisions of Environment Act 1986. These rules have been framed to regulate the disposal of various categories of Bio-Medical Waste as envisaged therein; so as to ensure the safety of the staff, patients, public and the environment. There have been some amendments to the rules from time to time; presently the rules are being revised and this section will be duly updated.

10.2 OBJECTIVES

The Bio-Medical Waste Management policy of the hospitals shall meet the following broad objectives:-

(i) Provide a system of management of potentially infectious and hazardous waste as per guidelines and recommendations of Biomedical Wastes (Management and Handling Rules) 1998.

(ii) Identifying, defining & classifying the various categories of waste being generated in the hospitals.
Use of separate color coded containers for Segregation of various categories of waste at point of generation.

(iii) Segregation of various categories of waste in separate color coded containers at the site of generation, so that each category is treated in a suitable manner to render it harmless.

(iv) Disinfection/decontamination of infected items at the site of generation immediately after use.

(v) Onsite appropriate ‘‘treatment technology’’ to be used depending upon the category of waste.

(vi) Creating a system where all categories and personnel are responsible as well as accountable for proper waste management.

(vii) Environment and patient friendly safety norms.

10.3 Practices in the patient-care areas/clinical areas:

10.3.1 POLICY ON SEGREGATION OF WASTE:

The hospital should ensure that clinical and general wastes is segregated at source and placed in color coded plastic bags and containers prior to collection and disposal at the site of generation in all patient care areas/clinical areas. There should be no mixing of waste.

Colored coded bags are used for segregation.

Segregation is the responsibility of the generator of wastes i.e. the doctors, nurses or paramedical personnel.

Segregation for each of the following:

- Infectious non-sharps
- Infectious sharp
- Disposable plastic items
- Glass
- General waste
- Paper/ cardboards
- Cytotoxic/radiological/radioactive
- Microbiological/pathological wastes

Table 1. Categories of Biomedical Waste (Schedule 1)

Options	Waste Category	Treatment and Disposal
Category No. 1	**Human Anatomical Waste** (human tissues, organs, body parts)	incineration @/deep burial*
Category No. 2	**Animal Waste** (animal tissues, organs, body parts carcasses, bleeding parts, fluid, blood and experimental animals used in research, waste generated by veterinary hospitals, colleges, discharge from hospitals, animal houses)	incineration@/deep burial*
Category No. 3	**Microbiology & Biotechnology Waste** (Wastes from laboratory cultures, stocks or micro-organisms live or vaccines, human and animal cell culture used in research and infectious agents from research and industrial laboratories, wastes from production of biologicals, toxins, dishes and devices used for transfer of cultures)	local autoclaving/micro-waving/incineration@
Category No. 4	**Waste Sharps** (needles, syringes, scalpels, blade, glass, etc. that may cause puncture and cuts. This includes both used and unused sharps)	disinfection (chemical treatment @@@/autoclaving/microwaving and mutilation/shredding##
Category No. 5	**Discarded Medicines and Cytotoxic drugs** (outdated, contaminated and discarded medicines)	incineration@/destruction and drugs disposal in secured landfills
Category No. 6	**Soiled Waste** (items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines, bedding, other material contaminated with blood)	incineration@autoclaving/microwaving
Category No. 7	**Solid Waste** (Waste generated from disposal items other than the sharps such a tubings, catheters, intravenous sets etc.)	disinfection by chemical treatment@@ autoclaving/microwaving and mutilation/shredding##
Category No. 8	**Liquid Waste** (Waste generated from laboratory and washing, cleaning, housekeeping and disinfecting activities)	disinfection by chemical treatment@@ and discharge into drains
Category No. 9	**Incineration Ash** Ash from incineration of any bio-medical waste)	disposal in municipal landfill
Category No. 10	**Chemical Waste** (Chemicals used in production of biologicals, chemicals used in production of biologicals, chemicals used in disinfection etc.)	chemical treatment@@ and discharge into drains for liquids and secured landfill for solids

@ There will be no chemical pretreatment before incineration. Chlorinated plastics shall not be incinerated.

* Deep burial shall be an option available only in towns with population less than five lakhs and in rural areas.

@@ Chemicals treatment using at least 1% hypochlorite solution or any other equivalent chemical reagent. It musts be ensured that chemical treatment ensures disinfection.

Mutilation/shredding must be such so as to prevent unauthorised reuse.

Table 2. Color-coded bags & Category wise Treatment

Color Coding	Waste Category	Treatment option as per Schedule 1
Yellow (Plastic bag)	Cat. 1, 2. 3, 6 .	Incineration/deep burial
Blue (plastic bag/puncture proof container)	Cat. 4,7.	Autoclaving/Chemical Treatment /Microwaving and Shredding
Black (Plastic bag)	Cat. 5, 9 and 10 (solid)	Disposal in secured landfill

NB: Categories 8 and 10 (liquid) do not require containers/bags. No PVC material should be placed in yellow bag.

Any material treated with hypo-chlorite solution should never be sent for incineration

BINS AND LINERS:

The container comprises of an inner bag of color depending on the type of waste, and should match the chosen outer container is a plastic bin with handles, and of a size which will depend on the amount of waste generated. The inner polythene bag should be leak proof, and should fit into the container with one-fourth of the polythene bag turned over the rim.

LINERS/PLASTIC BAGS: MATERIALS USED:

Biodegradable colored plastic bags to line the same colored bins with the specifications ad guidelines of BMW Rules.

BINS :

Containment of waste: An optimum number of easy to use, Standard, uniform, covered, foot-operated bins of appropriate size shall be placed at identified places in all clinical areas.

DISINFECTION OF BINS:

Chemical disinfection of the waste bins using hypochlorite solution should be done frequently at a separate washing facility in the hospital.

DISINFECTION AND MUTILATION OF SHARPS:

In order to render them harmless to waste handlers a Pre-Treatment of the infectious waste generated in the patient-care areas is required, prior to transportation for onsite treatment and disposal. It is required for the following infectious items;

- Syringes
- Needles
- Catheters, I/V sets, gloves

10.3.2 COLLECTION STORAGE, LABELING, AND RECORDING OF WASTE

All the biomedical waste to be labeled as waste type, site of generation, date of generation before transportation from the generation site. Waste should be stored in the areas of generation at an identified safe area, for an interim period after which it is transported for onsite treatment and final disposal. No untreated bio-medical waste shall be kept stored beyond a period of 48 hours.

All the staff is required to duly full in the waste book color wise mentioning the number and size of bags handed over and sign the slip for further record.

10.4 LIQUID AND CHEMICAL WASTES MANAGEMENT:

Chemical disinfection of the liquid waste, at the areas of generation e.g., Labor rooms, OTs, labs etc is done. These liquid wastes should be disinfected by chemical treatment using at least 1% sodium hypochlorite solution for a contact period of 30 Minutes and them discharged into drains/sewers where it is taken care of by the principle of dilution and dispersal.

10.5 DISCARDED MEDICINES AND CYTOTOXIC DRUGS:

The discarded medicines and cytotoxic drugs, which need to the disposed, should be certified by Head of the concerned department, put in a relevant bag, tied and sealed and labelled as with ‘Cytotoxic’

10.6 Different labels for Bio-medical waste containers and bags

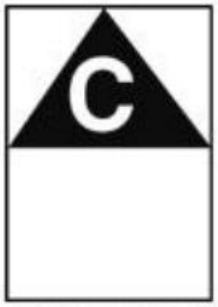
shall be required for identification and safe handling of this waste. These labels for storage/transportation of biomedical waste are as under:

LABEL FOR BIO-MEDICAL WASTE CONTAINERS/BAGS

BIOHAZARD SYMBOL
जैविक परिसंकट चिन्ह

BIOHAZARD
जैविक परिसंकट

CYTOTOXIC HAZARD SYMBOL
कोषिकाविष परिसंकट चिन्ह



CYTOTOXIC
कोषिकाविष

11. OCCUPATIONAL HEALTH AND SAFETY

11.1 Introduction

Occupational health and safety includes the prevention, reporting and management of sharps injuries, needle stick injuries and other percutaneous exposures to blood and body fluids which may potentially expose an employee to the risk of blood-borne viruses.

Definitions of sharp injury

Sharps injury can be defined as injury from needle or other sharp device contaminated with blood or a body fluid and penetrates the skin percutaneously mucosal/ cutaneous exposure.

Blood borne pathogens are viruses that some people carry in their blood and which may cause severe disease in certain people and few or no symptoms in others. The virus can spread to another person even if the carrier is asymptomatic.

The main blood borne viruses of concern are:
- Hepatitis B virus (HBV)
- Hepatitis C virus (HCV)
- Human Immunodeficiency Virus (HIV)

Source patient is the person whose blood is present on the item that caused the sharps injury.

11.2 PPE & VACCINATION OF THE HEALTH CARE WORKERS:

All waste handlers should be provided with Masks, Caps, Gum Boots, Gloves, and Disposable apron which they are expected to wear while dealing with the waste. All health care workers should be vaccinated against Hepatitis B and tetanus.

11.3 SHARPS INJURY MANAGEMENT

The commonest cause of injury while handling the waste is inappropriate segregation wherein sharp waste is deposited in containers meant for non-sharp waste. When sharp injury occurs following procedures is to be followed.

(i) Stop the procedure immediately and wash the wound with soap and water, encourage bleeding the apply antiseptic.

(ii) Immediately report to Nodal officer in Casualty for First aid and emergency treatment or any other action and follow-up advice, if required. 'PEP' is provided is casualty round the clock as per MOHFW guidelines.

(iii) Retention, if possible of the item and details of its source for identification of possible infection.

(iv) Investigation, determination and implementation of remedial measures.

(v) Recording of Sharp injury**:** Needle Sticks/ Sharp injury should be recorded.

11.4 TRAINING OF ALL THE STAFF:

A regular training of the staff CME's, Workshops, are the essential part to maintain the Hospital Waste Management (HWM) at the best. It is necessary to conduct the regular refresher training of all the staff members of the hospital.

11.5. MANAGEMENT OF EXPOSURES TO HBV

For percutaneous or mucosal exposures to blood, several factors must be considered when making a decision to provide prophylaxis, including the HBsAg status of the source and the hepatitis B vaccination and vaccine-response status of the exposed person. Such exposures usually involve persons for whom hepatitis B vaccination is recommended. Any blood or body fluid exposure to an unvaccinated person should lead to initiation of the hepatitis B vaccine series. A summary of prophylaxis recommendations for exposure to blood according to the HBsAg status of the exposure source and the vaccination and vaccine-response status of the exposed person is included in the following table:

Table 3. RECOMMENDED POSTEXPOSURE PROPHYLAXIS FOR EXPOSURE TO HEPATITIS B VIRUS

Vaccination and antibody response status of exposed workers*	TREATMENT		
	Source HbsAg† positive	Source-HBsAg negative	Source – Unknown or not available for testing
Unvaccinated	HBIG§ x 1 and initiate HB vaccine series	Initiate HB vaccine series	Initiate HB vaccine
Previously vaccinated			
- Serum anti-HBs¶ ≥ 10 mIU/mL	No treatment	No treatment	No treatment
- Serum anti-HBs < 10 mIU/mL	HBIG x 1 and initiate revaccination or HBIG x 2**	No treatment	If known high risk source, treat as if source were HBsAg positive
- Antibody response unknown	Test exposed person for anti-Hbs. - If anti-HBs ≥ 10 mIU/ML, no treatment. - If anti-HbS < 10 mIU/mL, administer HBIG x 1 and vaccine booster	No treatment	Test exposed person for anti-Hbs. - If anti-HBs ≥ 10 mIU/ML, no treatment. - If anti-HbS < 10 mIU/mL, administer HBIG x 1 and vaccine booster

* Persons who have previously been infected with HBV are immune to reinfection and do not require postexposure prophylaxis.

† Hepatitis B surface antigen.

§ Hepatitis B immune globulin; does is 0.06 mL/kg intramuscularly.

¶ Antibody to HBsAg.

** The option of giving one dose of HBIG and reinitiating the vaccine series is preferred for non-responders who have not completed a second 3-dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred.

11.6. EXPOSURE TO HIV

Please see NACO 2007 Antiretroviral Therapy Guidelines for HIV-Infected Adults and Adolescents Including Post-exposure Prophylaxis

Six steps are indicated for managing occupational exposures to HIV.

1. Manage the exposure site
    a. Do remove gloves, if appropriate
    b. Do wash the exposed site thoroughly with running water
    c. Do irrigate with water or saline if eyes or mouth have been exposed
    d. Do wash the skin with soap and water
    e. Do not panic
    f. Do not put the pricked finger in the mouth
    g. Do not squeeze the wound to bleed it
    h. Do not use bleach, chlorine, alcohol, betadine, iodine, or other antiseptics/detergents on the wound

2. Establish eligibility for PEP
    a. Three categories of exposure can be described based on the amount of blood/fluid involved and the entry port. These categories are intended to help in assessing the severity of the exposure but may not cover all possibilities.

i. Mild exposure: mucous membrane/non-intact skin with small volumes.
ii. Moderate exposure: mucous membrane/non-intact skin with large volumes OR percutaneous superficial exposure with solid needle
iii. Severe exposure: percutaneous with large volume

b. A baseline rapid HIV testing should be done before starting PEP. Initiation of PEP where indicated should not be delayed while waiting for the results of HIV testing of the source of exposure. Informed consent should be obtained before testing of the source as per national HIV testing guidelines.
c. The exposed individual should be assessed for pre-existing HIV infection intended for people who are HIV negative at the time of their potential exposure to HIV. Exposed individuals who are known or discovered to be HIV positive should not receive PEP. They should be offered counselling and information on prevention of transmission and referred to clinical and laboratory assessment to determine eligibility for antiretroviral therapy (ART).

3. Counsel for PEP
    a. Exposed persons (clients) should receive appropriate information about what PEP is about and the risk and benefits of PEP in order to provide informed consent. It should be clear that PEP is not mandatory.

    b. There are two types of PEP regimens
        i. Basic: 2-drug combination
        ii. Expanded: 3-drug combination
    c. The decision to initiate the type of regimen depends on the

type of exposure and HIV serostatus of the source person

d. PEP must be initiated as soon as possible, preferably within 2 hours. All clients starting on PEP must take 4 weeks (28 days) of medication.
e. If the exposed person is pregnant, the evaluation of risk of infection and need for PEP should be approached as with any other person who has had an HIV exposure. However, the decision to use any antiretroviral drug during pregnancy should involve discussion between the woman and her health-care provider (s) regarding the potential benefits and risks to her and her fetus.

   Data regarding the potential effects of antiretroviral drugs on the developing fetus or neonate are limited. There is a clear contraindication for Efavirenz (first 3 months of pregnancy) and Indinavir (prenatal).

   In conclusion, for a female HCP considering PEP, a pregnancy test is recommended if there is any chance that she may be pregnant. Pregnant HCP are recommended to begin the basic 2-drug regimen, and if a third drug is needed, Nelfinavir is the drug of choice.

4. Laboratory evaluation
   f. When offered HIV testing, the exposed person should receive standard pre-test counselling according to the national HIV testing and counselling guidelines, and should give informed consent for testing. Confidentiality of the test result must be ensured. Do not delay PEP if HIV testing is not available.
   g. Recommended baseline laboratory evaluations within 8

days of exposure.

i. In persons taking PEP: HIV, HCV, anti-HBs, complete blood count, transaminases
ii. In persons not taking PEP: HIV, HCV, anti-HBs.

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COVID -19 Outbreak

Standard Operating Procedures

State or District Control Room

National Centre for Disease Control

22 Sham Nath Marg, Delhi 110054

Directorate General of Health Services

Ministry of Health and Family Welfare

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WHO has declared the COVID-19 (SARS-CoV-2) as Public Health Emergency of international concern and has raised the risk assessment of China, Regional Level and Global Level to Very High.

To monitor implementation of activities to contain local transmission of COVID-2019 disease a state control room should be set up. The creation of control room will ensure a single incident command structure for coordination of all activities related to COVID-19 containment and efficient use of resources.

The control room should be headed by a state health department officials/ State surveillance officers. The Control room incharge will supervise activities related to surveillance, call centre, media scanning, sample collection and intersectoral coordination. Following sub-teams should be formuuated for the control room:

1. Surveillance team
2. Call Centre management team
3. Media Surveillance team
4. Sample tracing team
5. Private hospital surveillance team
6. Transportation and ambulance management team
7. Inter departmental and coordination team

TORs of Teams

1. **Surveillance team**

- Hospital surveillance
  - The condition of the Symptomatic patients admitted at isolation wards of hospitals will be closely scrutinized and reports will be updated to surveillance team
  - Analysis of the reports
- Field surveillance
  - Those patients discharged from hospitals will be monitored by field workers in their corresponding PHC area
  - Those asymptomatic travellers/contacts in home isolation will also be monitored for 14 days by field workers and reports will be sent to the DSO.
- Lab Surveillance
  - The DSO and District nodal officers entrusted for sample collection will inform to the lab surveillance team before sample collection
  - Sample requisition forms will be scrutinized before sending to National Institute of Virology Pune/VDRL lab network.
  - Liaison with districts and sample collection point

2. **Call Centre management team**

- All State teams shall ensure to be present in daily meeting at 6 pm at the state control room / wherever suggested by authorities.
- All State teams shall connect and coordinate with corresponding teams in all districts and compile the activities, so as to prepare the report of the

activities in the evening meeting.

- The respective State teams may co-opt the officers necessary for compiling the reports and supporting the districts as per the needs.
- They shall ensure that the specific activities are conducted, data collated and presented in a specific format.

Control room call centre should be set up in state as well as district. The call centre is to be set up with 3 laptop, 3 mobile/ landline telephone facility. Each Call Centre Operator is to be assigned both a telephone and a computer. One outgoing mobile facility also available for answering pending calls. Two whatsapp number also be made available in control management room. Depending on the configuration of the call centre, each workstation should have the following items:

- Headset for hands-free answering;
- Reference materials (including all standard MoHFW guidelines);
- Item to be used to request assistance from the supervisor (Paper and pen/pencil, register etc)
- All phone/computer banks are set up in close proximity to power, telephone, and data sockets/ports.

Mandates for Call Centre

- Call centre will be operational 24*7
- Documentation of all the activities happening in call centre
- Daily consolidation report at 4.30 pm.
- Establishing call centre with sufficient connectivity
- To answer medical queries, logistics and administrative issues regarding health and health related problems
- Daily maintenance of second and third level call referral. Compilation format

Total number of calls till today	No: of calls on the date--/--/2020	Total	Case follow up till today	Case reported on --./2020	Total fever, cough, shortness of breath with contact/travel history

3. Media Surveillance team; Print, visual and social media surveillance with the support of State and District team.

- Collection of information regarding demand and supply of logistics, Human resources etc. circulated in the media,
- Validating the information collected from the media for negative outcomes and execute timely preventive and control measures.
- Reply queries to the general public regarding health related events and information through phone numbers circulated at the state level.

Reporting format of cyber space monitoring

Sl No.	Description	Details
1	Whether any misinformation noticed	
2	Misinformation noticed Give details in brief	
3	Whether reported to take action and case booked	
4	Cases booked today	
	Total cases Booked till today	

4. Sample Tracing Team

- The team should keep a watch on sample sent to each lab from all districts and answer all queries regarding the sending of samples in coordination with the PH lab.
- The team should hand hold the district in transportation of samples, filling formats, collecting reports and intimate the authorities regarding the status of results Monitor sample collection and facilitate
- All sample test results to be reported to the respective Superintendent of MCH, District Collector, DHS, DME and Prl Secretary on daily basis

SI No	Description	Number	Results received	Positive
1	Total Sample Collected			
2	Samples sent to			

5. Private hospital surveillance team

- Team should compile the data regarding the general public visiting private hospitals from all districts and suspect and identify any missed out contacts of contacts reaching the facilities.
- Reporting format

Number of persons visited private hospitals	
Suspected cases/contacts identified from March	

6. Transportation and ambulance management team

The teams should compile the data regarding the availability spacing, training of drivers of ambulances and vehicles carrying patients from home isolation to the hospital isolation facilities and back it should be ensured that there should be continuous availability of vehicles 24 x 7 in all districts. The data should be compiled in following format in all districts .All possible challenges at the

district should be addressed there itself and decision taken at the state could be compiled and addressed during control room presentation.

7. Inter departmental and coordination team

There should be daily co-ordination meetings under the chairmanship of DC. The inter-sectoral team should assess the requirements and address staffing needs, identify funding sources and mechanisms for related activities, ensure inter-sectoral coordination between government departments, agencies, civil society organizations and other relevant bodies. All sectors should be prepared to support the implementation of public health measures and the health sector response and to maintain essential business continuity.

Ministry of Health and Family Welfare
Directorate General of Health Services
[Emergency Medical Relief]

Novel Coronavirus Disease 2019 (COVID-19): Guidelines on rational use of Personal Protective Equipment

1. About this guideline

This guideline is for health care workers and others working in points of entries (POEs), quarantine centers, hospital, laboratory and primary health care / community settings. The guideline uses setting approach to guide on the type of personal protective equipment to be used in different settings.

2. Introduction

Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. Rarely, animal coronaviruses can evolve and infect people and then spread between people such as has been seen with MERS and SARS.

The outbreak of Novel coronavirus disease (now named COVID-19) was initially noticed from a seafood market in Wuhan city in Hubei Province of China in mid-December, 2019, has spread to more than 185 countries/territories worldwide including India.

The causative agent for COVID-19, earlier termed provisionally as novel Coronavirus has been officially named as SARS-CoV-2.

3. Mode of transmission

There is clear evidence of human-to-human transmission of SARS-CoV-2. It is thought to be transmitted mainly through respiratory droplets that get generated when people cough, sneeze, or exhale. SARS-CoV-2 also gets transmitted by touching, by direct touch and through contaminated surfaces or objects and then touching their own mouth, nose, or possibly their eyes. Healthcare associated infection by SARS-CoV-2 virus has been documented among healthcare workers in many countries.

The people most at risk of COVID-19 infection are those who are in close contact with a suspect/confirmed COVID-19 patient or who care for such patients.

4. Personal Protective Equipment (PPE)

Personal Protective Equipments (PPEs) are protective gears designed to safeguard the health of workers by minimizing the exposure to a biological agent.

4.1 Components of PPE

Components of PPE are goggles, face-shield, mask, gloves, coverall/gowns (with or without aprons), head cover and shoe cover. Each component and rationale for its use is given in the following paragraphs:

4.1.1 Face shield and goggles

Contamination of mucous membranes of the eyes, nose and mouth is likely in a scenario of droplets generated by cough, sneeze of an infected person or during aerosol generating procedures carried out in a clinical setting. Inadvertently touching the eyes/nose/mouth with a contaminated hand is another likely scenario. Hence protection of the mucous membranes of the eyes/nose/mouth by using face shields/ goggles is an integral part of standard and contact precautions. The flexible frame of goggles should provide good seal with the skin of the face, covering the eyes and the surrounding areas and even accommodating for prescription glasses.

4.1.2 Masks

Respiratory viruses that includes Coronaviruses target mainly the upper and lower respiratory tracts. Hence protecting the airway from the particulate matter generated by droplets / aerosols prevents human infection. Contamination of mucous membranes of the mouth and nose by infective droplets or through a contaminated hand also allows the virus to enter the host. Hence the droplet precautions/airborne precautions using masks are crucial while dealing with a suspect or confirmed case of COVID-19/performing aerosol generating procedures.

Masks are of different types. The type of mask to be used is related to particular risk profile of the category of personnel and his/her work. There are two types of masks which are recommended for various categories of personnel working in hospital or community settings, depending upon the work environment:

1. Triple layer medical mask
2. N-95 Respirator mask

4.1.2.1 Triple layer medical mask

A triple layer medical mask is a disposable mask, fluid-resistant, provide protection to the wearer from droplets of infectious material emitted during coughing/sneezing/talking.

4.1.2.2. N-95 Respirator mask

An N-95 respirator mask is a respiratory protective device with high filtration efficiency to airborne particles. To provide the requisite air seal to the wearer, such masks are designed to achieve a very close facial fit.

Such mask should have high fluid resistance, good breathability (preferably with an expiratory valve), clearly identifiable internal and external faces, duckbill/cup-shaped structured design that does not collapse against the mouth.

If correctly worn, the filtration capacity of these masks exceeds those of triple layer medical masks. Since these provide a much tighter air seal than triple layer medical masks, they are designed to protect the wearer from inhaling airborne particles.

4.1.3 Gloves

When a person touches an object/surface contaminated by COVID-19 infected person, and then touches his own eyes, nose, or mouth, he may get exposed to the virus. Although this is not thought

to be a predominant mode of transmission, care should be exercised while handling objects/surface potentially contaminated by suspect/confirmed cases of COVID-19.

Nitrile gloves are preferred over latex gloves because they resist chemicals, including certain disinfectants such as chlorine. There is a high rate of allergies to latex and contact allergic dermatitis among health workers. However, if nitrile gloves are not available, latex gloves can be used. Non-powdered gloves are preferred to powdered gloves.

4.1.4 Coverall/Gowns

Coverall/gowns are designed to protect torso of healthcare providers from exposure to virus. Although coveralls typically provide 360-degree protection because they are designed to cover the whole body, including back and lower legs and sometimes head and feet as well, the design of medical/isolation gowns do not provide continuous whole-body protection (e.g., possible openings in the back, coverage to the mid-calf only).

By using appropriate protective clothing, it is possible to create a barrier to eliminate or reduce contact and droplet exposure, both known to transmit COVID-19, thus protecting healthcare workers working in close proximity (within 1 meter) of suspect/confirmed COVID-19 cases or their secretions.

Coveralls and gowns are deemed equally acceptable as there is a lack of comparative evidence to show whether one is more effective than the other in reducing transmission to health workers. Gowns are considerably easier to put on and for removal. An apron can also be worn over the gown for the entire time the health worker is in the treatment area. Coveralls/gowns have stringent standards that extend from preventing exposure to biologically contaminated solid particles to protecting from chemical hazards.

4.1.5 Shoe covers

Shoe covers should be made up of impermeable fabric to be used over shoes to facilitate personal protection and decontamination.

4.1.6. Head covers

Coveralls usually cover the head. Those using gowns, should use a head cover that covers the head and neck while providing clinical care for patients. Hair and hair extensions should fit inside the head cover.

The specifications for all the PPEs are at **Annexure-A.**

5. Rational use of PPE

The PPEs are to be used based on the risk profile of the health care worker. The document describes the PPEs to be used in different settings.

5.1. Point of Entry

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Health Desk	Provide information to travellers	Low risk	Triple layer medical mask Gloves	Minimum distance of one meter needs to be maintained.
2	Immigration counters, customs and airport security	Provide services to the passengers	Low risk	Triple layer medical mask Gloves	Minimum distance of one meter needs to be maintained.
3	Temperature recording station	Record Temperature with hand held thermal recorder.	Low risk	Triple layer medical mask Gloves	
4	Holding area/ Isolation facility of APHO/ PHO	Interview & Clinical examination by doctors/ nurses	Moderate Risk	N-95 masks Gloves	
5	Isolation facility of APHO	Clinical management (doctors, nurses)	Moderate Risk	N-95 masks Gloves	
		Attending to severely ill passenger	High risk	Full complement of PPE	When aerosol generating procedures are anticipated
5	Sanitary staff	Cleaning frequently touched surfaces/ Floor/ cleaning linen	Moderate risk	N-95 mask Gloves	
6	Administrative staff	Providing administrative support	No risk	No PPE	No contact with patients of COVID-19. They should not venture into areas where suspect COVID-19 cases are being managed.

5.2. Hospital Setting

5.2.1. Out Patient Department (Respiratory Clinic / Separate screening area)#

S. No	Setting	Activity	Risk	Recommended PPE	Remarks
1	Triage area	Triaging patients Provide triple layer mask to patient.	Moderate risk	N 95 mask Gloves	Patients get masked.
2	Screening area help desk/ Registration counter	Provide information to patients	Moderate risk	N-95 mask Gloves	
3	Temperature recording station	Record temperature with hand held thermal recorder	Moderate Risk	N 95 mask Gloves	
4	Holding area/ waiting area	Nurses / paramedic interacting with patients	Moderate Risk	N 95 mask Gloves	Minimum distance of one meter needs to be maintained.
5	Doctors chamber	Clinical management (doctors, nurses)	Moderate Risk	N 95 mask Gloves	No aerosol generating procedures should be allowed.
6	Sanitary staff	Cleaning frequently touched surfaces/ Floor/ cleaning linen	Moderate risk	N-95 mask Gloves	
7	Visitors accompanying young children and elderlies	Support in navigating various service areas	Low risk	Triple layer medical mask	No other visitors should be allowed to accompany patients in OPD settings. The visitors thus allowed should practice hand hygiene

All hospitals should identify a separate triage and holding area for patients with Influenza like illness. If there is no triage area / holding area for patients due to resource constraints, such hospitals will follow the above guidance for general OPD.

5.2.2. In-patient Services

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Individual isolation rooms/ cohorted isolation rooms	Clinical management	Moderate risk	N 95 mask Gloves	Patient masked. Patients stable. No aerosol generating activity.
2	ICU/ Critical	Critical care	High risk	Full complement of	Aerosol generating

	care	management		PPE	activities performed.
3	ICU /critical care	Dead body packing	High risk	Full complement of PPE	
4	ICU/ Critical care	Dead body transport to mortuary	Low Risk	Triple Layer medical mask Gloves	
5	Sanitation	Cleaning frequently touched surfaces/ floor/ changing linen	Moderate risk	N-95 mask Gloves	
6	Other Non-COVID treatment areas of hospital	Attending to infectious and non-infectious patients	Risk as per assessed profile of patients	PPE as per hospital infection prevention control practices.	No possibility of exposure to COVID patients. They should not venture into COVID-19 treatment areas.
7	Caretaker accompanying the admitted patient	Taking care of the admitted patient	Low risk	Triple layer medical mask	The caretaker thus allowed should practice hand hygiene, maintain a distance of 1 meter

5.2.3. Emergency Department

S.No	Setting	Activity	Risk	Recommended PPE	Remarks
1	Emergency	Attending emergency cases	Moderate risk	N 95 mask Gloves	When aerosol generating procedures are anticipated
2		Attending to severely ill patients of SARI	High risk	Full complement of PPE	Aerosol generating activities performed.

5.2.4. Pre-hospital (Ambulance) Services

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Ambulance Transfer to designated hospital	Transporting patients not on any assisted ventilation	Moderate risk	N-95 mask Gloves	
		Management of SARI patient while transporting	High risk	Full complement of PPE	When aerosol generating procedures are anticipated
		Driving the ambulance	Low risk	Triple layer medical mask Gloves	Driver helps in shifting patients to the emergency

5.2.5. Other Supportive/ Ancillary Services

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1.	Laboratory	Sample collection and transportation	High risk	Full complement of PPE	
		Sample testing	High risk	Full complement of PPE	
2	Mortuary	Dead body handling	Moderate Risk	N 95 mask Gloves	No aerosol generating procedures should be allowed. No embalming.
		While performing autopsy	High Risk	Full complement of PPE	No post-mortem unless until specified.
3	Sanitation	Cleaning frequently touched surfaces/ Floor/ cleaning linen in COVID treatment areas	Moderate risk	N-95 mask Gloves	
4	CSSD/Laundry	Handling linen of COVID patients	Moderate risk	N-95 mask Gloves	
5	Other supportive services	Administrative Financial Engineering Security, etc.	No risk	No PPE	No possibility of exposure to COVID patients. They should not venture into COVID-19 treatment areas.

5.3. Health Workers in Community Setting

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	ASHAs/ Anganwadi and other field staff	Field Surveillance	Low Risk	Triple layer mask Gloves	Maintain distance of one meter. Surveillance team to carry adequate triple layer masks to distribute to suspect cases detected on field surveillance
2	Doctors at supervisory level conducting field investigation	Field surveillance Clinical examination.	Medium risk	N 95 mask Gloves.	

5.4 Quarantine facility

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Persons being quarantined		Low Risk	Triple layer mask	
2	Healthcare staff working at quarantine facility	Health monitoring and temperature recording	Low Risk	Triple layer mask Gloves	
		Clinical examination of symptomatic persons	Moderate Risk	N-95 masks Gloves	
3	Support staff		Low Risk	Triple layer mask Gloves	

5.5 Home Quarantine

S. No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Persons being quarantined		Low Risk	Triple layer mask	
2	Designated family member	Taking care of person being quarantined	Low Risk	Gloves	While cleaning commonly touched surfaces or handling soiled linen
3	Other family		No Risk	No PPE required	Maintain a distance of at least 1 meter from person under home quarantine. Senior citizens in the household should stay away from such persons under home quarantine.

Points to remember while using PPE

1. PPEs are not alternative to basic preventive public health measures such as hand hygiene, respiratory etiquettes which must be followed at all times.
2. Always (if possible) maintain a distance of at least 1 meter from contacts/suspect/confirmed COVID-19 cases
3. Always follow the laid down protocol for disposing off PPEs as detailed in infection prevention and control guideline available on website of MoHFW.

Annexure A

Personal Protection Equipment (PPE) -Specifications

(for Contact & Airborne precautions)

1. PPE Kit

1.1 Gloves

- Nitrile
- Non-sterile
- Powder free
- Outer gloves preferably reach mid-forearm (minimum 280 mm total length)
- Different sizes (6.5 & 7)
- Quality compliant with the below standards, or equivalent:
    a. EU standard directive 93/42/EEC Class I, EN 455
    b. EU standard directive 89/686/EEC Category Ill, EN 374
    c. ANSI/SEA 105-2011
    d. ASTM D6319-10

1.2 Coverall (medium and large)*

- Impermeable to blood and body fluids
- Single use
- Avoid culturally unacceptable colors e.g. black
- Light colors are preferable to better detect possible contamination
- Thumb/finger loops to anchor sleeves in place
- Quality compliant with following standard
    a. Meets or exceeds ISO 16603 class 3 exposure pressure, or equivalent

1.3 Goggles

- With transparent glasses, zero power, well fitting, covered from all sides with elastic band/or adjustable holder.
- Good seal with the skin of the face
- Flexible frame to easily fit all face contours without too much pressure
- Covers the eyes and the surrounding areas and accommodates for prescription glasses
- Fog and scratch resistant
- Adjustable band to secure firmly so as not to become loose during clinical activity
- Indirect venting to reduce fogging
- May be re-usable (provided appropriate arrangements for decontamination are in place) or disposable
- Quality compliant with the below standards, or equivalent:
    a. EU standard directive 86/686/EEC, EN 166/2002
    b. ANSI/SEA Z87.1-2010

1.4. N-95 Masks

- Shape that will not collapse easily
- High filtration efficiency
- Good breathability, with expiratory valve
- Quality compliant with standards for medical N95 respirator:
    a. NIOSH N95, EN 149 FFP2, or equivalent
- Fluid resistance: minimum 80 mmHg pressure based on ASTM F1862, ISO 22609, or equivalent
- Quality compliant with standards for particulate respirator that can be worn with full- face shield

1.5. Shoe Covers

- Made up of the same fabric as of coverall
- Should cover the entire shoe and reach above ankles

1.6. Face Shield

- Made of clear plastic and provides good visibility to both the wearer and the patient
- Adjustable band to attach firmly around the head and fit snuggly against the forehead
- Fog resistant (preferable)
- Completely covers the sides and length of the face
- May be re-usable (made of material which can be cleaned and disinfected) or disposable
- Quality compliant with the below standards, or equivalent:
    a. EU standard directive 86/686/EEC, EN 166/2002
    b. ANSI/SEA Z87.1-2010

3. Triple Layer Medical Mask

- Three layered medical mask of non-woven material with nose piece, having filter efficiency of 99% for 3 micron particle size.
    a. ISI specifications or equivalent

4. Gloves

- Nitrile
- Non-sterile
- Powder free
- Outer gloves preferably reach mid-forearm (minimum 280mm total length)
- Different sizes (6.5 & 7)
- Quality compliant with the below standards, or equivalent:
    1. EU standard directive 93/42/EEC Class I, EN 455
    2. EU standard directive 89/686/EEC Category Ill, EN 374
    3. ANSI/SEA 105-2011
    4. ASTM D6319-10

5. **Body Bags - Specifications**

1) Impermeable
2) Leak proof
3) Air sealed
4) Double sealed
5) Disposable
6) Opaque
7) White
8) U shape with Zip
9) 4/6 grips
10) Size: 2.2 x 1.2 Mts
11) Standards:
    a) ISO 16602:2007
    b) ISO 16603:2004
    c) IS016604:2004
    d) ISO/DIS 22611:2003

All items to be supplied need to be accompanied with certificate of analysis from national/ international organizations/labs indicating conformity to standards

All items: Expiry 5 years

* Due to scarcity of coveralls, and risk versus benefit, that as an emergency temporary measure in larger public interest, in present given circumstances, the fabric that cleared/passed 'Synthetic Blood Penetration Resistance Test' (ISO 16603) and the garment that passed 'Resistance to penetration by biologically contaminated solid particles (ISO 22612:2005) may be considered as the benchmark specification to manufacture Coveralls." The Coveralls should be taped at the seams to prevent fluid/droplets/aerosol entry.

The test for these two standards (ISO 16603 and ISO 22612:2005), which can be performed in Indian laboratories are as per WHO Disease Commodity Package (Version 4.0)

Government of India
Ministry of Health & Family Welfare
Directorate General of Health Services
(EMR Division)

COVID-19: GUIDELINES ON DEAD BODY MANAGEMENT

15.03.2020

1. Scope of the document

- There are currently over 100 laboratory confirmed cases and two deaths due to Novel Coronavirus disease (COVID-19) in India. Being a new disease there is knowledge gap on how to dispose of dead body of a suspect or confirmed case of COVID-19.

- This guideline is based on the current epidemiological knowledge about the COVID-19. India is currently having travel related cases and few cases of local transmission. At this stage, all suspect/ confirmed cases will be isolated in a health care facility. Hence the document is limited in scope to hospital deaths.

2. Key Facts

- The main driver of transmission of COVID-19 is through droplets. There is unlikely to be an increased risk of COVID infection from a dead body to health workers or family members who follow standard precautions while handling body.

- Only the lungs of dead COVID patients, if handled during an autopsy, can be infectious.

3. Standard Precautions to be followed by health care workers while handling dead bodies of COVID.

Standard infection prevention control practices should be followed at all times. These include:

1. Hand hygiene.
2. Use of personal protective equipment (e.g., water resistant apron, gloves, masks, eyewear).
3. Safe handling of sharps.

4. Disinfect bag housing dead body; instruments and devices used on the patient.
5. Disinfect linen. Clean and disinfect environmental surfaces.

4. Training in infection and prevention control practices

All staff identified to handle dead bodies in the isolation area, mortuary, ambulance and those workers in the crematorium / burial ground should be trained in the infection prevention control practices.

5. Removal of the body from the isolation room or area

- The health worker attending to the dead body should perform hand hygiene, ensure proper use of PPE (water resistant apron, goggles, N95 mask, gloves).
- All tubes, drains and catheters on the dead body should be removed.
- Any puncture holes or wounds (resulting from removal of catheter, drains, tubes, or otherwise) should be disinfected with 1% hypochlorite and dressed with impermeable material.
- Apply caution while handling sharps such as intravenous catheters and other sharp devices. They should be disposed into a sharps container.
- Plug Oral, nasal orifices of the dead body to prevent leakage of body fluids.
- If the family of the patient wishes to view the body at the time of removal from the isolation room or area, they may be allowed to do so with the application of Standard Precautions.
- Place the dead body in leak-proof plastic body bag. The exterior of the body bag can be decontaminated with 1% hypochlorite.The body bagcan be wrapped with a mortuary sheet or sheet provided by the family members.

- The body will be either handed over to the relatives or taken to mortuary.
- All used/ soiled linen should be handled with standard precautions, put in bio-hazard bag and the outer surface of the bag disinfected with hypochlorite solution.
- Used equipment should be autoclaved or decontaminated with disinfectant solutions in accordance with established infection prevention control practices.
- All medical waste must be handled and disposed of in accordance with Bio-medical waste management rules.
- The health staff who handled the body will remove personal protective equipment and will perform hand hygiene.
- Provide counseling to the family members and respect their sentiments.

6. Environmental cleaning and disinfection

All surfaces of the isolation area (floors, bed, railings, side tables, IV stand, etc.) should be wiped with 1% Sodium Hypochlorite solution; allow a contact time of 30 minutes, and then allowed to air dry.

7. Handling of dead body in Mortuary

- Mortuary staff handling COVID dead body should observe standard precautions.
- Dead bodies should be stored in cold chambers maintained at approximately 4°C.
- The mortuary must be kept clean. Environmental surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution.
- After removing the body, the chamber door, handles and floor should be cleaned with sodium hypochlorite 1% solution.

8. Embalming

- Embalming of dead body should not be allowed.

9. Autopsies on COVID-19 dead bodies

Autopsies should be avoided. If autopsy is to be performed for special reasons, the following infection prevention control practices should be adopted:

- The Team should be well trained in infection prevention control practices.
- The number of forensic experts and support staff in the autopsy room should be limited.
- The Team should use full complement of PPE (coveralls, head cover, shoe cover, N 95 mask, goggles / face shield).
- Round ended scissors should be used
- PM40 or any other heavy duty blades with blunted points to be used to reduce prick injuries
- Only one body cavity at a time should be dissected
- Unfixed organs must be held firm on the table and sliced with a sponge – care should be taken to protect the hand
- Negative pressure to be maintained in mortuary. An oscillator saw with suction extraction of the bone aerosol into a removable chamber should be used for sawing skull, otherwise a hand saw with a chain-mail glove may be used
- Needles should not be re-sheathed after fluid sampling – needles and syringes should be placed in a sharps bucket.
- Reduce aerosol generation during autopsy using appropriate techniques especially while handling lung tissue.

- After the procedure, body should be disinfected with 1% Sodium Hypochlorite and placed in a body bag, the exterior of which will again be decontaminated with 1% Sodium Hypochlorite solution.
- The body thereafter can be handed over to the relatives.
- Autopsy table to be disinfected as per standard protocol.

10. Transportation

- The body, secured in a body bag, exterior of which is decontaminated poses no additional risk to the staff transporting the dead body.
- The personnel handling the body may follow standard precautions (surgical mask, gloves).
- The vehicle, after the transfer of the body to cremation/ burial staff, will be decontaminated with 1% Sodium Hypochlorite.

11. At the crematorium/ Burial Ground

- The Crematorium/ burial Ground staff should be sensitized that COVID 19 does not pose additional risk.
- The staff will practice standard precautions of hand hygiene, use of masks and gloves.
- Viewing of the dead body by unzipping the face end of the body bag (by the staff using standard precautions) may be allowed, for the relatives to see the body for one last time.
- Religious rituals such as reading from religious scripts, sprinkling holy water and any other last rites that does not require touching of the body can be allowed.
- Bathing, kissing, hugging, etc. of the dead body should not be allowed.

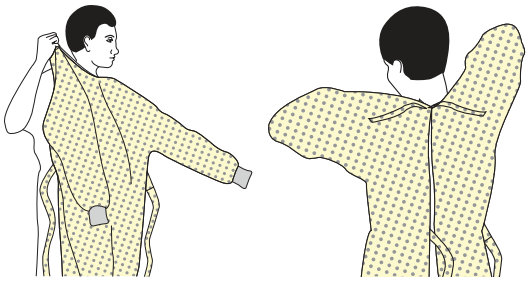
- The funeral/ burial staff and family members should perform hand hygiene after cremation/ burial.
- The ash does not pose any risk and can be collected to perform the last rites.
- Large gathering at the crematorium/ burial ground should be avoided as a social distancing measure as it is possible that close family contacts may be symptomatic and/ or shedding the virus.

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

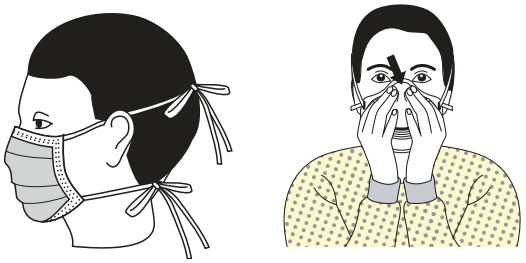
1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator

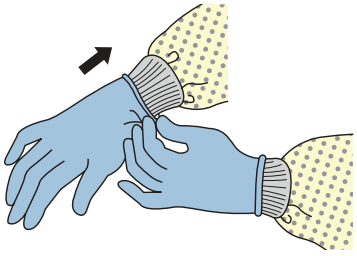


3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit

4. GLOVES

- Extend to cover wrist of isolation gown



USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

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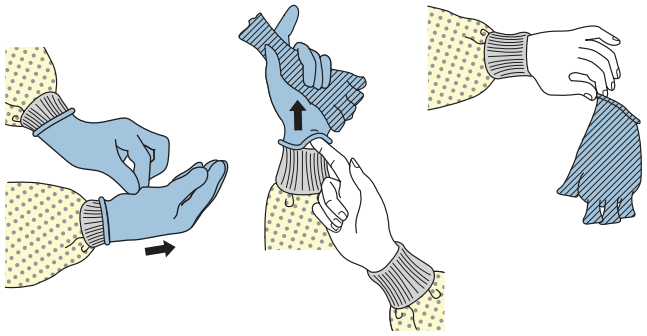
HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container

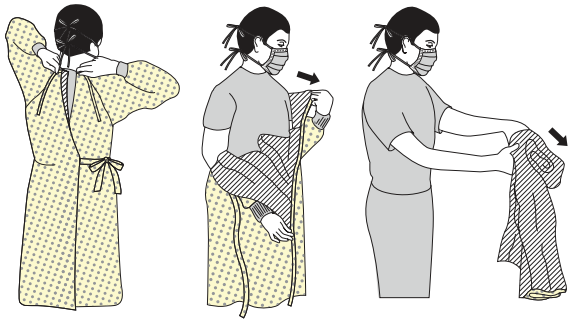


2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

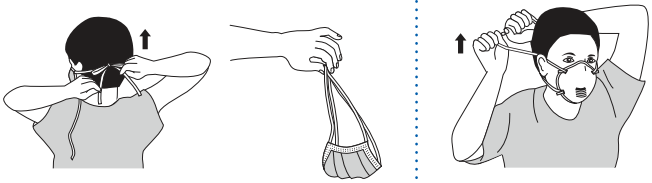
3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container

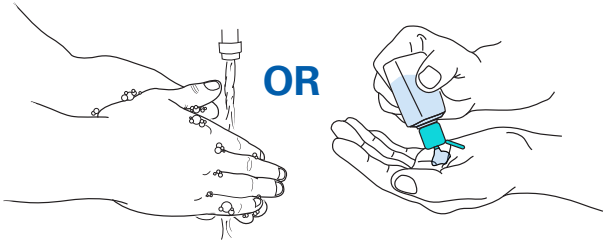


4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

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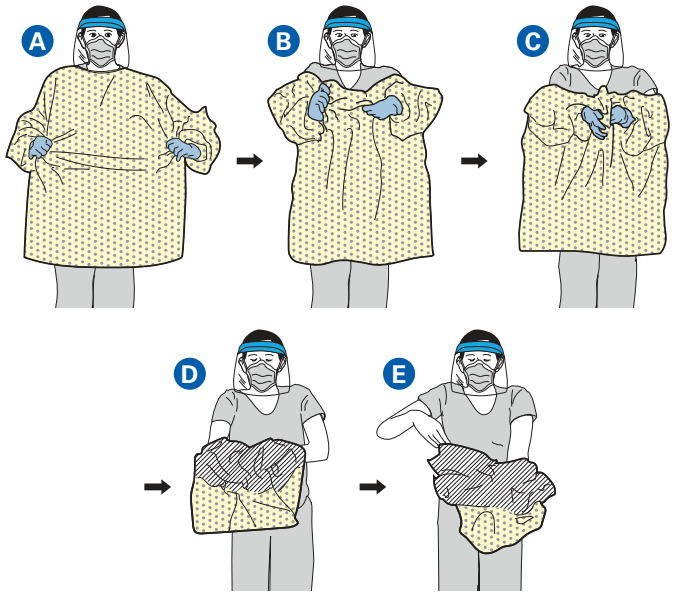
HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 2

Here is another way to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

1. GOWN AND GLOVES

- Gown front and sleeves and the outside of gloves are contaminated!
- If your hands get contaminated during gown or glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp the gown in the front and pull away from your body so that the ties break, touching outside of gown only with gloved hands
- While removing the gown, fold or roll the gown inside-out into a bundle
- As you are removing the gown, peel off your gloves at the same time, only touching the inside of the gloves and gown with your bare hands. Place the gown and gloves into a waste container

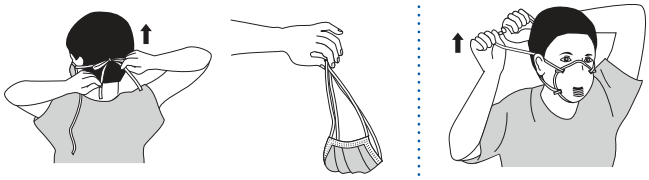


2. GOGGLES OR FACE SHIELD

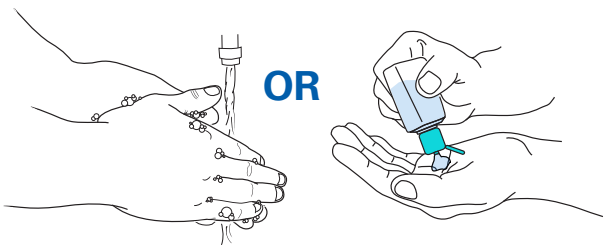
- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band and without touching the front of the goggles or face shield
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container

3. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



4. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

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Mock Drill for Emergency Response for Handling COVID -19 cases in Govt Hospitals

Setting	Personnel Required	Inventory/Activity/ Skills to be tested
1. Outpatients facilities/ Initial Triage		
Consultation Room	Healthcare workers (Doctors and Nurses)	Physical examination of patients with respiratory symptoms. Inventory PPEs & Medicines, hand washing and sanitizer facility.
	Healthcare workers (Doctors and Nurses)	Physical examination of patients without respiratory symptoms but based on self-declaration and /or history
	Cleaners	After and between consultations with patients with respiratory symptoms; Disinfectants.
Waiting Room		Well ventilated areas with Exhaust Fans/Open Areas
2. Emergency /Inpatient facilities/Isolation Rooms and Duty Stations		
	Healthcare workers (Doctors and Nurses)	• PPE • Drugs & Disposable • Oxygen Apparatus • Suction Machine • Hand washing and Hand sanitizer facility
	Cleaners	Entering the room of COVID-19 patients with proper PPE
Laboratory	Lab Technician	Collection of Respiratory samples
Administrative Areas	All staff, including healthcare workers	Administrative tasks that do not involve contact with COVID -19 patients but work on logistics and supply and record maintenance. Hand washing and hand sanitizer facility.

Setting	Personnel Required	Inventory/Activity/ Skills to be tested
3. ICU Facilities		
ICUs	Respiratory specialists Anaesthesiologist • ICU Nurses • OT Technician	• PPEs • Knowledge and skill as per treatment protocols • Oxygen supply • Emergency medicines • Monitors • Defibrillators • Ventilators
4. Ambulance or transfer vehicle (For shifting to Tertiary Care Centre)		
	Healthcare workers	Transporting suspected COVID-19 patients to the referral healthcare facility.
	Driver with Paramedical workers	Involved only in driving the patient with suspected COVID-19 disease and the driver's compartment is separated from the main compartment.
		Assisting with embarkation /disembarkation of patient with suspected COVID-19 disease.
	Cleaners	Cleaning and disinfection after and between transport of patients with suspected COVID-19 disease to the referral healthcare facility
5. Details of Tertiary Care Centre (Contact No. of Nodal Person and Emergency No.) are available		

General Tips:

1. In addition to using the appropriate PPE, frequent hand hygiene and respiratory hygiene should always be performed. PPE should be discarded in an appropriate waste container after use, and hand hygiene should be performed before putting on and after taking off PPE.

2. The number of visitors should be restricted. If visitors must enter a COVID-19 patient's room, they should be provided with clear instructions about how to put on and remove PPE and about performing hand hygiene before putting on and after removing PPE; this should be supervised by a healthcare worker.
3. This category includes the use of no-touch thermometers, thermal imaging cameras, and limited observation and questioning, all while maintaining a spatial distance of at least 1 m.
4. All rapid response team members must be trained in performing hand hygiene and how to put on and remove PPE to avoid self-contamination.

Laboratory investigations (i) All kits required for collection (Respiratory samples like Nasopharyngeal Swab, Sputum and bronchoalveolar lavage) such as swabs, VTMs, Zip Lock Bag & Cold Chain etc. are available (ii) All lab investigations of a COVID-19 suspect case should be restricted to a bare minimum as deemed appropriate by the treating physician till such time as the confirmatory COVID-19 tests are made available. After confirmation proper bio safety precautions should be observed if any invasive investigations are done.

Assessment of Healthcare workers

Doctors, Nurses, Technicians should undergo knowledge assessment along with skill assessment and if needed the requisite training should be provided to fill the gaps. A Microbiologists should be posted for Supervising the samples collection from the patients in a proper way and ensuring the transportation of sample to designated laboratories for testing under appropriate condition including maintenance of cold chain for this purpose.

Public Health Specialist should be engaged to advise about the reduction of infection in the medical care facility. They will also supervise the handing over of discharged patients to State Surveillance teams for monitoring and tracking these patients till the requisite period is over. They will also supervise proper biomedical waste disposal of the healthcare facility.

GUIDANCE DOCUMENT FOR POEs, STATES AND UTs FOR SURVEILLANCE OF 2019-nCoV

Situation Update (as on 25 January, 2020)

The Ministry of Health and Family Welfare (MoHFW), GoI is closely monitoring the outbreak of respiratory illness caused by a novel (new) coronavirus (termed "2019-nCoV") that was first detected in Wuhan City, Hubei Province, China and which continues to expand.

As 25th January 2020, a total of 1287 cases and 41 deaths were reported in 29 provinces (districts and cities) of China. In addition, 28 cases have been confirmed outside Chinese mainland: 5 cases in Hong Kong, 2 cases in Macao, 3 cases in Taiwan, 4 cases in Thailand (2 cases cured), 2 cases in Japan (1 case cured), 2 cases in South Korea, 2 cases in the United States, 2 cases in Vietnam, 3 cases in Singapore, 1 case in Nepal and 2 cases in France.

Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. Rarely, animal coronaviruses can evolve and infect people and then spread between people such as has been seen with MERS and SARS.

Initially, many cases reported in the outbreak in Wuhan, China had some link to a large seafood and animal market, suggesting animal-to-person spread. However, with increased number of cases being reported without any history of exposure to animal markets, suggests person-to-person transmission might be occurring. At this time, it's unclear whether the human to human transmission is sustainable or not.

Limited information is available to characterize the spectrum of clinical illness, however yet modes of transmission, incubation period and period of communicability is unknown. No vaccine or specific treatment for 2019-nCoV infection is available; supportive care is recommended.

This is a rapidly evolving situation and information will be updated as it becomes available. These guidelines have been developed based on what currently is known about the disease and guidance from WHO. These are subject to change as additional information becomes available at a short notice.

Risk assessment: WHO assesses the risk of this event to be very high in China, high at the regional level and moderate at the global level.

Currently, WHO has not declared the situation as PHEIC.

Response from MoHFW(GoI):

- MoHFW is closely monitoring this situation in collaboration with WHO.
- MoHFW has initiated inflight announcements with regard to nCoV and entry screening for travellers from 2019-nCoV affected countries (China) at designated airports
- Mechanism for in country surveillance and contact tracing has been put in place through Integrated Disease Surveillance Programme(IDSP), NCDC.

- Advisories for travellers visiting China and arriving from China have been issued.
- Public health preparedness including diagnostics, hospital preparedness, IPC, response, logistics is being constantly reviewed.
- Risk Communication has been initiated and signages have been displayed at PoEs.

Scope of the guidance: It is mainly targeted towards health personnel involved in entry screening at Points of Entries (designated Airports) and in community surveillance through the mechanism of IDSP.

Objectives of the guidance:

- *To establish system for screening of travellers from 2019 nCoV affected countries (China) at Points of Entries*:
    - In flight announcement and filling of Self declaration form in the flight (Annexure 1)
    - Suspect case of 2019nCoV based on WHO case definition (identified during screening at APHO) will be referred to designated Hospital and information shared with CSU IDSP/NCDC immediately (Annexure 6).
    - Close contacts of the suspect case (co passengers seated in the same row, 3 rows in front and 3 rows behind along with some of the cabin crew) – Information be shared as per interim guidelines (page no. 5) in the format (Annexure 2)
    - List of passengers who have history of close contact (as per self declaration form)will be shared to IH Division and State/District for in-country surveillance by IDSP on daily basis.
- *To establish In country/ community surveillance* through the Integrated Disease Surveillance Programme network(IDSP)
    - SSU/DSU will receive line list / emails of Passengers under observation, coming from 2019-nCoV affected countries* from APHO, Office of Emergency Medical Relief, MEA or CSU and information collected in Format A & B. (Annexure 3 & 4)
    - Health Status of these passengers to be shared with CSU in Format C (Annexure 5) as per SoPs (Page no. 3).
    - Passengers who have history of close contact will be followed by IDSP officials on daily basis.
    - Close contacts of the suspect case – Information be shared as per interim guidelines in the format (Annexure 2)

PROTOCOL FOR SENDING DAILY HEALTH STATUS OF PASSENGERS UNDER OBSERVATION

SOPs for SSOs

1) SSU will receive line list / emails of Passengers under observation, coming from 2019-nCoV affected countries* from APHO, Office of Emergency Medical Relief, MEA or CSU.
2) SSU will share the line list / mails with DSUs immediately and Ensure immediate tracing of Passengers under observation by DSUs.
3) Information regarding any passenger who travels to another State will be immediately notified to the concerned State Health authority and comment shared in Format C.
4) SSU will receive complete investigation details in enclosed Format A from DSU as soon as possible on the same day.
5) SSU will ensure daily follow up of Passengers under observation for 28 days starting from date of last exposure/arrival.
6) SSU to compile the line list of all Passengers under observation daily, updating daily health status of Travelers / Suspects in enclosed Format B and share daily report of health status of Passengers under observation with CSU / EMR daily (Format C).
7) If any passenger is not traceable initially or during any duration while being followed up should be immediately notified to CSU.

All SSUs will keep themselves updated by routinely checking WHO and NCDC website on 2019-nCoV. Any guidelines shared by MoHFW on 2019-nCoV will be disseminated to concerned State/District authorities.

SOPs for DSU

1) Receive line list/ email of Passengers under observation from SSU/CSU/APHO.
2) Immediately trace the Passengers under observation and begin investigation and fill the enclosed format A. On first visit, passenger is to be provided a mask to be put on immediately in case symptoms such as fever and cough develop.
3) Passenger will be provided following advice during first visit by Health care provider:
    a. You will also receive daily calls/visit from health department 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 2019-nCoV i.e. Fever and Cough for 28 days from the date of arrival from 2019-nCoV affected countries*.
    c. In case you initiation of symptoms (fever and cough), put on the mask immediately, restrict your outdoor movement and contact 24 hours helpline number 011-23978046. The Call operator will tell you whom to contact further. In the meanwhile, keep yourself isolated in your house/room.
4) DSU has to ensure daily follow up of Passengers under observation for 28 days starting from date of possible exposure/arrival. Passengers will also be counseled for self-reporting of illness suggestive of 2019-nCoV.

5) Information regarding any passenger who travels to another District will be immediately notified to the concerned District Health authority and SSU.
6) In case, Passengers under observation develop symptoms suggestive of ARI/ILI, S/he has to be shifted to identified health facility with isolation unit (as transmission pattern of the virus is still unclear).Laboratory guidelines will be shared soon.
7) Daily follow up of Passengers under observation to be continued for 28 days starting from the date of last exposure/departure.
8) If any passenger is not traceable initially or during any duration while being followed up should be immediately notified to SSU/CSU.
9) Daily health status to be shared with SSU every day by 12:00 PM.

*Currently China only.

Advisory:

1. Format C to be sent positively every day to idsp-npo@nic.inby 12:00 pm including 'Nil' report.
2. The passenger has to be observed from 28 days from the day of possible exposure/arrival to India.
3. **In case passenger develop any symptom, s/he will be requested to wear amask. Health care provider will arrange for the transfer of such patient from home to isolation facility. During the procedure, standard infection control practice for eg. wearing mask and hand washing should be performed by Health care providers.**

Interim Guidelines for community based Tracing and Management of Contacts for 2019- nCoV Case

Contact tracing: the process

Contact tracing is the process of identifying, assessing, and managing people who have been exposed to a disease to prevent onward transmission. People who may have been exposed to 2019-nCoV are to be followed for 28 days from the date of the probable last exposure/arrival from 2019-nCoV affected countries.

Any person who has had contact with a patient under investigation/treatment for suspected, probable or confirmed case of 2019-nCoV (refer WHO case definition) should be carefully monitored for the appearance of symptoms of 2019-nCoV.

Contact is defined as:

Anyone who provided care for the suspect or confirmed case, including a health care worker or family member, or who had other similarly close physical contact; Anyone who stayed at the same place (e.g. lived with, visited) while the suspect or confirmed case was symptomatic. Note: This should include health workers (including those involved in cleaning, waste management, laboratory technicians, healthcare workers, etc.)
If symptoms of 2019-nCoV appear within the first 28 days following the contact, the individual should be considered a probable case and reported through IDSP network to NCDC.

Community based Contact Tracing Implementation Guidelines

1. As soon as the single event (identification of suspect or confirmed case) is detected, contact tracing must be aggressively implemented (preferably to be completed within 48 hours).
2. The contact tracing shall preferably be done by visiting the local residence of the contact(s) by a Health Personnel. Other methods of communication like telephone may be used in certain circumstances or for follow-up.
3. On meeting the 'contact person' the visiting Health Personnel should introduce him (her)-self, explain the purpose of contact tracing and should collect data in the prescribed format (Annex).
4. Contact tracing must include identification of extended social networks and travel history of cases during the 28 days after onset of illness.
5. Contacts of confirmed cases should be traced and monitored for at least 28 days after the last exposure to the case patient for evidence of 2019-nCoV symptoms as per case definition.
6. Information about contacts can be obtained from: a. Patient, his/her family members, persons at patient's workplace or school associates, or b. others with knowledge about the patient's recent activities and travels.

7. Case wise Line-listing (Performa enclosed at Annex) of all exposed contacts shall be maintained with the following information: a. demographic information, b. date of last exposure or date of contact with the case patient, c. date of onset of fever orother symptoms developed, if any.

Advisory for Symptomatic contacts:

Refer persons with fever and cough and history of contact with a confirmed case within last 28 days for:

1. Isolation for strict infection control
2. Collection and transportation of sample for laboratory testing at designated lab.
3. Appropriate medical care for management of patient.

Depending on the severity of illness, acceptability, and availability of hospital beds, ill contacts may be isolated at a health-care facility or at home while awaiting test-results. However, once confirmed by laboratory, such cases must be managed in a designated health facility.

Advisory for Asymptomatic Contacts:

- Remain at home (home quarantine) for at least 28 days after the last exposure with the case.
- Initiate self-health monitoring for the development of fever or cough within 28 days after the last exposure to the case patient and maintain a list of contacts on daily basis.
- If above described symptoms develop, person must put on the mask, self-isolate him in the home and inform the identified Local Health Official/District CMO/DSO by telephone and further management must be done at a designated health facility.
- Active monitoring (e.g. daily visits or telephone calls) for 28 days after the last exposure shall be done by the identified Local Health Officials.

Health and safety precautions for the contact tracing official:

- Maintain a distance of at least 2 meter (as advised by WHO*) from the contact.
- Personal protective equipment (PPE) is not needed for Contact Follow-up Teams and should not be worn. However, masks should be worn by the contact tracing team.
- Maintain standard infection prevention and control measures and hand washing should be performed.

ANNEXURE 1 – SELF DECLARATION FORM

Ministry of Health and Family Welfare
Government of India

SELF REPORTING FORM

FOR ALL TRAVELLERS ARRIVING from 2019-nCoV affected countries*
(TO BE PRESENTED AT THE IMMIGRATION COUNTER)

All persons coming to India from 2019-nCoV affected countries are required to fill-up this proforma. You are requested to provide the following information to safeguard your own health.

Personal Information

1	Name of the passenger			
	Seat No.		3. Flight No.	
4	Passport No.			
5	Date of Arrival			
6	Port of origin of Journey			
7	Port of final destination			

Contact Address in India for Indian Nationals:

1	House Number	
2	Street/ Village	
3	Tehsil	
4	District/ City	
5	State	
6	Pin	
7	Residence Number	
8	Mobile Number	
9	E mail ID	

(PART-A)

I) During your visit to China, what all cities did you visit? _____

II) Have you visited Wuhan city in Hubei province, China in last 14 days? Yes/ No

If yes, period and duration_____

III) In the Last 14 days during your visit, did you[#]:

a. Visit any sea food/animal food market? Yes / No
b. Come in close contact of any person suffering from Fever and cough? Yes / No
c. Visit any health facility in China? Yes / No

IV) Are you suffering from any of the following symptoms**

- Fever Yes No
- Cough Yes No
- Respiratory distress Yes No

Signature of the passenger

*CHINA

[#] If answer to any of the above questions is “yes”, Consider them as close contact.

**If answer to any of the above questions is “yes”, please present yourself to the Airport Health counter for preliminary screening.

In case you develop symptoms such as fever and cough within 28 days of leaving this airport, restrict your outdoor movement and contact MoHFW's24 hours helpline number 011-23978046. Call operator will tell you whom to contact further. In the meanwhile, keep yourself isolated in your house/room.

ANNEXURE 2 – Format For Case-Wise Contact Listing And Follow – Up

Case Information

Name		Age (yrs)		Sex (M/F)		Address	District	Date of Symptom Onset	Any other information

Contact Information and follow up

S. No.	Date of Contact	Name	Age (yrs)	Sex (M/F)	Address	District	Phone Number	Day of follow - up (Put a 'X' if the contact has no symptom and put a '√' if the contact has one of the following symptoms listed below)																											
								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

ANNEXURE 3

Format A - for surveillance of Passenger for 2019-nCoV (To be filled by District Surveillance Unit and send to SSU daily)

Full Name:	
Age in years:	
Gender:	
Passport number:	
Complete Address (For Indian passport holders)	
Place of Stay during visit to India (For International tourists)	
Landline number with STD code (In India)	
Mobile number (In India)	
Countries visited in last 14 days	
Date of arrival from 2019-nCoV affected country to India	

Passenger History:

Clinical details: write 'N' for No & 'Y' for Yes

Day	Date	Fever	Cough	Day	Date	Fever	Cough
1				15			
2				16			
3				17			
4				18			
5				19			
6				20			
7				21			
8				22			
9				23			
10				24			
11				25			
12				26			
13				27			
14				28			

In case of any symptoms the passenger should be immediately isolated at designated hospital following standard Infection, control practices.

Filled by……..

ANNEXURE 4

Format B (Linelist of Format A from all DSU to be updated on daily basis by SSU)

NAME OF State:

	LINELIST FORMAT FOR REPORTING OF DAILY HEALTH STATUS OF PASSENGERS UNDER OBSERVATION											
Sl.No.	**Name**	**Age**	**Gender**	**Address**	**Phone**	**District**	**Country of visit**	**Date of departure from affected country**	**Date of receipt of information**	**Observation started from**	**Today's Health status**	**Comments**

- New passengers enrolled for observation:
- Cumulative number of Passengers under observation:
- No. of passengers who have completed 28 days observation period:

ANNEXURE 5

FORMAT FOR DAILY REPORTING OF HEALTH STATUS OF PASSENGERS ARRIVING FROM 2019-nCoV AFFECTED COUNTRY.

Date:……

Time:……..

S. No.	State	New passengers enrolled for observation	Cumulative number of Passengers under observation	No. of passengers who have completed 28 days observation period	Number of passengers found symptomatic & referred	Comments
1	A&N Island					
2	Andhra Pradesh					
3	Arunachal Pradesh					
4	Assam					
5	Bihar					
6	Chandigarh					
7	Chhattisgarh					
8	D N Haveli					
9	Daman & Diu					
10	Delhi					
11	Goa					
12	Gujarat					
13	Haryana					
14	Himachal Pradesh					
15	Jammu & Kashmir					
16	Jharkhand					
17	Karnataka					
18	Kerala					
19	Lakshadweep					
20	Madhya Pradesh					
21	Maharashtra					
22	Manipur					
23	Meghalaya					
24	Mizoram					
25	Nagaland					
26	Odisha					
27	Puducherry					
28	Punjab					
29	Rajasthan					
30	Sikkim					
31	Tamil Nadu					

32	Telangana					
33	Tripura					
34	Uttar Pradesh					
35	Uttarakhand					
36	West Bengal					
	TOTAL					

ANNEXURE 6

Suspect Case Referral Form: For any passenger developing symptom as per case definition of 2019-nCoV, requisite information will be shared to NCDC/CSU/SSU immediately

Full Name:	
Age in years:	
Gender:	
Passport number:	
Complete Address (For Indian passport holders)	
Place of Stay during visit (For International tourists)	
Landline number with STD code (In India)	
Mobile number (In India)	
Countries visited in last 28 days	
Date of departure from 2019-nCoV affected country	
Passenger Clinical History:	
Travel History after arrival in India:	
Name & Contact details of the Hospital where currently admitted:	

Advisory on Social Distancing Measure in view of spread of COVID-19 disease

Social distancing is a non-pharmaceutical infection prevention and control intervention implemented to avoid/decrease contact between those who are infected with a disease causing pathogen and those who are not, so as to stop or slow down the rate and extent of disease transmission in a community. This eventually leads to decrease in spread, morbidity and mortality due to the disease.

In addition to the proposed interventions, the State/UT Governments may prescribe such other measures as they consider necessary.

All these proposed interventions shall be in force till 31st of March, 2020. They will be reviewed as per the evolving situation.

The following interventions are proposed:

1. Closure of all educational establishments (schools, universities etc), gyms, museums, cultural and social centres, swimming pools and theatres. Students should be advised to stay at home. Online education to be promoted.

2. Possibility of postponing exams may be explored. Ongoing exams to be conducted only after ensuring physical distance of one meter amongst students.

3. Encourage private sector organizations/employers to allow employees to work from home wherever feasible.

4. Meetings, as far as feasible, shall be done through video conferences. Minimize or reschedule meetings involving large number of people unless necessary.

5. Restaurants to ensure handwashing protocol and proper cleanliness of frequently touched surfaces. Ensure physical distancing (minimum 1metre) between tables; encourage open air seating where practical with adequate distancing.

6. Keep already planned weddings to a limited gathering, postpone all non-essential social and cultural gatherings.

7. Local authorities to have a dialogue with organizers of sporting events and competitions involving large gatherings and they may be advised to postpone such events.

8. Local authorities to have a dialogue with opinion leaders and religious leaders to regulate mass gatherings and should ensure no overcrowding/at least one metre distance between people.

9. Local authorities to have meeting with traders associations and other stakeholders to regulate hours, exhibit Do's and Don'ts and take up a communication drive in market places like sabzi mandi, anaj mandi, bus depots, railway stations, post-offices etc., where essential services are provided.

10. All commercial activities must keep a distance of one meter between customers. Measures to reduce peak hour crowding in markets.

11. Non-essential travel should be avoided. Buses, Trains and aeroplanes to maximize social distancing in public transport besides ensuring regular and proper disinfection of surfaces.

12. Hospitals to follow necessary protocol related with COVID-19 management as prescribed and restrict family/friends/children visiting patients in hospitals.

13. Hygiene and physical distancing has to be maintained. Shaking hands and hugging as a matter of greeting to be avoided.

14. Special protective measures for delivery men/ women working in online ordering services.

15. Keep communities informed consistently and constantly.

Ministry of Health & Family Welfare

ANNEXURE 2 – Format For Case-Wise Contact Listing And Follow – Up

Case Information

Name		Age (yrs)		Sex (M/F)		Address	District	Date of Symptom Onset	Any other information

Contact Information and follow up

S. No.	Date of Contact	Name	Age (yrs)	Sex (M/F)	Address	District	Phone Number	Day of follow - up (Put a 'X' if the contact has no symptom and put a '√' if the contact has one of the following symptoms listed below)																											
								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Form A

NATIONAL CENTRE FOR DISEASE CONTROL

(To be filled for 2019-nCoV Acute Respiratory Disease)

A	**PATIENT INFORMATION**				
	Date of reporting to health facility:	Name of Reporting Health Facility:		Date of interview	
	State	Local Patient ID…….			
	Name of interviewer	Address of interviewer:	Contact Number of interviewer		
	Name of patient:		Age	Gender	
	Case Classification*: Confirmed ☐ Suspect ☐				
B	**SOCIODEMOGRAPHC PROFILE**				
	Residency: Indian Non-Indian(name of country)……				
	Postal Address	District	Phone number	email id	
C	**CLINICAL INFORMATION**				
1	**Patient clinical course**				
1.1	Date of Onset of symptoms				
1.2	Date of first contact with heath facility (name of health facility:)				
1.3	Date of admission (name of health facility:)				
1.4	Outcome (circle): Under treatment/ Discharged/ LAMA/ Died/ Cured		1.5Date of death(if applicable)		
1.6	Cause of death(As mentioned on death certificate):				
1.7	Was patient ventilated Yes/No				
2	**Patient Symptoms at admission (tick all reported)**				
a)	Fever/chills	f) Sore throat		j) Nausea/Vomiting	
b)	General weakness	g) Breathlessness		k) Headache	
c)	Cough	h) Diarrhea		l) Irritability/confusion	
d)	Runny nose	i) Pain(circle)muscular, chest, abdominal, joint			
e)	Any other, Specify				
3	**Patient signs at admission:** Details of following Signs to be taken from the case sheet if the patient is admitted				
a)	Temperature	d) Abnormal Lung X-Ray findings (yes/no)		g) Coma(yes/no)	
b)	Stridor (yes/ no)	e) Tachypnoea(yes/no)		h) Seizure(yes/no)	
c)	Redness of eyes (yes/no)	f) Abnormal lung auscultation(yes/no)		i) Any other(specify)	
4	**Underlying medical conditions** (tick all that apply)				
a)	COPD	f) Hypertension	k) Chronic neurological or neuromuscular disease		
b)	Chronic Renal Disease	g) Asthma	l) Heart disease		
c)	Bronchitis	h)Pregnancy (trimester)	m) Immunocompromised condition including HIV, TB		
d)	Malignancy	i) Post-partum(< 6 weeks)	n) Any other(mention)		
e)	Diabetes	j)Liver Disease	o) None		
D	**EXPOSURE HISTORY**				
5	Occupation (circle): Student/ Businessman/ Health care worker/Health care lab worker/ animal handler/ any other (specify)……				
6	H/O contact with 2019-nCoV case (Circle): Yes/ No				
6.1	If yes, then was it any of the following (tick appropriate option)				
a)	laboratory confirmed case of 2019-nCOV	b) person who is under investigation for 2019-nCoV while that person was ill			
6.2	If yes to Q. 6, then mention contact setting (tick all that apply)				
a)	While taking samples/ other investigations	f) Visit to a place where 2019-nCoV cases are treated or sampled(specify detail)			
b)	Clinical care of case (among HCW)	h) Immigration Staff at Point of Entry (details of place)			
c)	Housekeeping (Hospital)	i) Others, Specify			
d)	Caregiver of the case (specify details of case)	j) Not known			
7	Is patient a member of a cluster of patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) of unknown etiology in which nCoV is being evaluated? (Yes/No)				
E	**TRAVEL HISTORY**				

8	Have you travelled outside India in the past one month? Yes/ No. If yes then give date of arrival and fill details from Q. 8.1 onwards else skip to Q.9		8.1 Date of arrival to India:
8.2	Have you visited China? Yes/No If yes, then fill following columns else skip to Q. 8.3		
a)	Duration of stay:	b) Date of arrival in China:	c) Date of departure from China:
d)	Did you visit Wuhan (yes/no)	e) Any other places visited in China (specify)	
f)	During your stay, did you visit any animal market? Yes/No		
8.3	Details of visit to any other country in past one month: Names of the countries		
a)	Duration of stay: Country name& duration	Date of arrival:	Date of departure:
b)	Duration of stay: Country name& duration	Date of arrival:	Date of departure:
9	Have you travelled within India in the past one month? Yes/ No. If no, skip to Section F		
	If yes, details of visit to other places: Names of places		
a)	Duration of stay: Place & duration	Date of arrival:	Date of departure:
b)	Duration of stay: Place & duration	Date of arrival:	Date of departure:
c)	Duration of stay: Place & duration	Date of arrival:	Date of departure:

F	**LABORATORY INFORMATION (to be obtained from treating physician)**				
10	Any sample collected for confirmation of 2019-nCoV case (y/n)				
a)	If yes, then Type of sample collected	Date of collection	Sent to	Test Performed	Result
b)	If yes, then Type of sample collected	Date of collection	Sent to	Test Performed	Result
c)	If yes, then Type of sample collected	Date of collection	Sent to	Test Performed	Result

Suspect case

A. Patients with acute respiratory illness (fever, cough, breathing difficulty), **AND** with no other etiology that fully explains the clinical presentation **AND** at least one of the following:

- a history of travel to or residence in China in the 14 days prior to symptom onset, or
- patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.
- worked or attended a health care facility where a confirmed case of 2019-nCoV is admitted in the last 14 days
- close contact with a confirmed case of 2019-nCoV in the 14 days prior to illness onset, or

B. A suspect case for whom testing for 2019-nCoV is inconclusive

Confirmed case

A person with laboratory confirmation of 2019-nCoV infection, irrespective of clinical signs and symptoms.

G	**ENLIST THE CONTACTS** IN THE FOLLOWING FORMAT**				
S. No.	**Name**	**Age**	**Gender**	**Type of contact(Family (f), community(c), health care facility(h))**	**Contact details (Phone Number)**

Contact**

- Health care associated exposure, including providing direct care for 2019-nCoV patients, working with health care workers infected with 2019-nCoV, visiting patients or staying in the same close environment of a 2019-nCoV patient. Clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised;
- Working together in close proximity or sharing the same classroom environment with a with 2019-nCoV patient
- Traveling together with 2019-nCoV patient in any kind of conveyance
- Living in the same household as a 2019-nCoV patient

Covid-19 Monitoring Tool

Remote Data Collection from Fever Clinics, Quarantine Centers, Specialised Isolation Centres and Covid Hospitals

Date : 3 April 2020

Introduction - Stage 1

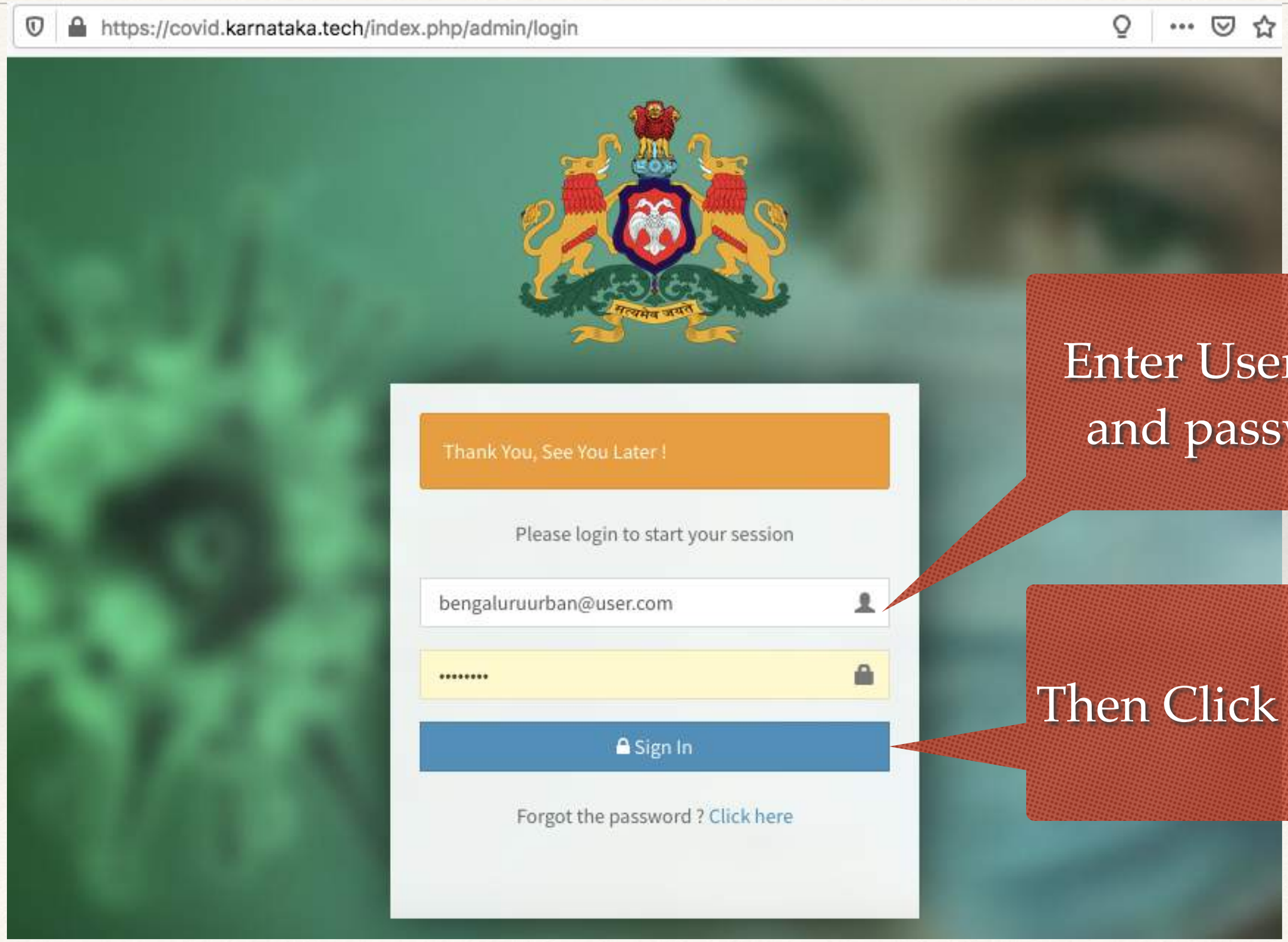
- This is a monitoring tool which helps to capture instant data from Fever Clinics, Quarantine Centres, Specialised Isolation Centres and Covid Hospitals
- The web portal allows each District Personnel to login enrol a facility and feed information on a periodic basis
- In Stage 1, the first requirement is to enrol and provide details of Fever Clinics, Quarantine Centres, Specialised Isolation Centres and Covid Hospitals
- This presentation is a step by step guide on how to login and add the details of the facilities

Step1 : Logging into the Portal

Step1 : Login

- Visit : http://covid.karnataka.tech/
- Open a browser like Google Chrome and type
  - covid.karnataka.tech
- You will see a login screen
- Type user name and password and Click “Sign in”
- Please see next slide for screen shot

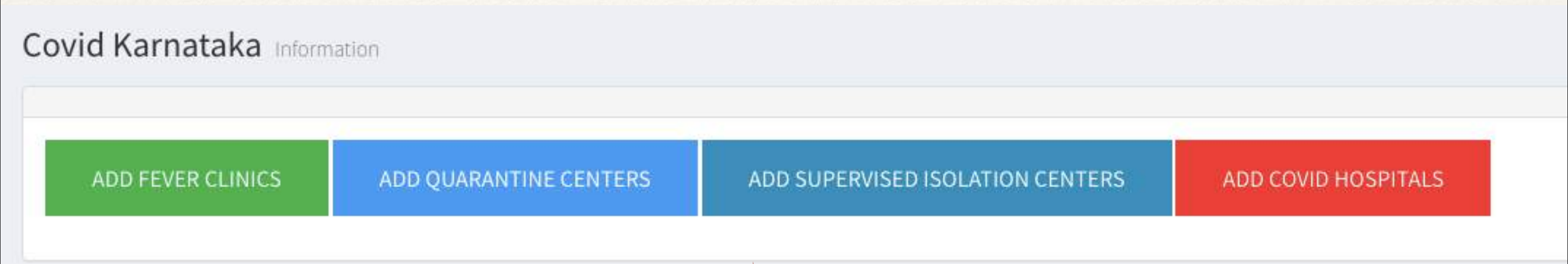
Step1 : Login


https://covid.karnataka.tech/index.php/admin/login
सत्यमेव जयते
Thank You, See You Later !
Please login to start your session
bengaluruurban@user.com
Sign In
Forgot the password ? Click here
Enter Username and password
Then Click Submit

Home Screen / Dashboard

- Upon Successful login, you will see the home screen / Dashboard
- The Main Menu contains Four Buttons to add
  - ADD FEVER CLINICS
  - ADD QUARANTINE CENTRES
  - ADD SUPERVISED ISOLATION CENTRES (SIC)
  - ADD COVID HOSPITALS
- Please see next slide for screen shot

Home Screen / Dashboard



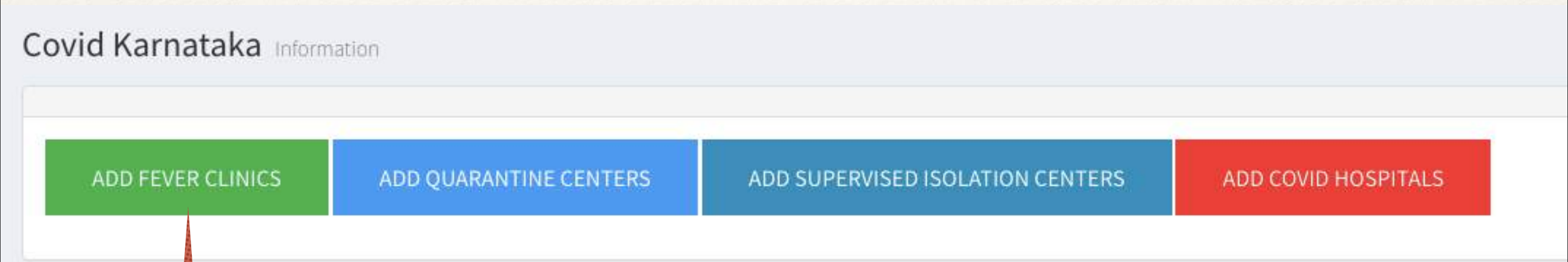
Main Menu with Buttons to Add Facilities

Step 2 : Adding Fever Clinics

Step2 : Add Fever Clinics

- From Home Screen, Click on “ADD FEVER CLINICS”
- Determine if the clinic is for URBAN or RURAL. Choose the right form
- You will see a form with fields. Now Enter :
  - Name of Fever Clinic in English *
  - Address of Fever Clinic in English *
  - Pincode * (6 Digit Pincode)
  - Maximum Number of People Who can be Screened in a Day *
  - Mobile Number of the Person In Charge of fever clinic * (10 Digit mobile number)
  - District *
  - Town * (for URBAN) and Block + Panchayat (for RURAL)
  - Ward (for URBAN) and Village (For RURAL)
- If you click **Save and Add More**, the data will be submitted and you can add more entries
- If you are entering a final fever clinic, you can click **save** ; it will submit the data and you will be able to view all the entries which were submitted
- Please review all the entries for correctness before proceeding

Step2 : Add Fever Clinics

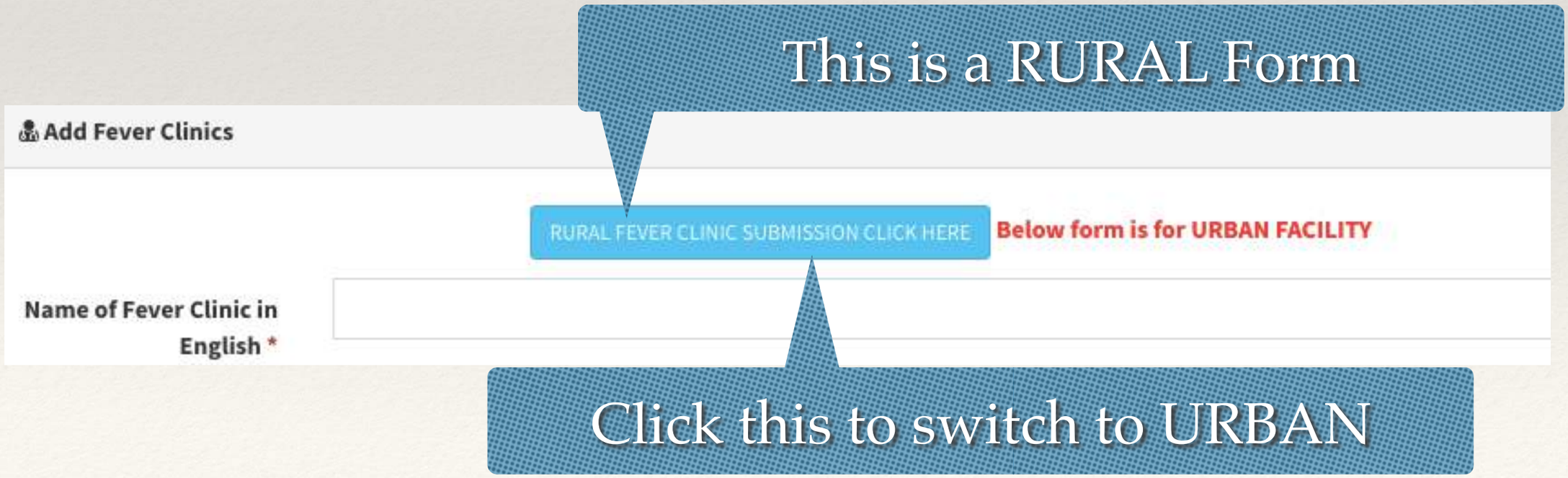


From Home Screen Click “ADD FEVER CLINICS”

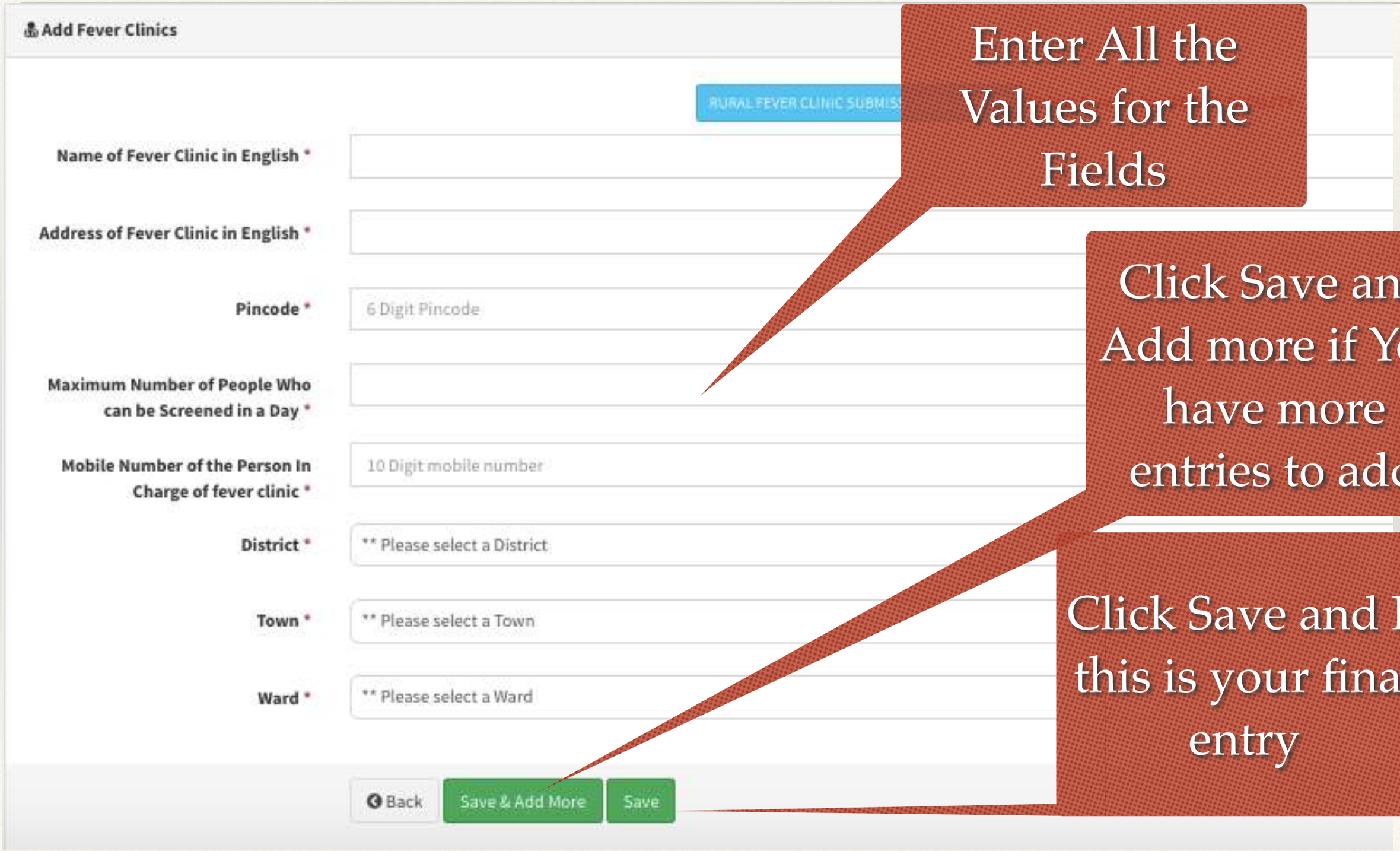
NOTE - RURAL Vs URBAN

- For Each Data Entry, First determine if the facility is for URBAN Jurisdiction or RURAL Jurisdiction
- In each for there is a button to switch between RURAL and URBAN forms

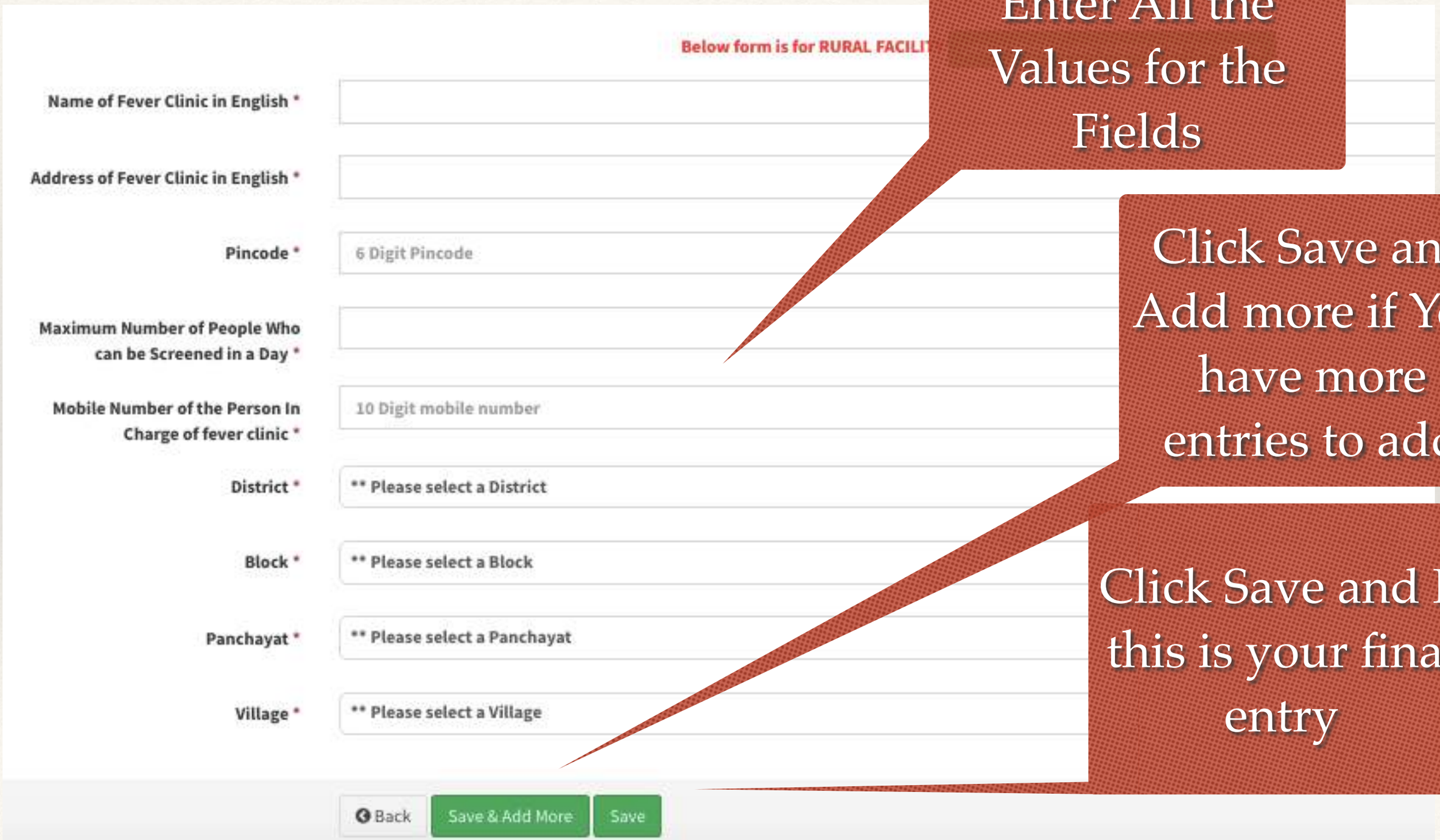
NOTE - RURAL Vs URBAN



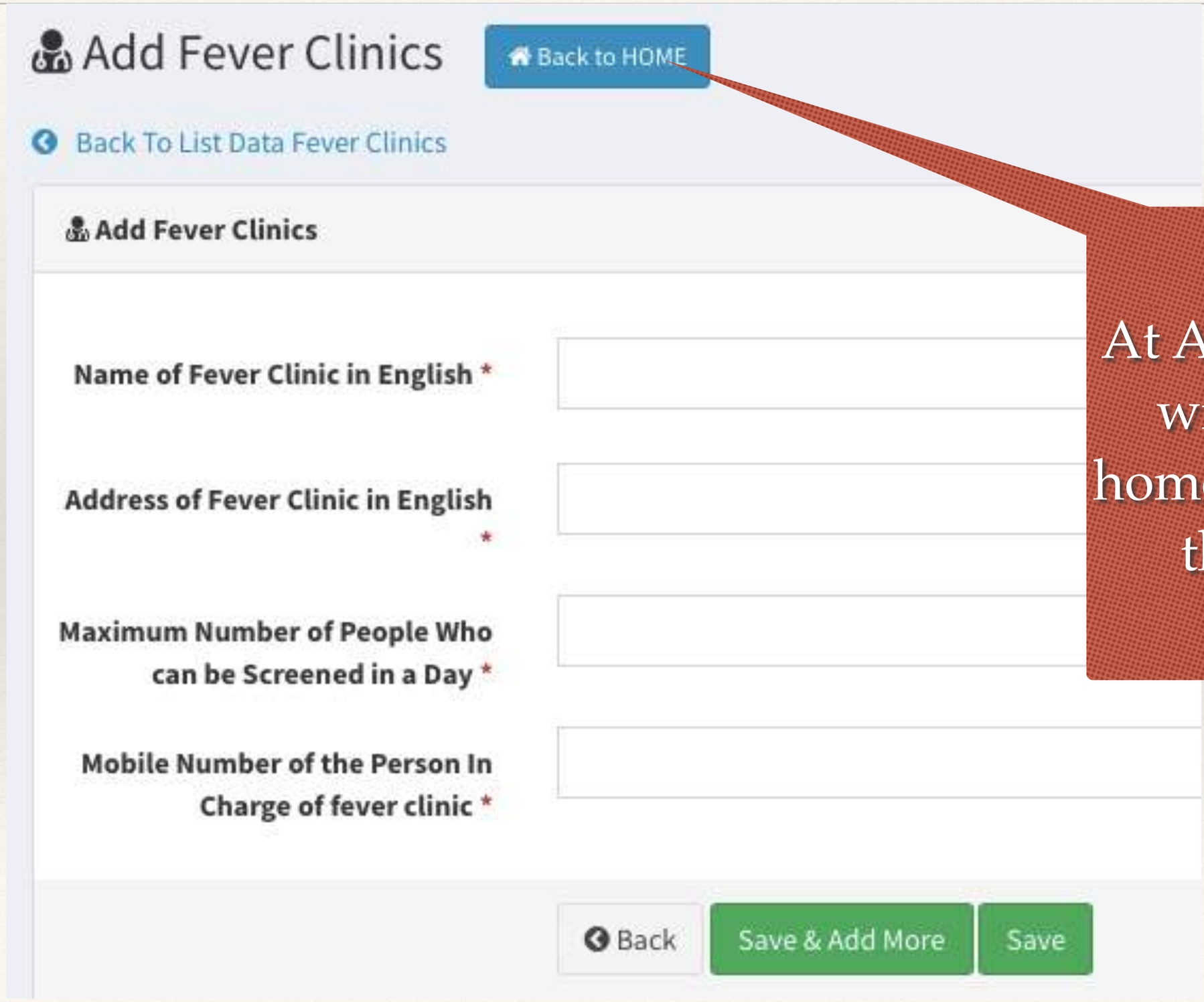
Step2 : Add Fever Clinics - URBAN



Step2 : Add Fever Clinics - RURAL



Step2 : Add Fever Clinics



Step2 : List of Entries

After Submission, you can see the list of entries you made.

To directly add more fever clinics click "ADD DATA"

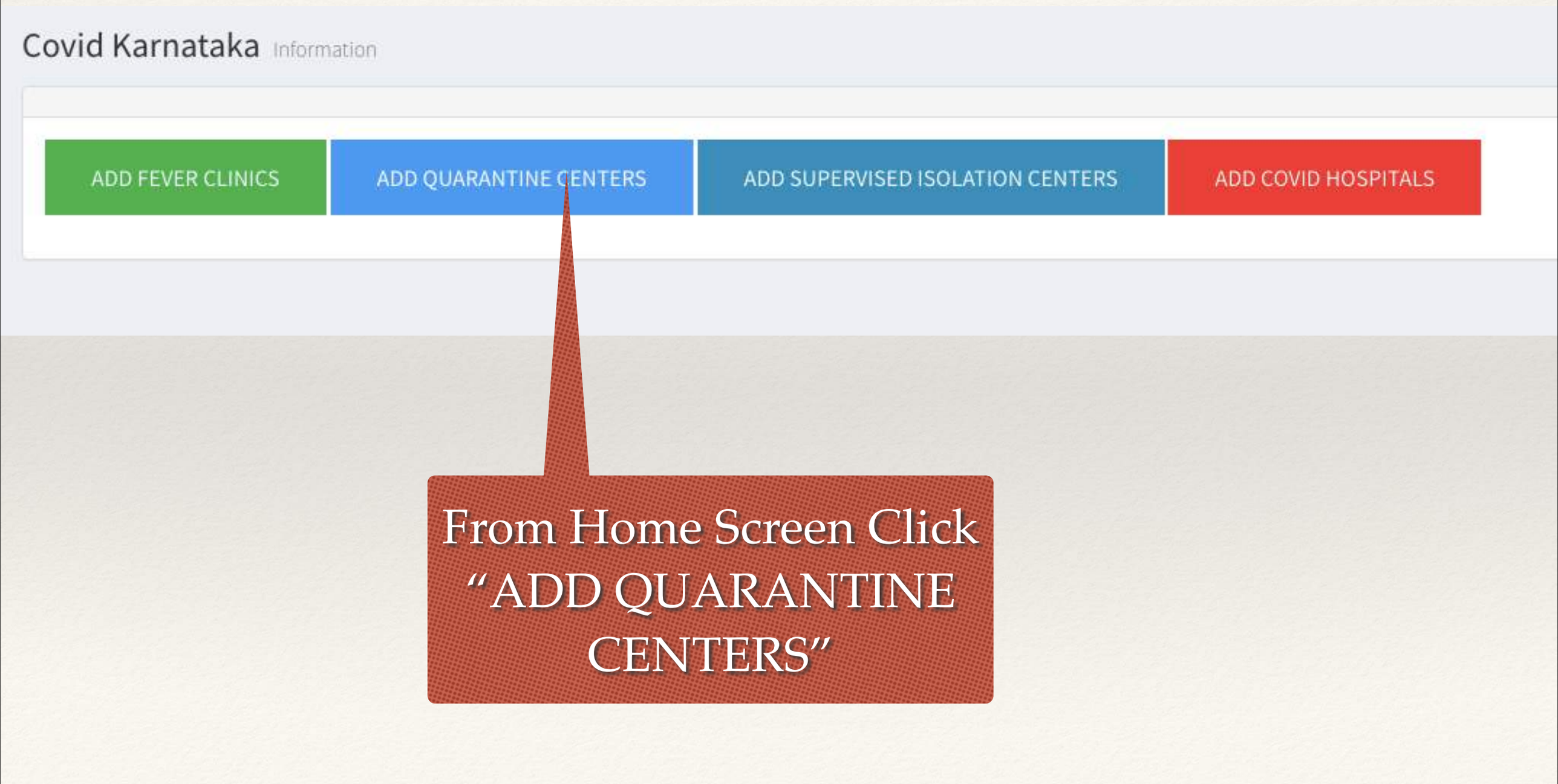
To go back to Home Screen Click this

Step 3 : Adding Quarantine Centres

Step3 : Add Quarantine Centres (QC)

- From Home Screen, Click on “ADD QUARANTINE CENTERS”
- Determine if the clinic is for URBAN or RURAL. Choose the right form
- You will see a form with fields. Now Enter :
  - Name of Quarantine Center in English *
  - Address of Quarantine Center in English *
  - Pincode * (6 Digit Pincode)
  - Total Beds (Maximum) *
  - Phone Number of Person in Charge of Quanrantine Center * (10 Digit mobile number)
  - District *
  - Town * (for URBAN) and Block + Panchayat (for RURAL)
  - Ward (for URBAN) and Village (For RURAL)
- If you click **Save and Add More**, the data will be submitted and you can add more entries
- If you are entering a final Quarantine Centre, you can click **save** ; it will submit the data and you will be able to view all the entries which were submitted
- Please review all the entries for correctness before proceeding

Step3 : Add QUARANTINE CENTERS



NOTE - RURAL Vs URBAN

- For Each Data Entry, First determine if the facility is for URBAN Jurisdiction or RURAL Jurisdiction
- In each for there is a button to switch between RURAL and URBAN forms

NOTE - RURAL Vs URBAN

This is a RURAL Form

RURAL FEVER CLINIC SUBMISSION CLICK HERE

Below form is for URBAN FACILITY

u can only enter the letter only

Click this to switch to URBAN

This is a RURAL Form

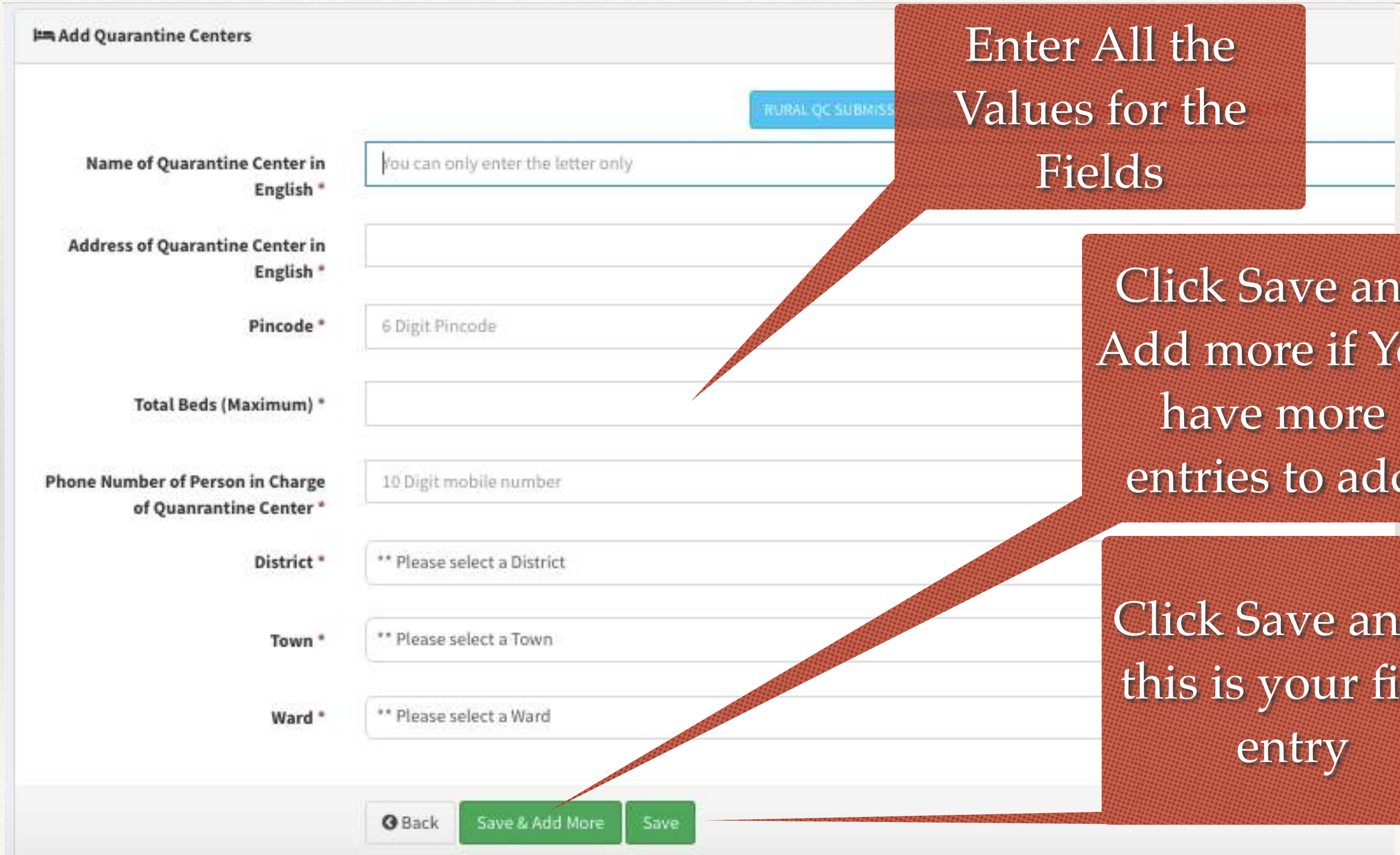
Below form is for RURAL FACILITY

URBAN FEVER CLINIC SUBMISSION CLICK HERE

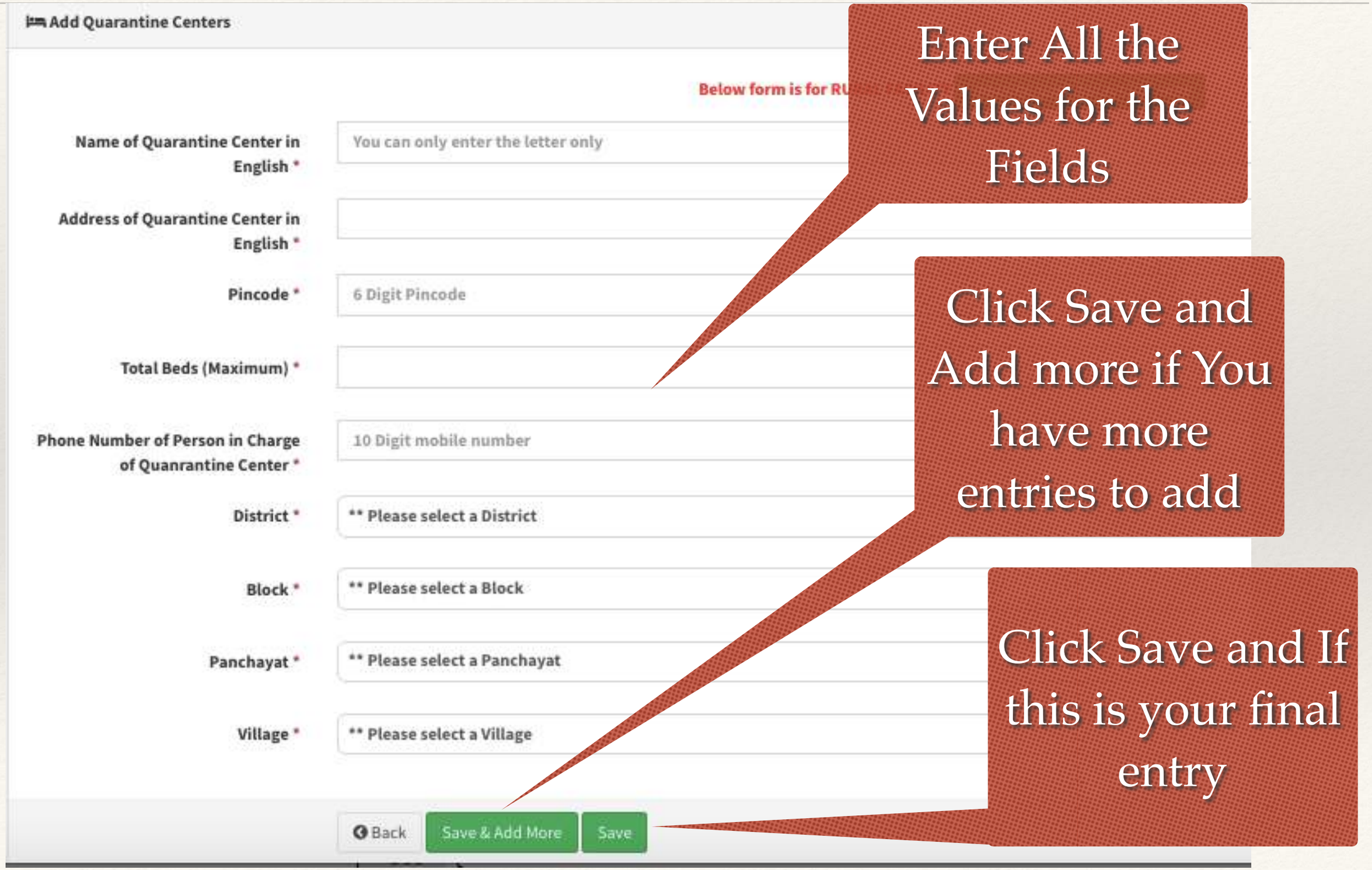
You can only enter the letter only

Click this to switch to URBAN

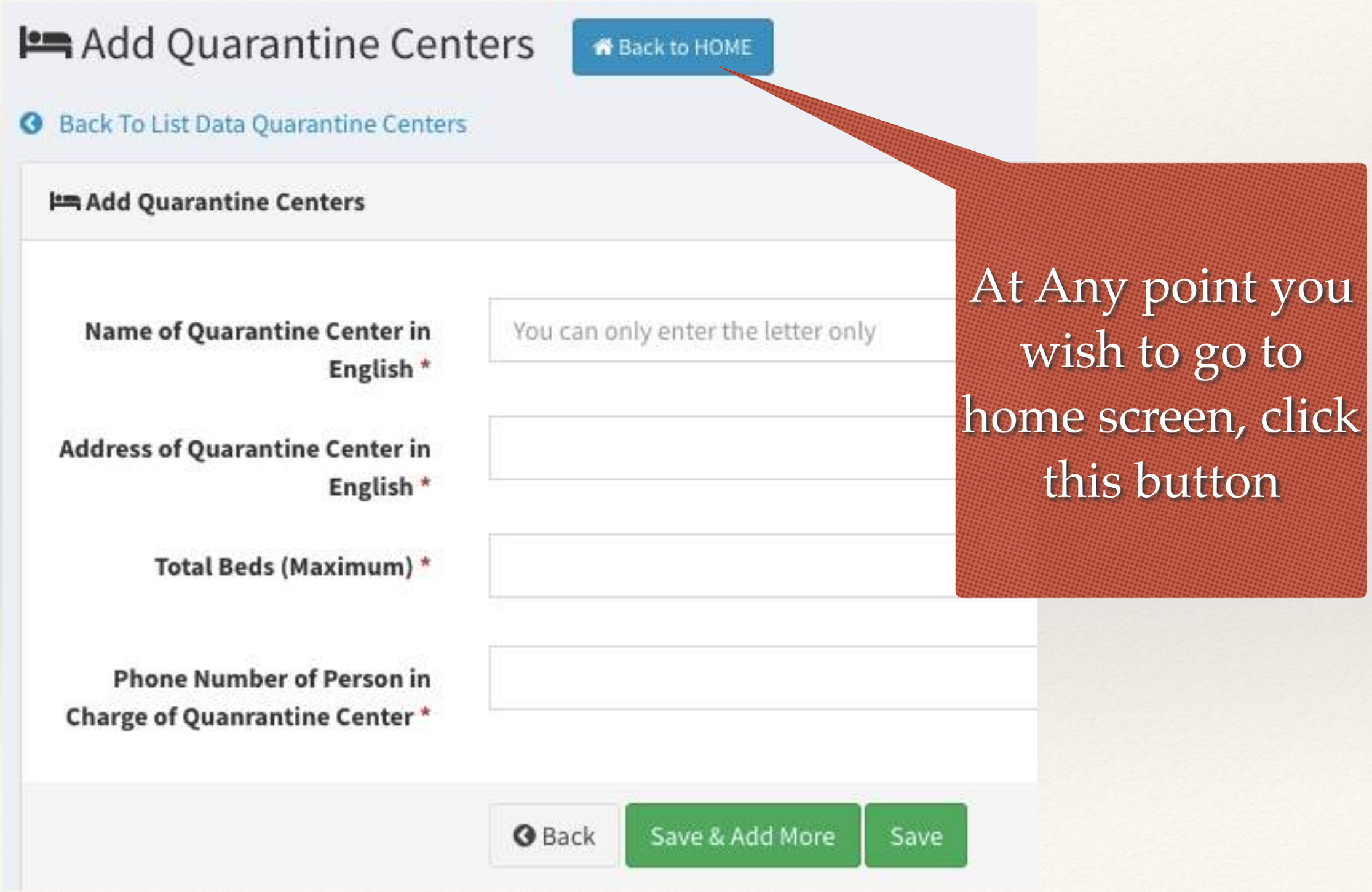
Step3 : Add Quarantine Centres - URBAN



Step3 : Add Quarantine Centres - RURAL

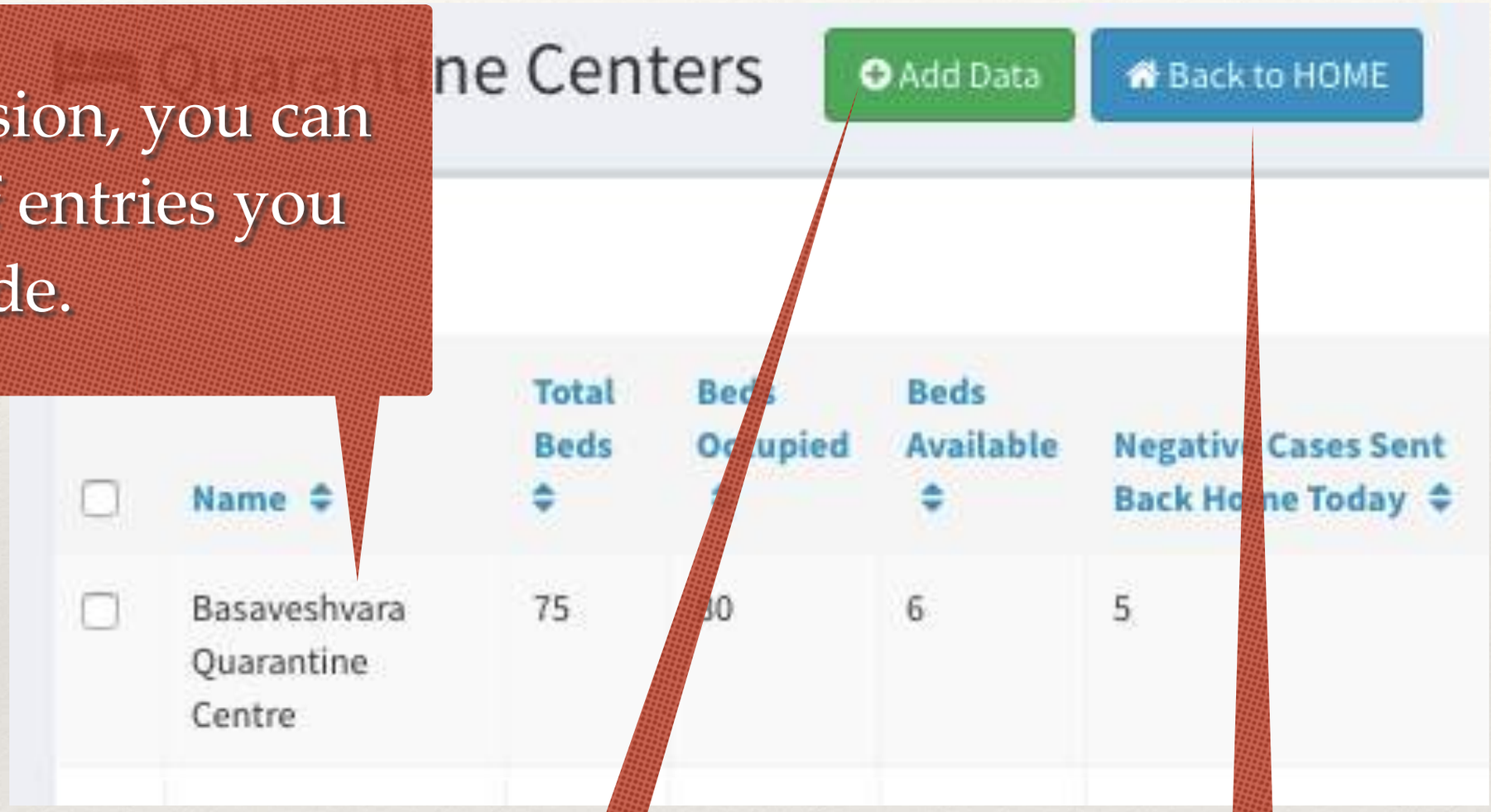


Step3 : Add Quarantine Centres



Step3 : List of Entries

After Submission, you can see the list of entries you made.



To directly add more fever clinics click “ADD DATA”

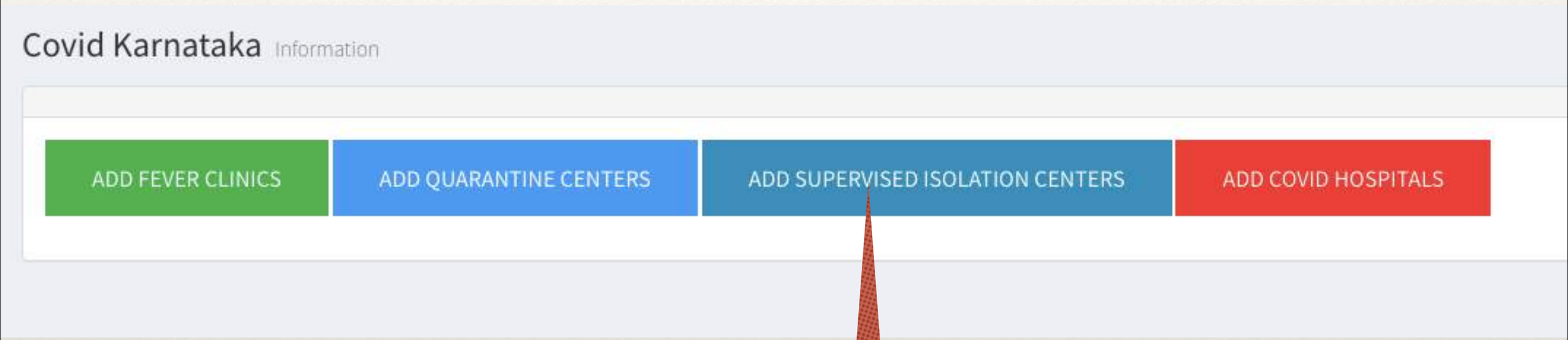
To go back to Home Screen Click this

Step 4 : Adding Supervised Isolation Centres (SICs)

Step4 : Add Supervised Isolation Centres (SIC)

- From Home Screen, Click on “ADD SUPERVISED ISOLATION CENTERS”
- Determine if the clinic is for URBAN or RURAL. Choose the right form
- You will see a form with fields. Now Enter :
  - Name of SIC in English *
  - Address of SIC in English *
  - Pincode * (6 Digit Pincode)
  - Total Beds (Maximum) *
  - Phone number of person in charge of SIC * (10 Digit mobile number)
  - District *
  - Town * (for URBAN) and Block + Panchayat (for RURAL)
  - Ward (for URBAN) and Village (For RURAL)
- If you click **Save and Add More**, the data will be submitted and you can add more entries
- If you are entering a final SIC, you can click **save** ; it will submit the data and you will be able to view all the entries which were submitted
- Please review all the entries for correctness before proceeding

Step4 : Add SPECIALISED ISOLATION CENTRES



From Home Screen Click "ADD SPECIALISED ISOLATION CENTRES"

NOTE - RURAL Vs URBAN

- For Each Data Entry, First determine if the facility is for URBAN Jurisdiction or RURAL Jurisdiction
- In each for there is a button to switch between RURAL and URBAN forms

NOTE - RURAL Vs URBAN

This is a RURAL Form

RURAL FEVER CLINIC SUBMISSION CLICK HERE

Below form is for URBAN FACILITY

u can only enter the letter only

Click this to switch to URBAN

This is a RURAL Form

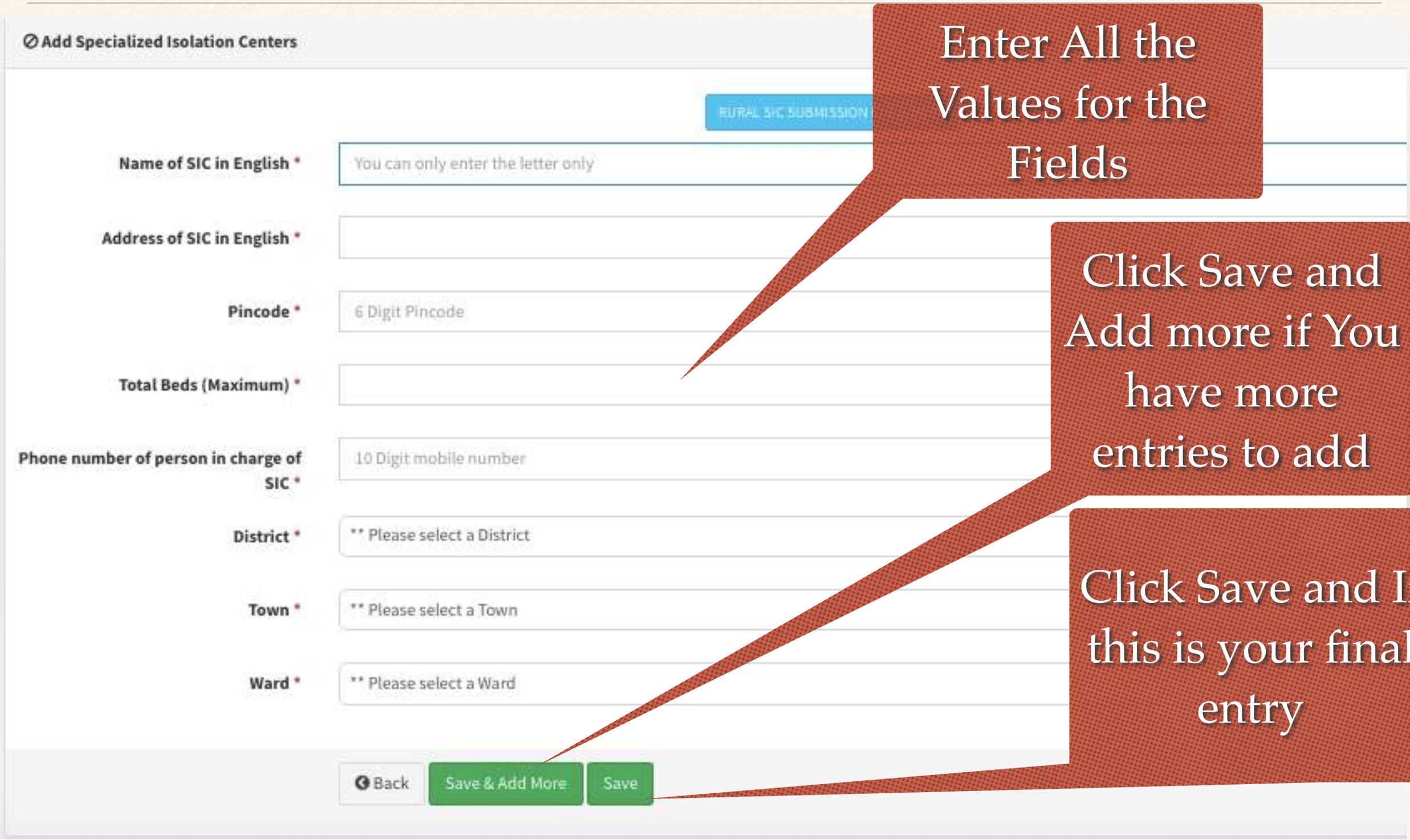
Below form is for RURAL FACILITY

URBAN FEVER CLINIC SUBMISSION CLICK HERE

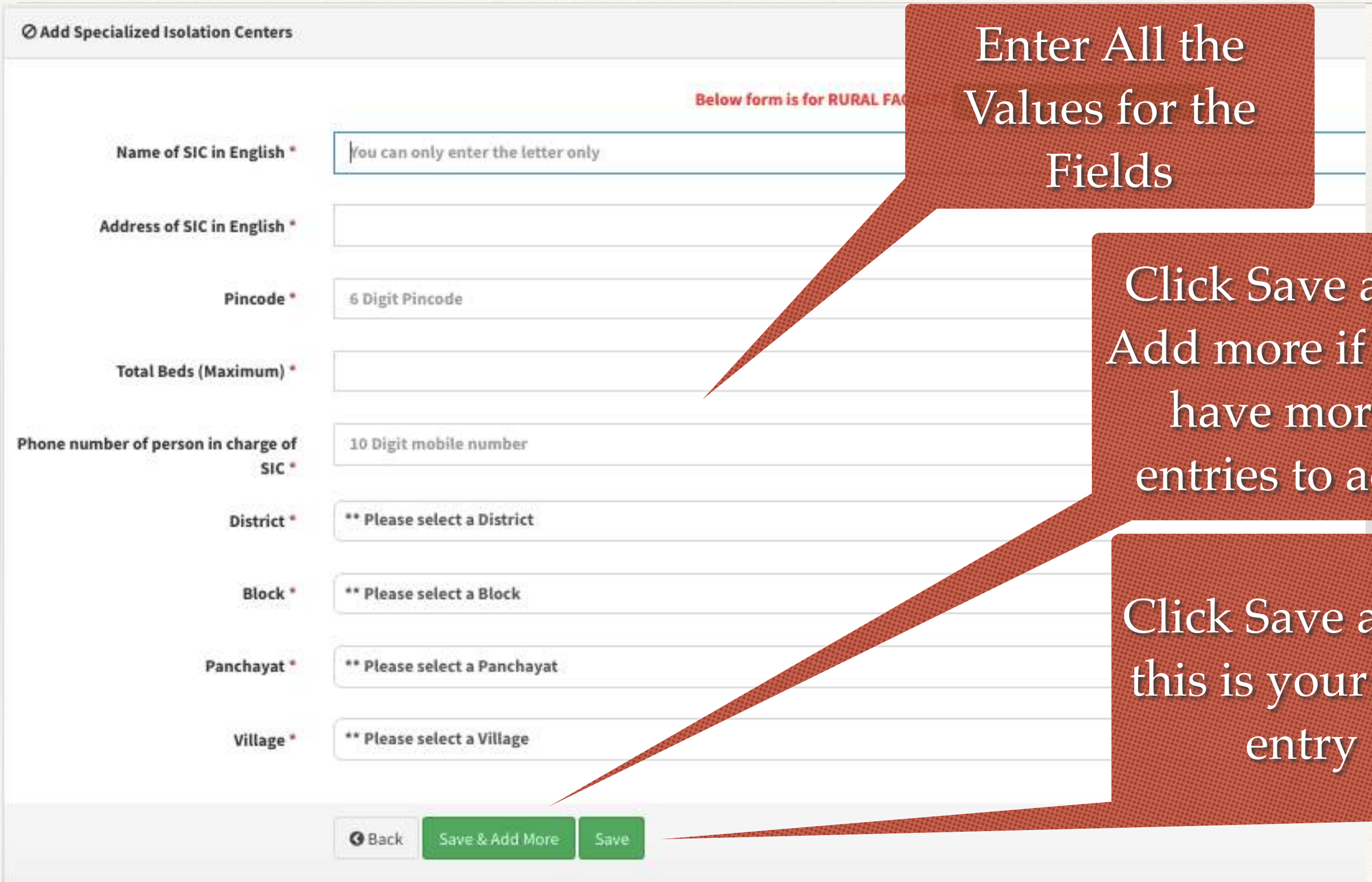
You can only enter the letter only

Click this to switch to URBAN

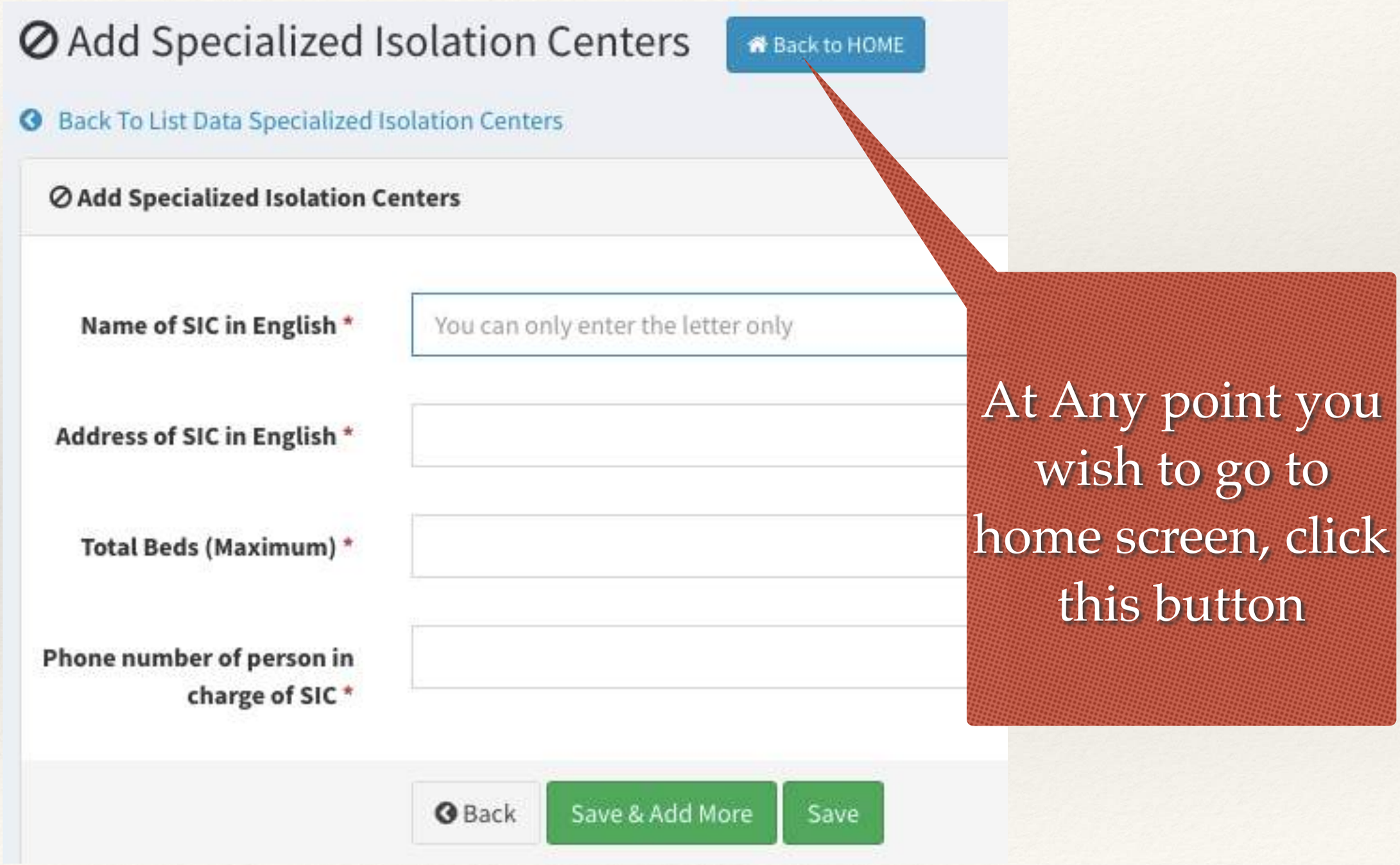
Step4 : Add SIC - URBAN



Step4 : Add SIC - RURAL

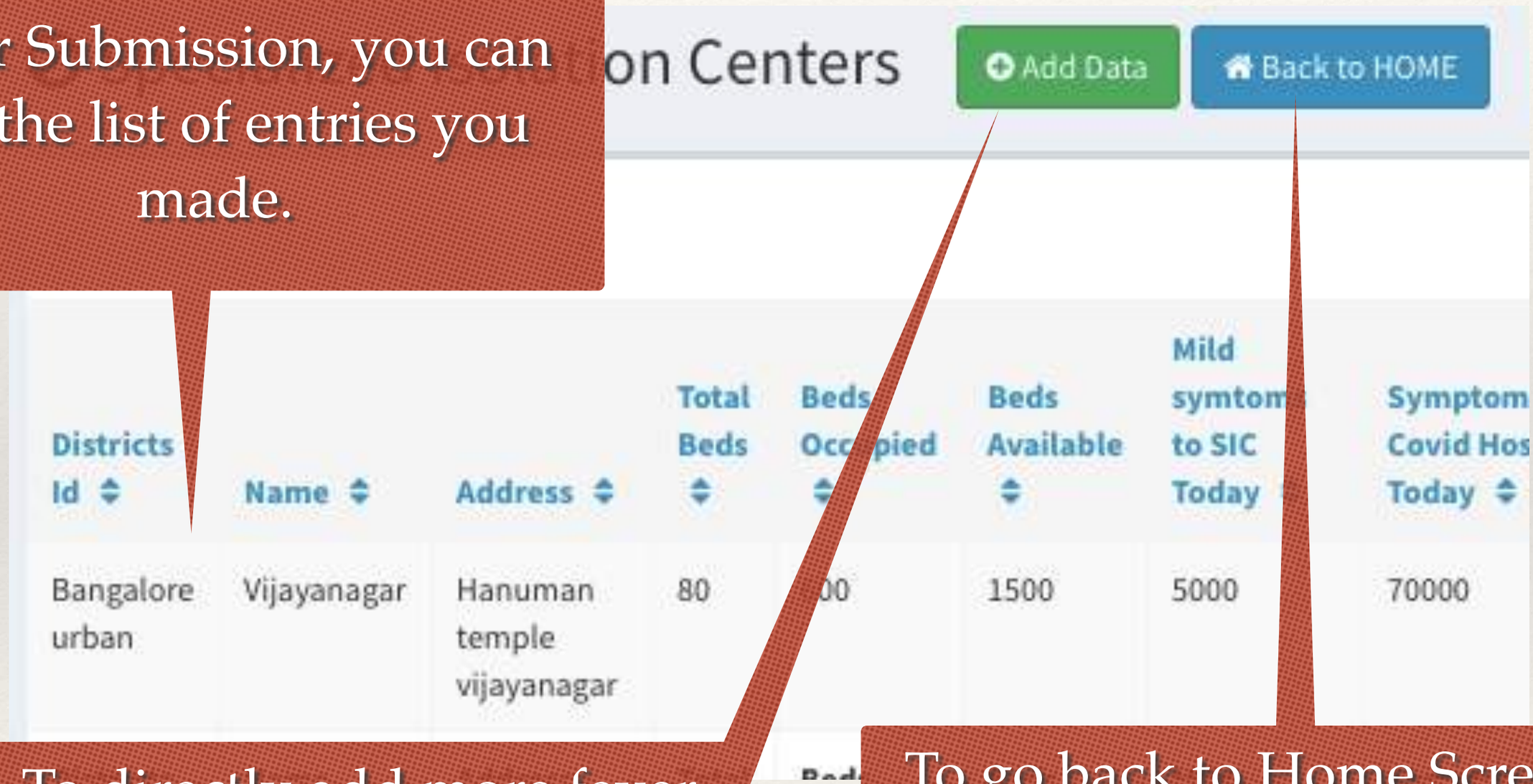


Step4 : Add SIC



Step4 : List of Entries

After Submission, you can see the list of entries you made.



To directly add more fever clinics click “ADD DATA”

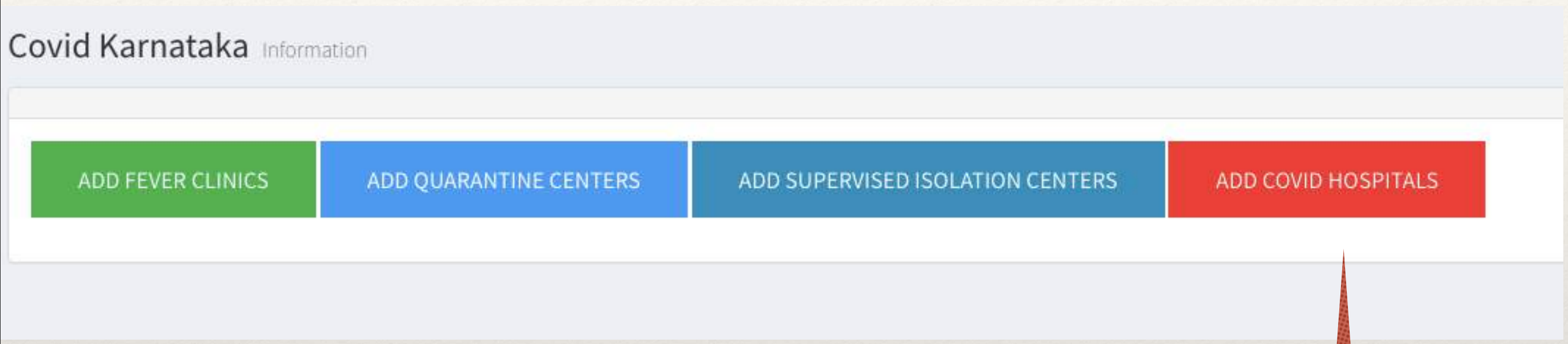
To go back to Home Screen Click this

Step 5 : Adding Covid Hospitals

Step5 : Add Covid Hospitals

- From Home Screen, Click on “ADD COVID HOSPITALS”
- Determine if the clinic is for URBAN or RURAL. Choose the right form
- You will see a form with fields. Now Enter :
  - Name of Covid Hospital in English *
  - Address of Covid Hospital in English *
  - Pincode * (6 Digit Pincode)
  - Total Beds (Maximum) *
  - Mobile Number of the Person in Charge of the Covid Hospital * (10 Digit mobile number)
  - District *
  - Town * (for URBAN) and Block + Panchayat (for RURAL)
  - Ward (for URBAN) and Village (For RURAL)
- If you click **Save and Add More**, the data will be submitted and you can add more entries
- If you are entering a final Covid Hospital, you can click **save** ; it will submit the data and you will be able to view all the entries which were submitted
- Please review all the entries for correctness before proceeding

Step5 : Add COVID HOSPITALS



From Home Screen Click "ADD COVID HOSPITALS"

NOTE - RURAL Vs URBAN

- For Each Data Entry, First determine if the facility is for URBAN Jurisdiction or RURAL Jurisdiction
- In each for there is a button to switch between RURAL and URBAN forms

NOTE - RURAL Vs URBAN

This is a RURAL Form

RURAL FEVER CLINIC SUBMISSION CLICK HERE

Below form is for URBAN FACILITY

u can only enter the letter only

Click this to switch to URBAN

This is a RURAL Form

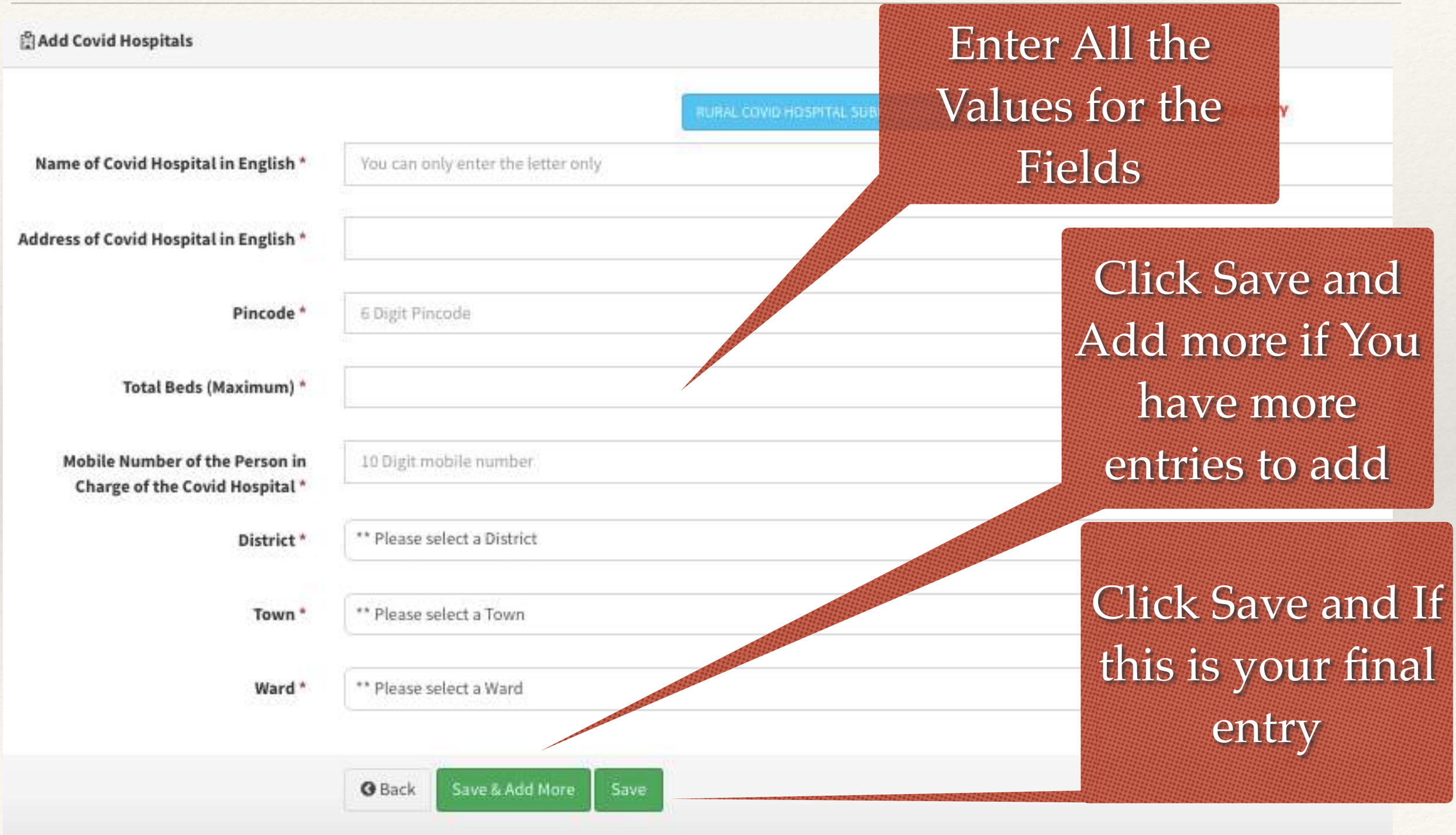
Below form is for RURAL FACILITY

URBAN FEVER CLINIC SUBMISSION CLICK HERE

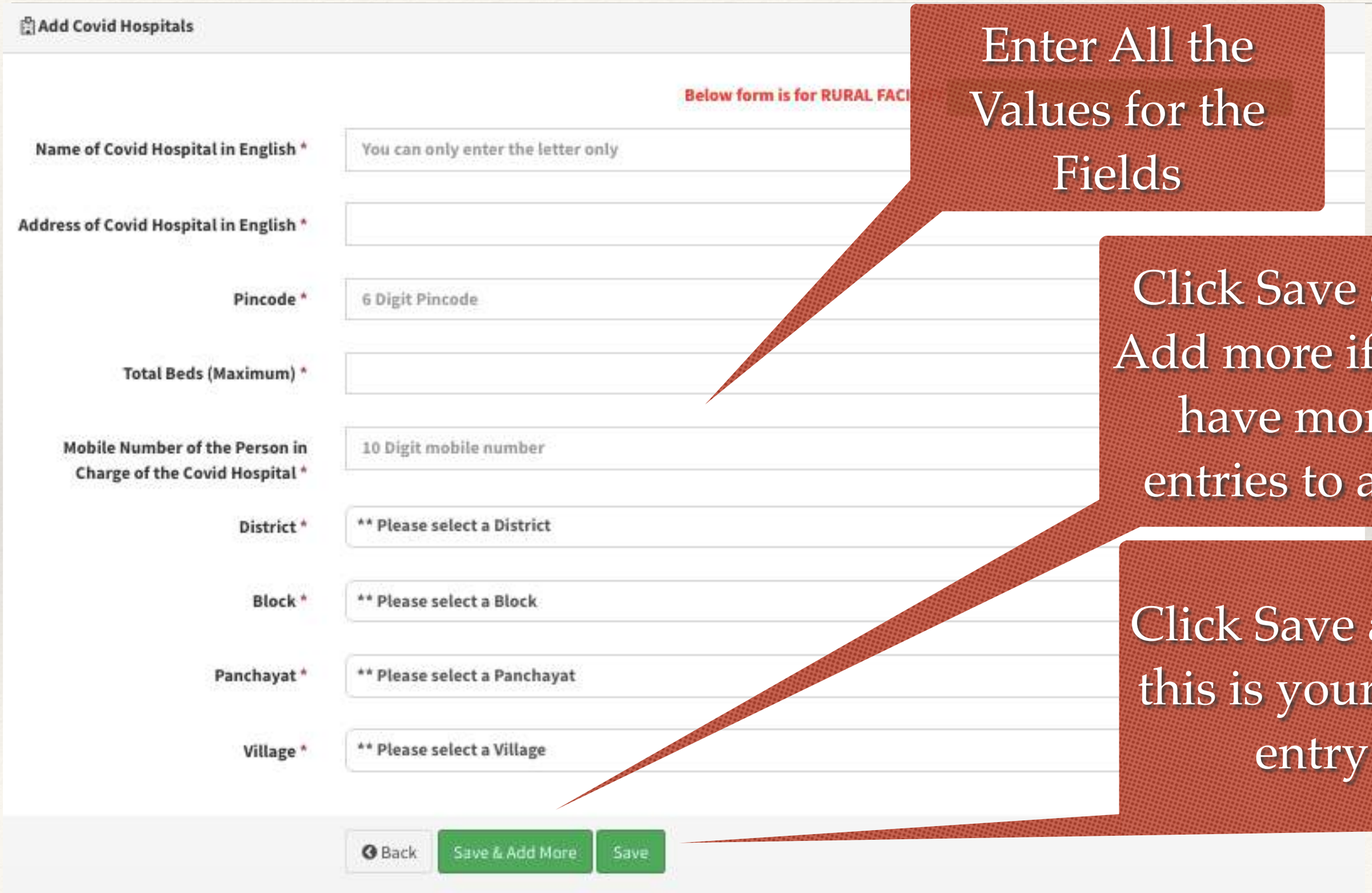
You can only enter the letter only

Click this to switch to URBAN

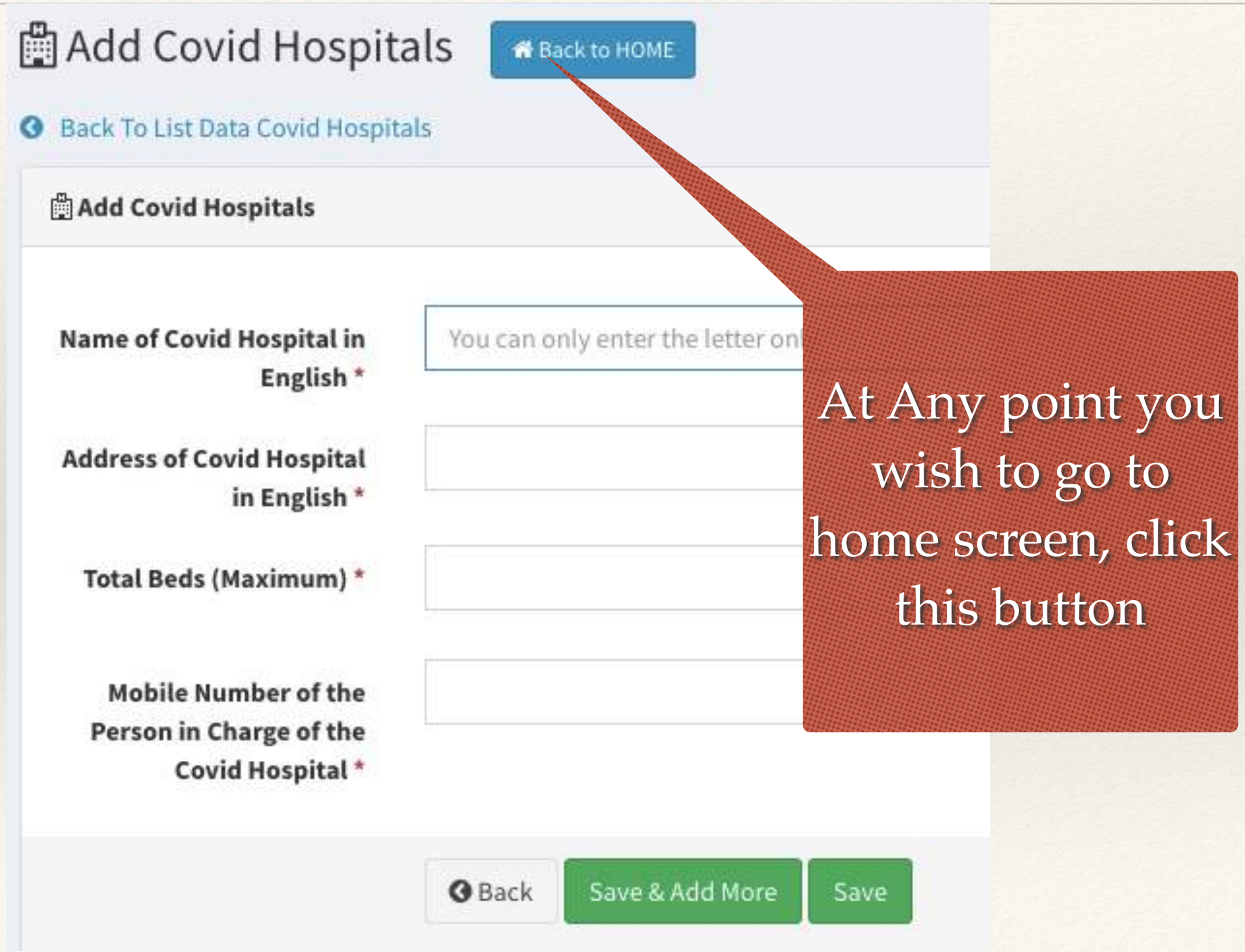
Step5 : Add COVID HOSPITALS - URBAN



Step5 : Add COVID HOSPITALS - RURAL



Step5 : Add COVID HOSPITALS

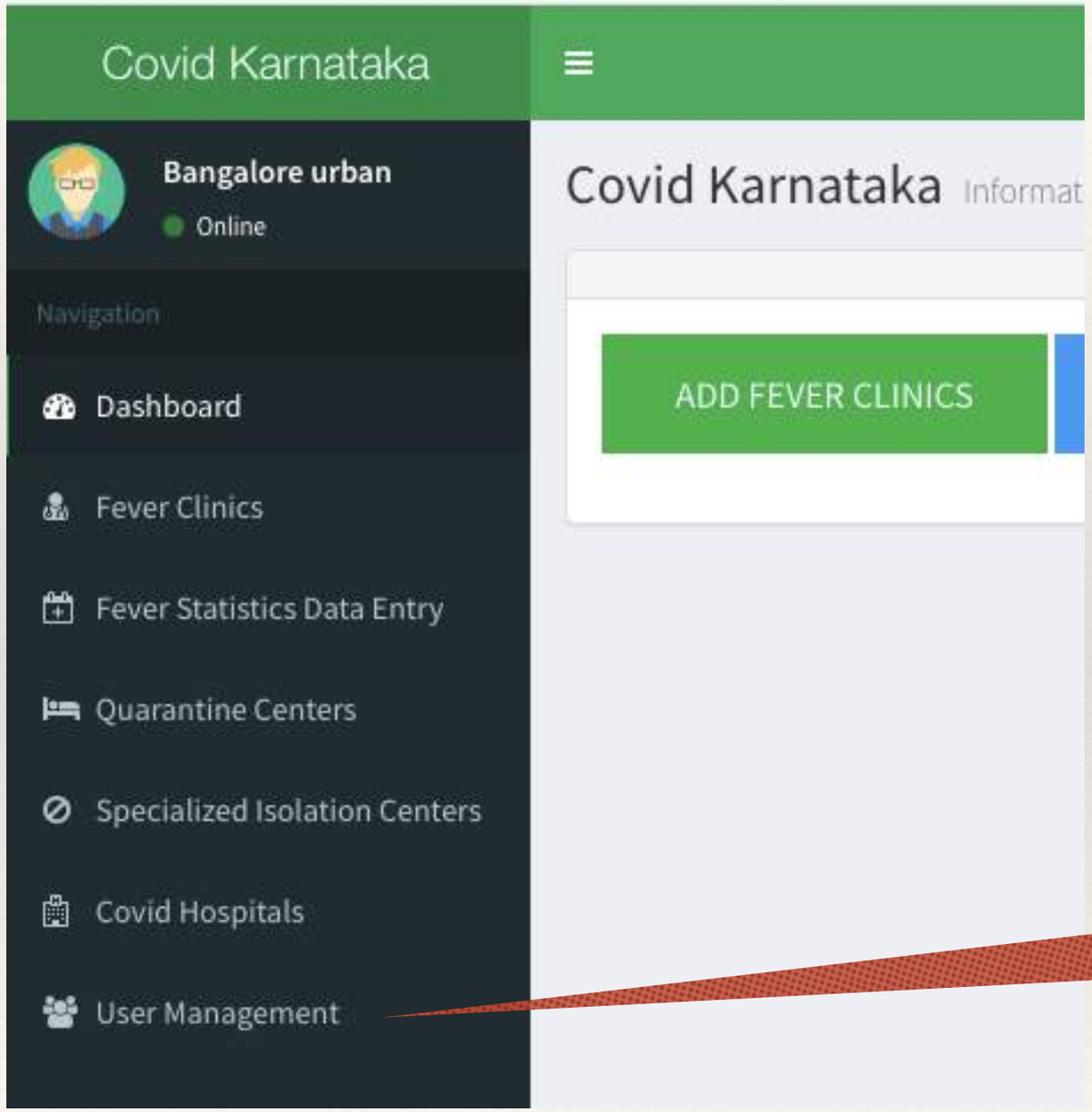


Step 6 : Assigning Users to Fever Clinics

Step6 : User Management

- In the Menu Drawer  there is a “user management” option. Click the same
- You will see the list of existing users
- Use Add data to add a new user. Enter the following
  - Name * (Name of user)
  - Email * (***Will be the login username***)
  - Fever Clinic Restriction * (Assign the fever clinic)
  - Password (Set a password)

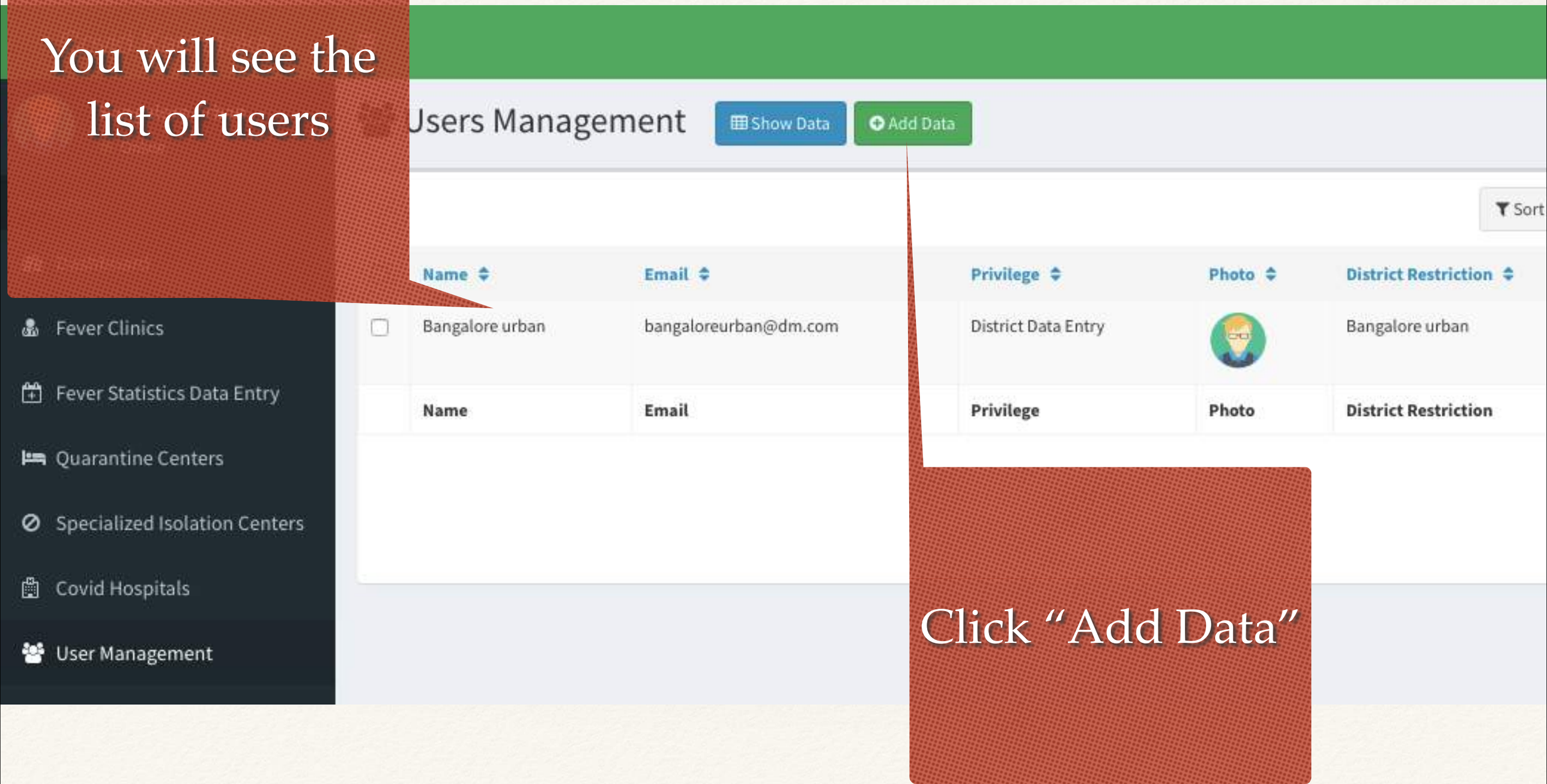
Step6 : User Management



Click User Management

Step6 : User Management

You will see the list of users



Click “Add Data”

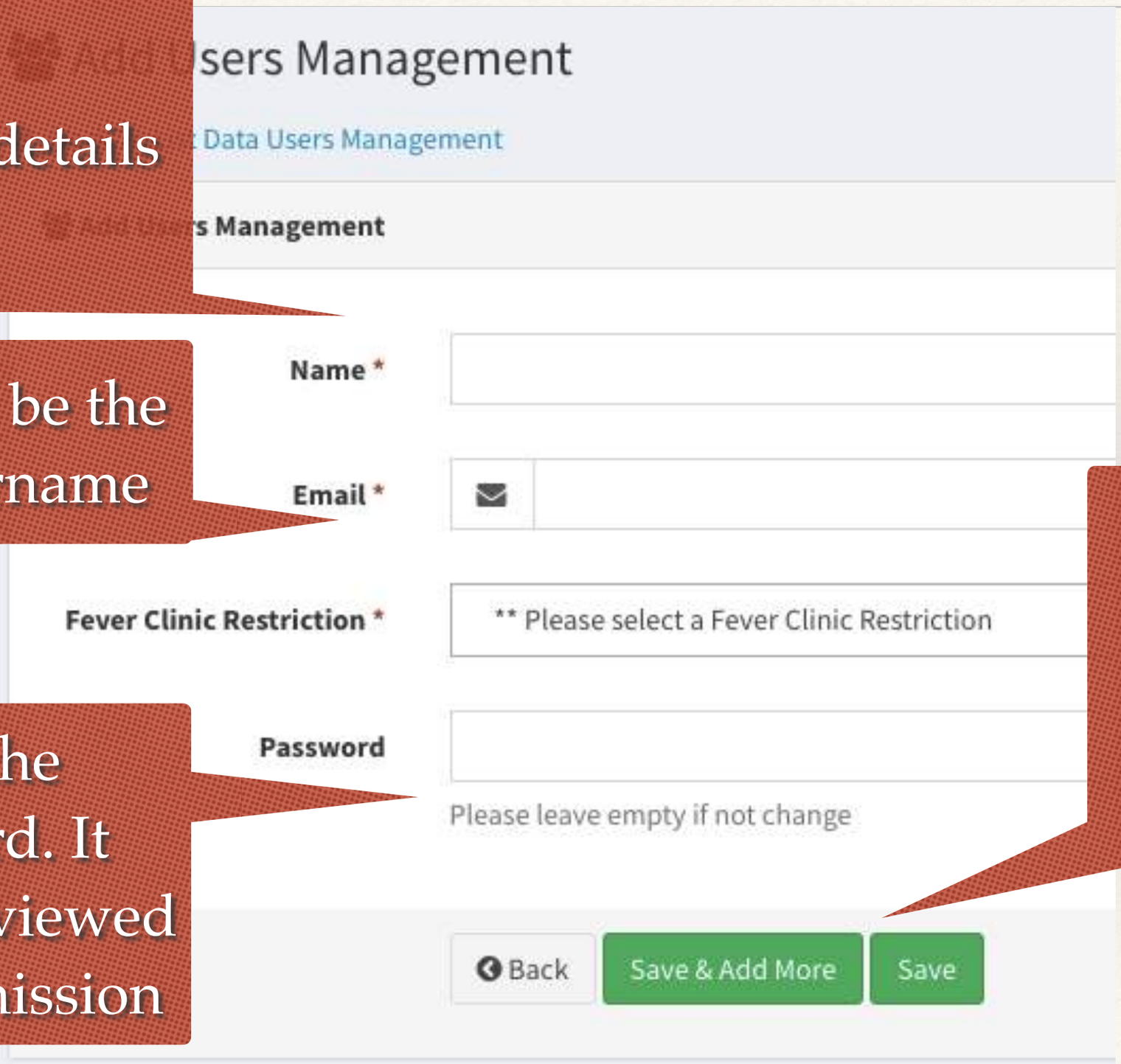
Step6 : User Management

Enter the details

Email will be the login username

Note the password. It cannot be viewed after submission

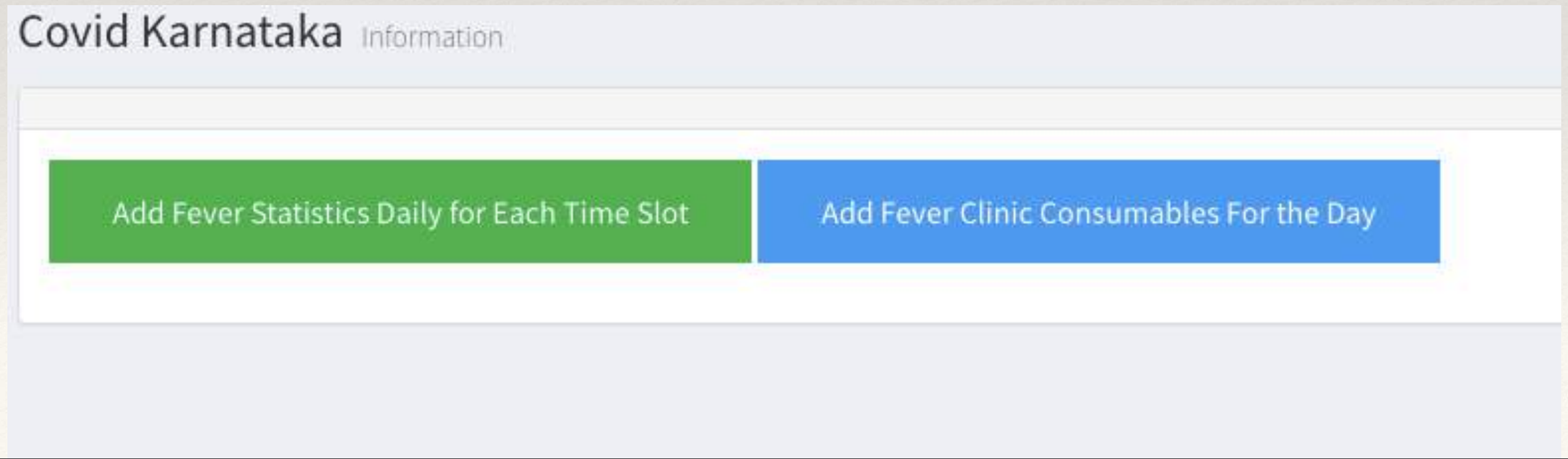
Click “save”



Step 7 : Fever Clinic Statistics Data Entry

Step7 : Fever Clinic Statistics

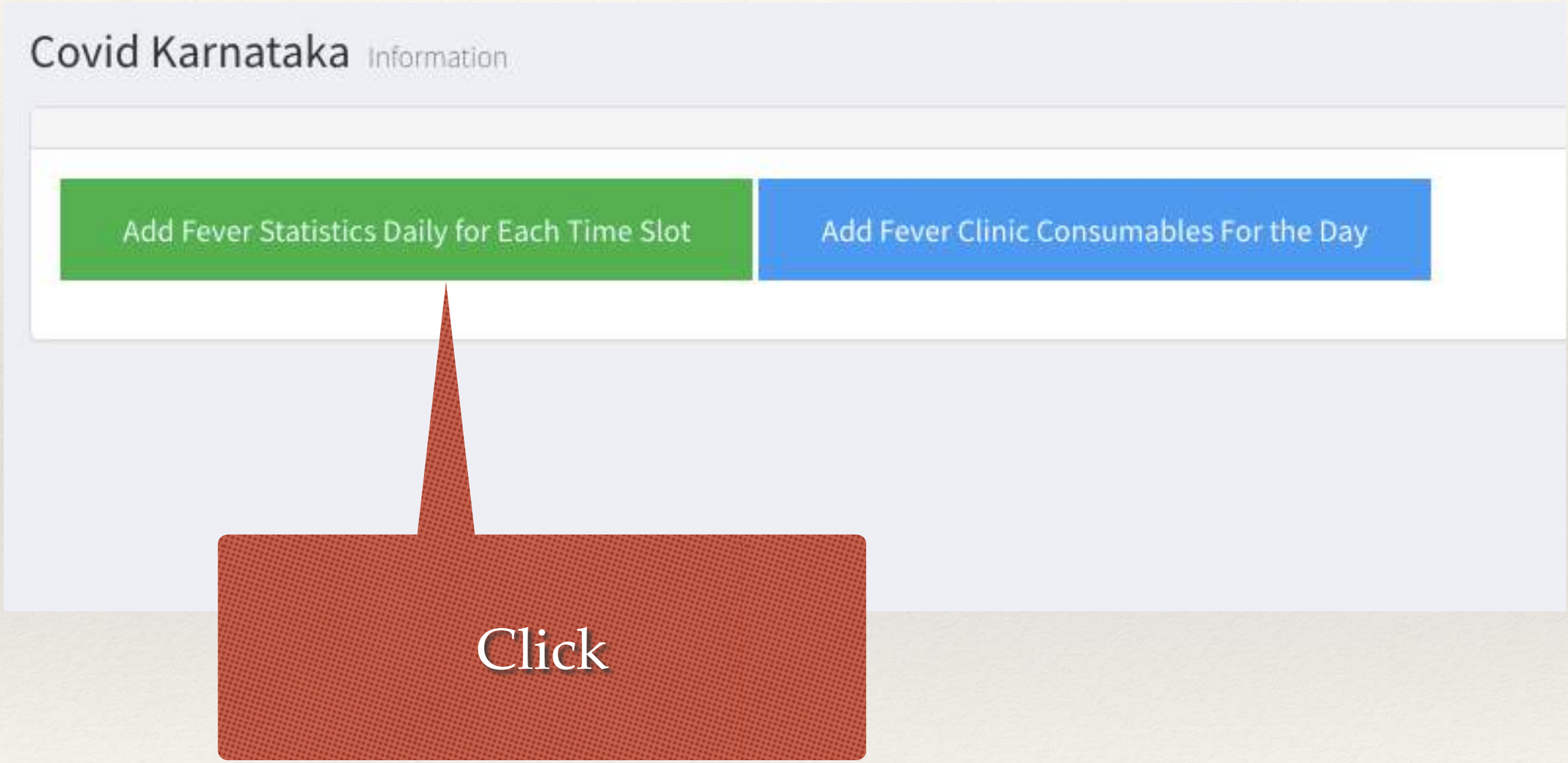
- This data entry is for fever clinic users
- There are two forms to be submitted and will appear as soon as fever clinic user logs in



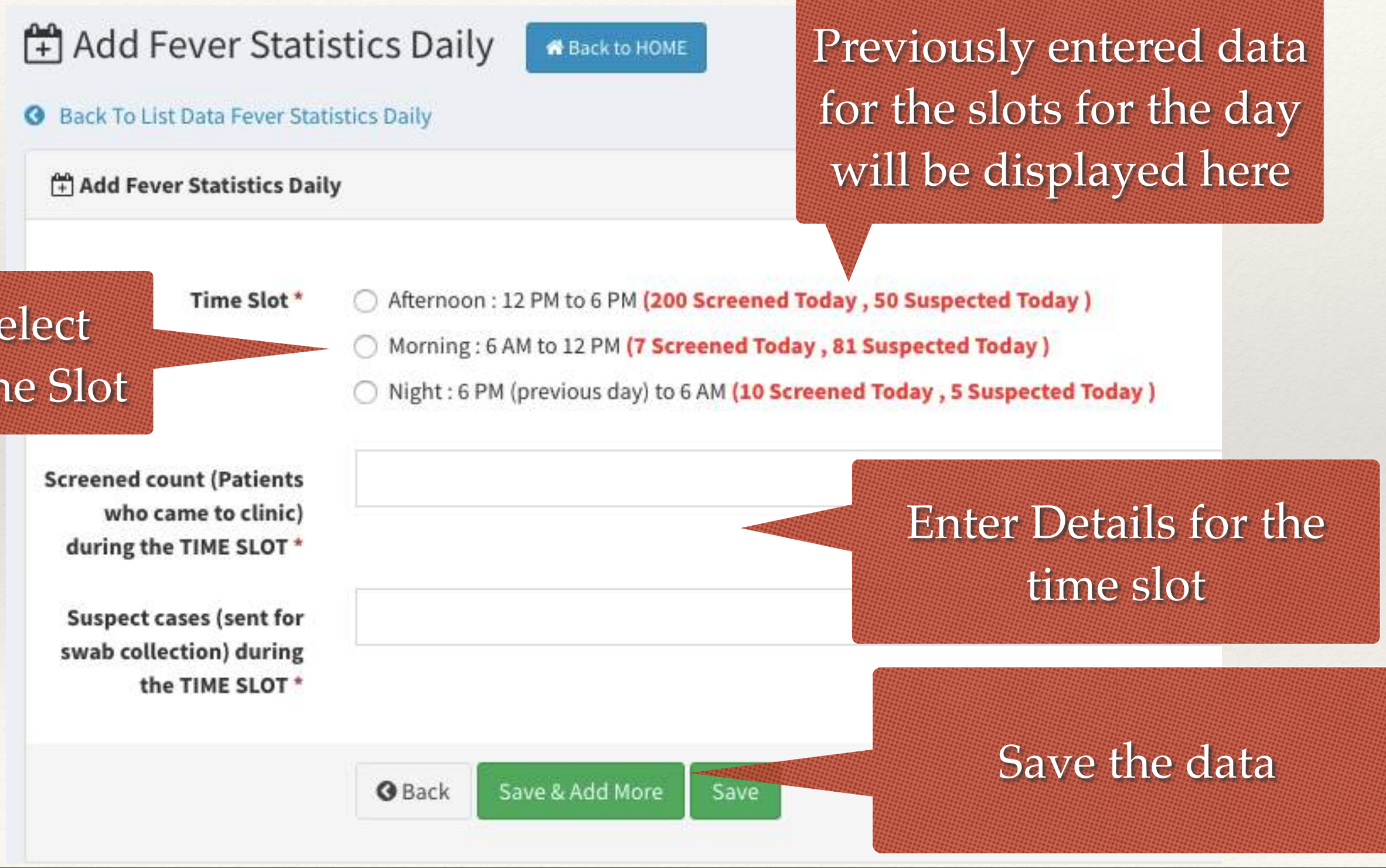
Submitting Fever Clinic Statistics

- Click on "**Add Fever Statistics Daily for Each Time Slot**" button. Enter the following details and submit
- Select the timeslot (morning / Afternoon / Night)
  - Afternoon : 12 PM to 6 PM
  - Morning : 6 AM to 12 PM
  - Night : 6 PM (previous day) to 6 AM (today)
- Screened count (Patients who came to clinic) **during the TIME SLOT** *
- Suspect cases (sent for swab collection) **during the TIME SLOT** *
- **The data has to be entered for the time slot and not total for the day**
- **If you wish to correct the information, you can resubmit the form with correct details for the slot you wish to correct**

Submitting Fever Clinic Statistics

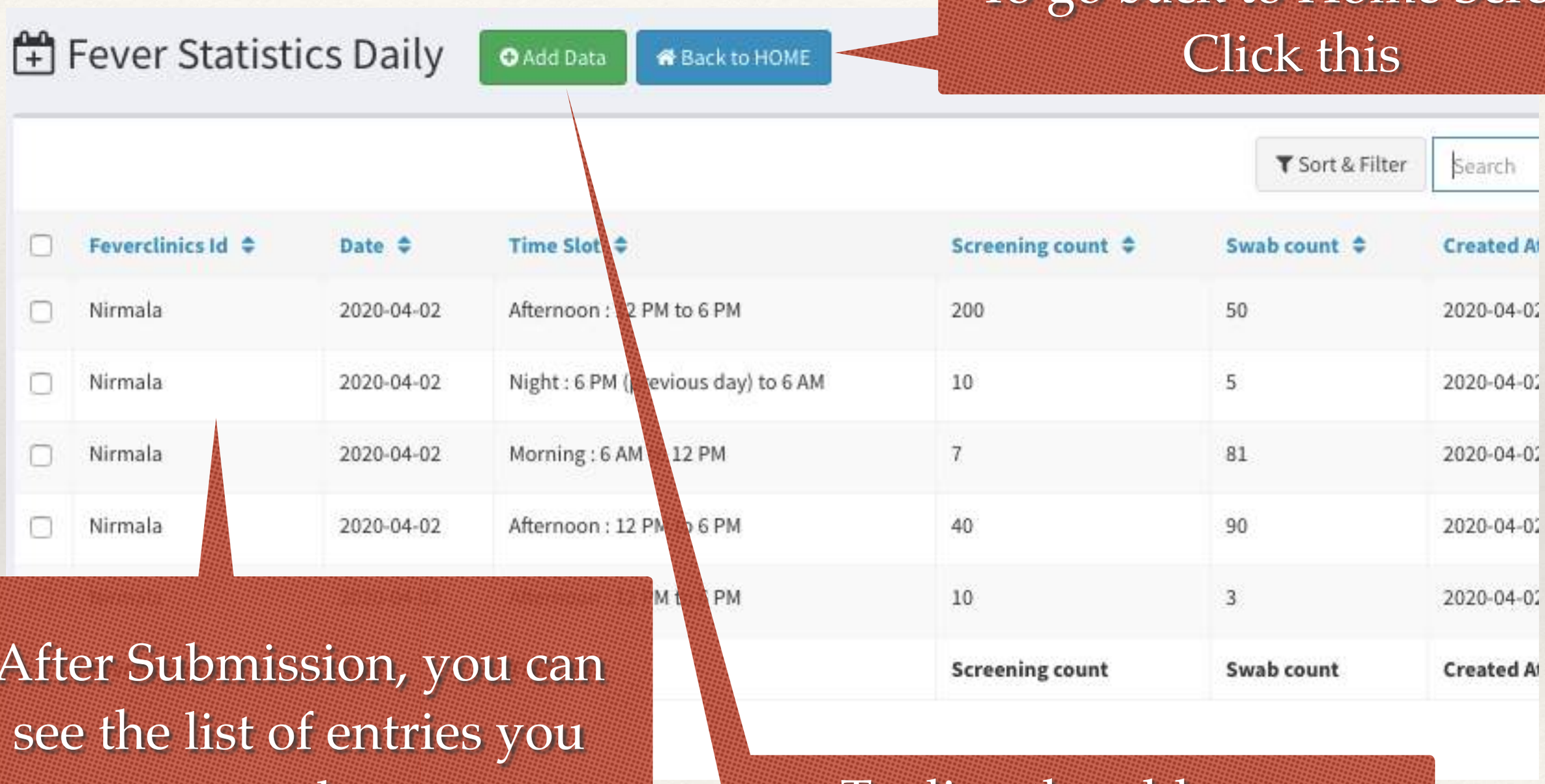


Submitting Fever Clinic Statistics



Submitting Fever Clinic Statistics

To go back to Home Screen Click this



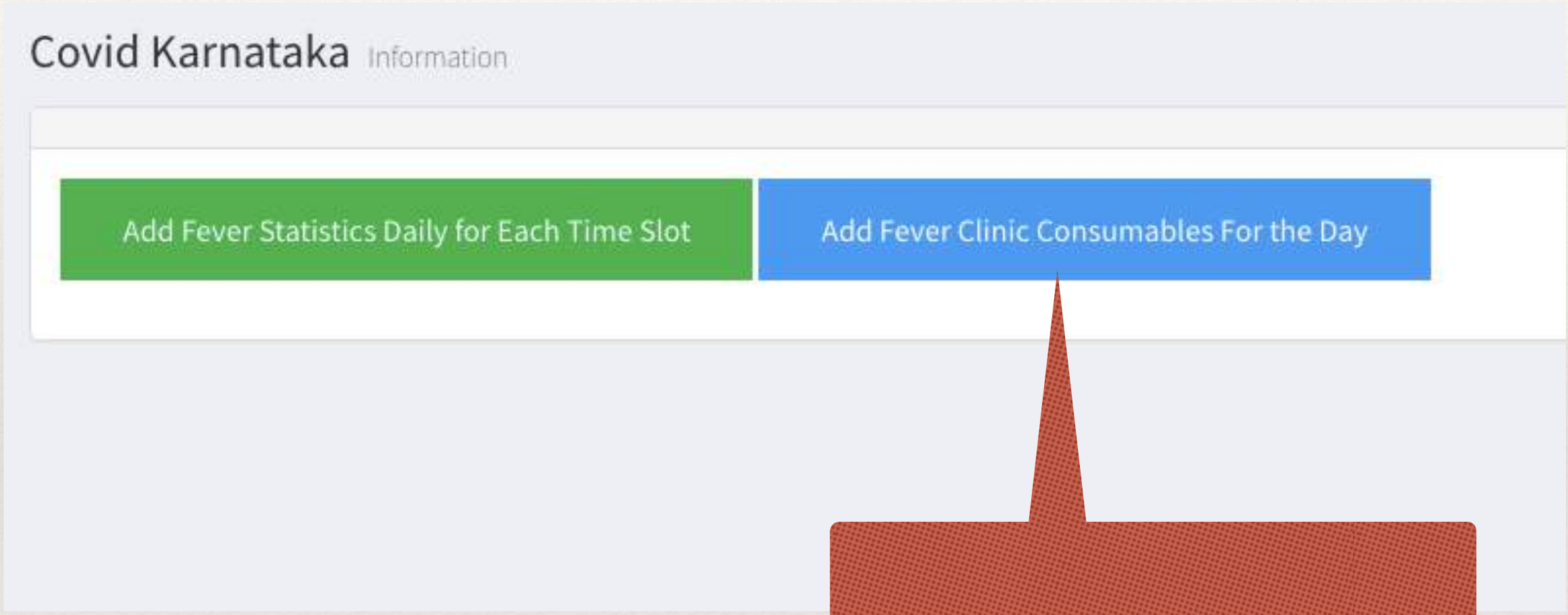
After Submission, you can see the list of entries you made.

To directly add more statistics”

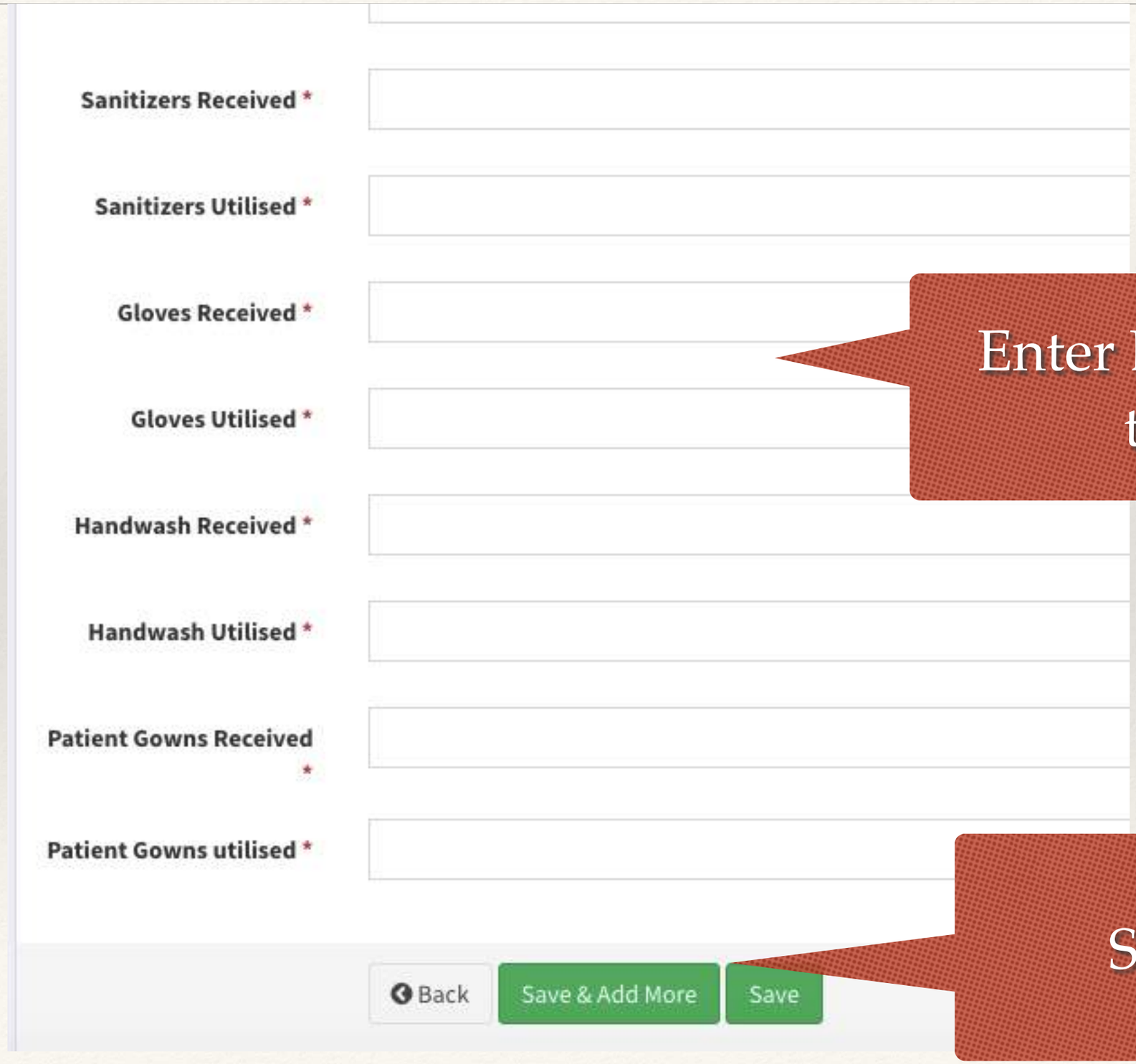
Submitting Fever Clinic Consumables

- Click on "**Add Fever Clinic Consumables For the Day**" button. Enter the following details and submit
  - N95 Masks Received *
  - N95 Masks Utilised *
  - Sanitizers Received *
  - Sanitizers Utilised *
  - Gloves Received *
  - Gloves Utilised *
  - Handwash Received *
  - Handwash Utilised *
  - Patient Gowns Received *
  - Patient Gowns utilised *
- **The data has to be entered for as total for the day (End of Day Report)**
- **If you wish to correct the information, you can resubmit the form with correct details for the slot you wish to correct**

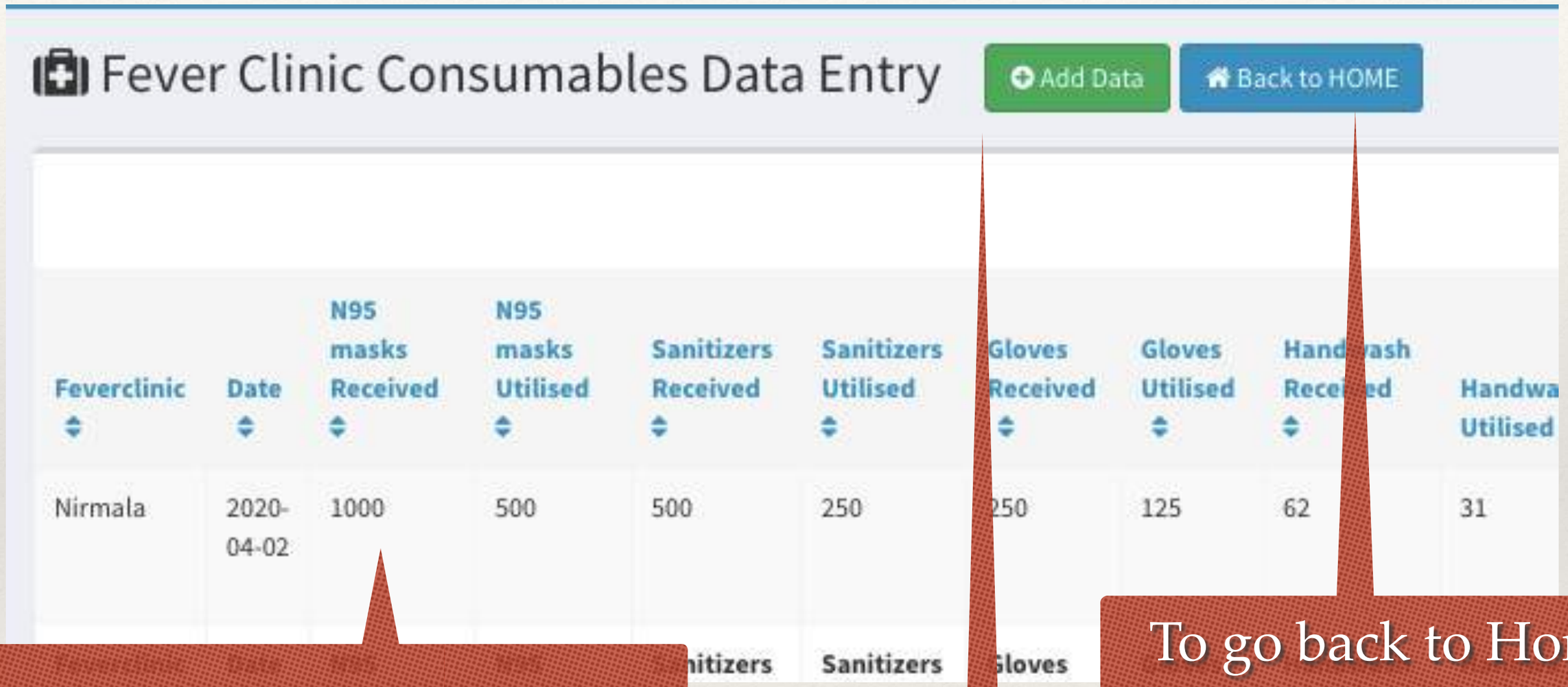
Submitting Fever Clinic Consumable



Submitting Fever Clinic Consumables



Submitting Fever Clinic Statistics

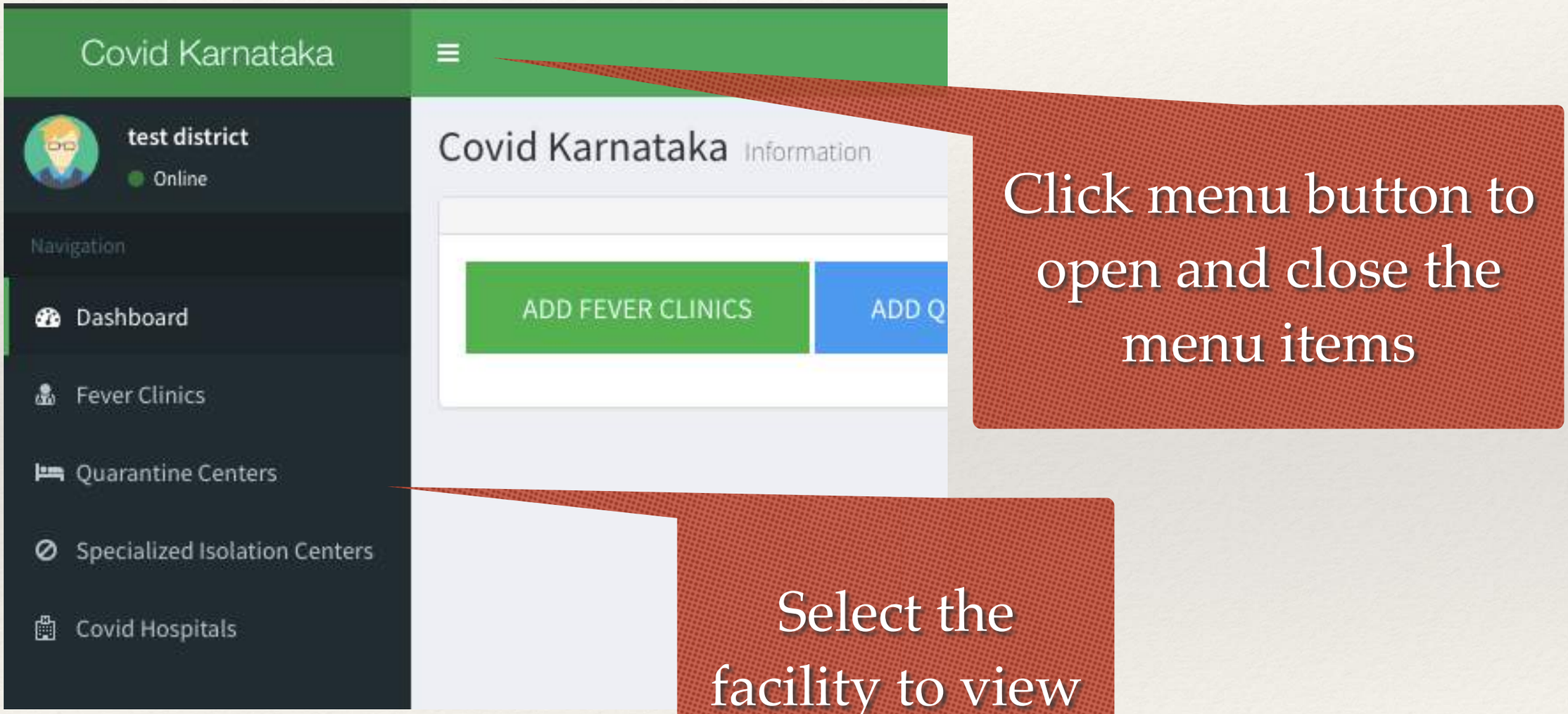


Step 6 : Editing Entries (optional)

Step8 : Editing Entries

- In case you have entered a wrong value or need to edit or modify an entry, you may click the menu button
- You will see the facilities mentioned
  - Fever Clinics
  - Quarantine Centers
  - Specialized Isolation Centers
  - Covid Hospitals
- Click the facility and you will see the list of entries made
- Scroll to far right and you will see a “pen” icon for editing
- Click on the edit icon, modify the entry and submit

Step6 : Viewing the List of Entries



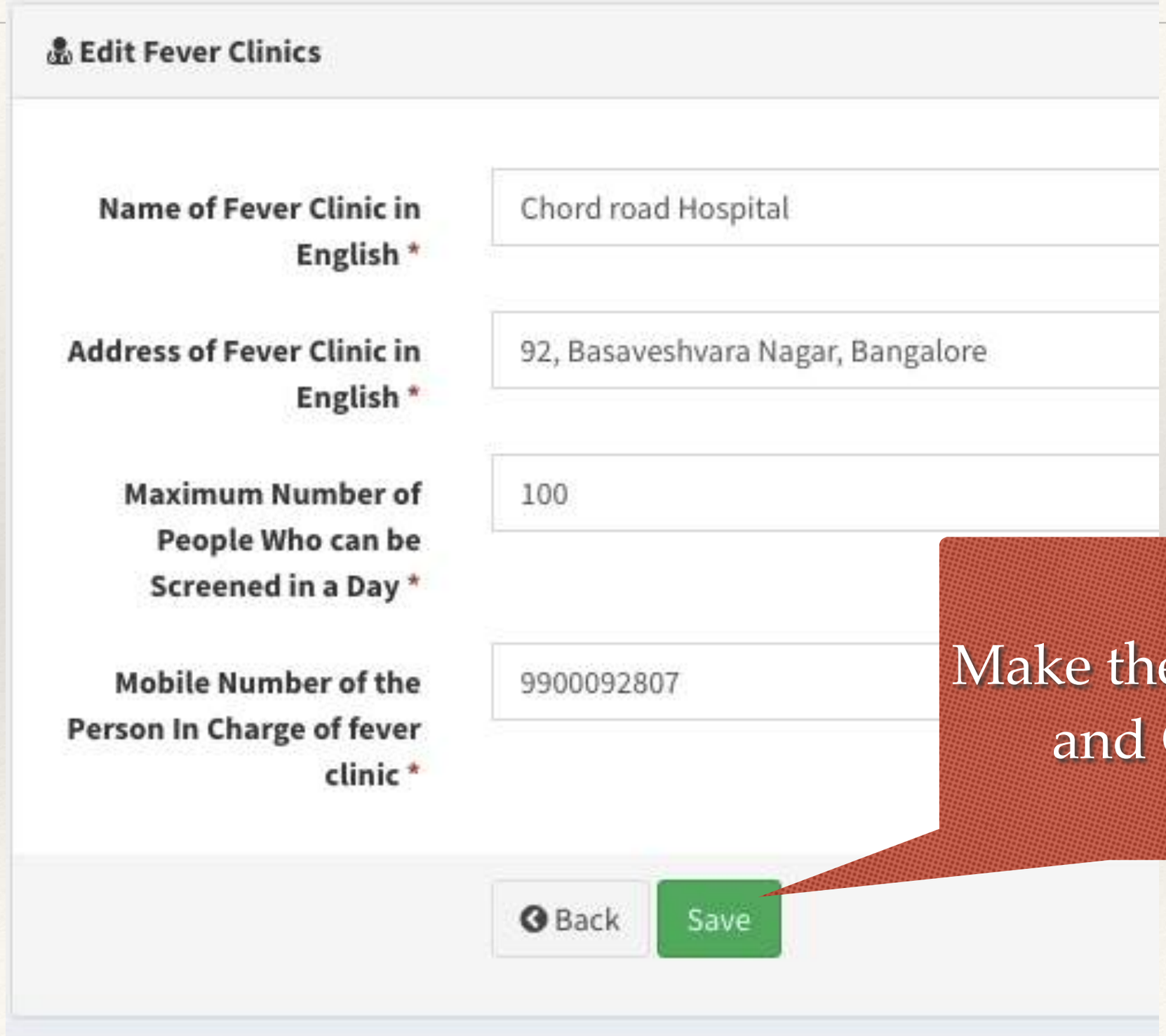
Step6 : Editing

Scroll to the far right to see this portion

	Capacity	Phone	Created At	Updated At	Action
Bangalore	0	9986986662123	2020-04-02 141833		
123	50	987654321	2020-04-02 133709		
92 Basaveshvara Nagar Bangalore	100	9900092807	2020-04-02 132654	2020-04-02	
742 Jarakabandekaval Behind CRPF Camp Attur post Ramagondanahalli Bengaluru Karnataka 560064	100	08050347000	2020-04-02 131902		

Click the "**pen**" icon to edit

Step6 : Editing

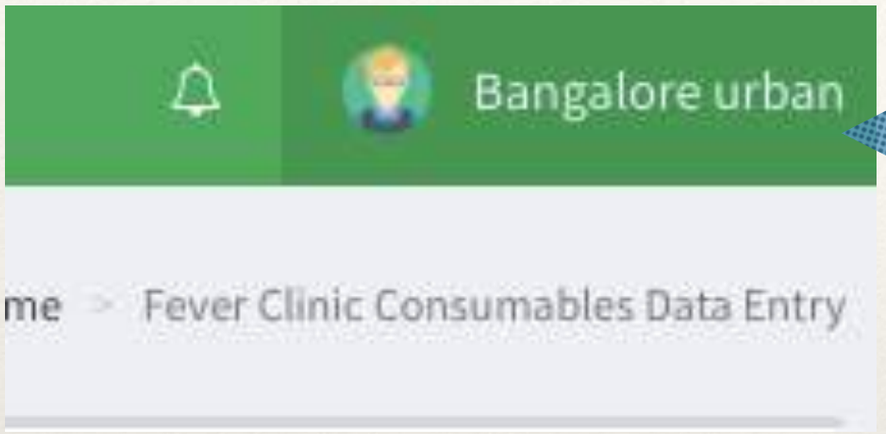


Changing Password

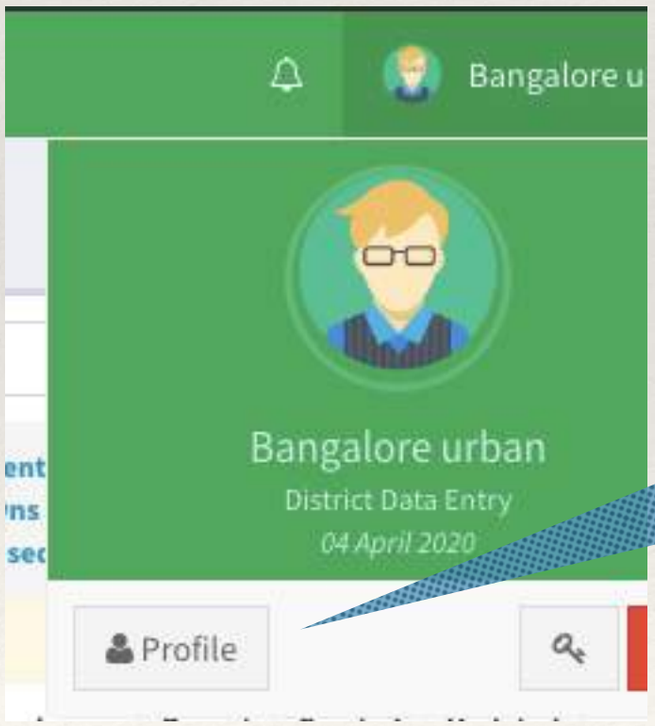
Changing Password

- After Logging in, in the top right corner, click on the profile name / district name
- Click Profile button
- Enter the password to change
- submit
- Password change is possible at a district level or admin level

Changing Password



Click Profile name at the top right corner



Click Profile Button

Changing Password