



Toolkit for setting up and managing COVID Health Centres in Rural Blocks

Basic Health Care Services, May 2021

List of Contents:

1. Acknowledgement.....	3
2. Purpose of setting up CHCs at block level.....	4
3. Infrastructure	5
4. Amenities for CHCs.....	6
5. Equipment and Supplies	7
6. Staff requirements.....	9
7. Clinical Care Protocols.....	10
8. Admission, Discharge & referral criteria.....	11
9. Recording and Monitoring.....	12
10. Personal Protection Measures.....	13
11. Counselling	14
12. Annexures:	
Annexure I: CHC power back up requirement.....	15
Annexure II: AIIMS protocol for COVID-19 treatment.....	15
Annexure III: Patient monitoring sheet	16
Annexure II: Maintenance of Oxygen Concentrators.....	20

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Purpose

COVID-19 pandemic is spreading in rural areas of India. Most patients with COVID-19 can recover at home with assisted home care. A small proportion, about 10% (one in 10) may require hospitalization. At the moment, most of the patients who require hospitalization have no place to go. PHCs and CHCs are not equipped to deal with the situation, and city hospitals are out of bounds.

Therefore, most patients, even when they become sicker, either remain at home, or reach a city hospital when their illness is advanced. City hospitals are already overcrowded and short of oxygen and other facilities, and therefore are not able to provide optimal care or end up denying care.

Of those patients who require hospitalization, most can be managed in a specially set up COVID Health Centre at a block or sub-block level. These centres can help rural patients to seek care early and closer home; improving their outcomes. This would also result in lesser load on city hospitals, which may allow them to focus on sicker patients.

This toolkit is based on ground realities of rural blocks, especially in Northern India, and on best available evidence. It would help the government and non-government organizations on setting up and managing COVID Health Centres, following the standards of care.

Infrastructure:

1. Space: Adequate space to run COVID health centre while ensuring social distancing for all. The proposed centre will need to have sufficient space for the following areas:
 - a. Waiting and registration area: Should be enough to ensure that there is no crowding and social distancing can be practiced. Triage should be done here for sicker patients and sicker patients would be shifted to the assessment or in-patient area.
 - b. Assessment area: Should have an examination table at comfortable height and should be well ventilated.
 - c. In-patient area: Initially the space should be enough for 20 beds spaced 3-feet apart from each other. The proposed centre should however be able to enhance the capacity to accommodate 40-50 beds should need arise.
2. Ventilation and Light: Patient areas should be open and well-ventilated. This includes leaving windows and doors open when possible to maximize cross ventilation and flow of natural light. Appropriately placed simple fans can also assist ventilation.
3. Lighting: Lights should be placed about 2.6 m above floor
4. Toilets: There should be three sets of toilets: one for patients, one for caregivers and one for staff. For every 10 patients, there should be one toilet.
5. Electrical sockets: Each bed should have its own socket for plugging in oxygen concentrators. The sockets should be connected to the power back up, and should be of at-least 5 amperes.

Amenities:

1. Electricity: The COVID Health Centre (CHC) should have reliable electrical supply. Electricity is required to run oxygen concentrators, for fans, light, and for charging mobile phones and other equipment. A power back-up option should be in place if there is power-cut of the regular source, especially to enable oxygen concentrator's function 24x7. Capacity of the power back up required can be estimated using this spread sheet (Annexure I). For a 20 bedded CHC, 2 Gen Sets of 5 KVA each are recommended.
2. Water Supply: The centre should have uninterrupted water supply line for:
 - a. Safe drinking water: RO or other water purification system
 - b. Hand washing area
 - c. Toilets
 - d. Cleaning
3. Food: The centre should be able to provide hot cooked, nutritious meals three times a day, and fluids such as *chhach* (*buttermilk*) or lemon water. Ideally, it should be cooked in-house. If not, then clean cooked meals can be supplied. Food should be available to the healthcare workers posted here as well as to one attendant per patient.
4. Fire safety: There should be two entry/ exit points. Facility should be equipped with fire extinguishers near exit/entrance.
5. Bio-waste management: The facility should have provision to dispose any hazardous or non-hazardous waste from the facility. There should be availability of colour coded bins to facilitate proper waste segregation. A needle cutter should also be available to dispose the needle points used to administer injectable drugs to the patients. The existing waste management agency should be activated to take the waste from CHC.
6. Sterilization: The Center should have an autoclave at the centre for cloth masks, N-95 masks, linen etc.

Equipment and Supplies:

1. Oxygen concentrators: Each bed should be equipped with an oxygen concentrator of its own.
 - a. Optimal placement near windows/doors (sources of adequate ventilation)
 - b. Medium O2 concentrators (15-19kg) w/ 90% O2 output at 1-5 l/min flow ideally suited for mild and moderate COVID disease
 - c. 10 lpm concentrator can be used for 2 patients

Rule of thumb requirements for Oxygen availability in CHCs

For a 20 bedded, at-least 14 should have an oxygen supply.

- An indicative suggestion for the 20 bedded CHC is:
- 8 oxygen concentrators of 5 L,
- 4 of 10 Litre and
- 2 large oxygen cylinders with flow meter.

In addition, 2 large oxygen cylinders should be available should some oxygen concentrators become dysfunctional or in case of a power cut

2. Nasal cannula and face masks: The device for administering oxygen will depend upon the increasing requirement of oxygen therapy. How to choose between different sources (nasal cannula or face masks) is available in this power-point. There should be one available for each patient.
3. Biowaste colour coded buckets with disposable bin-bags: Four buckets for different biological and non-biological waste
4. Pulse oxymeters: One for each bed, and 2-3 for triaging. (keep additional 10 for replacement if they go bad or lost). Keep a few spare batteries for replacement.
5. BP machines: Digital and manual sphygmomanometers should be available at the facility to monitor the blood pressure of patients admitted at the facility. A 20 bedded facility should have 4-5 BP instruments.
6. Thermometer: To monitor the body temperature of the patients. There should be one for each bed, five for triaging and 10 additional.
7. Glucometers: to be kept at the facility to monitor the blood sugar levels of the patients who are known diabetics. At least two sets should be available for a 20 bedded unit
8. Extension Cords: 3-4 heavy duty, ISI marked extension cords should be available.
9. Power banks: 1-2 power banks should be available for charging the mobile phones.
10. Alcohol rubs/ sanitizers: Ample supply of sanitizers or alcohol rubs for patients, their care givers and the health care providers.
11. Sodium Hypochlorite: For cleaning the floors and other surfaces
12. PPE, gloves, masks, surgical masks and shields: enough for all the staff members (pl also see the section on infection prevention)

Medications:

1. Injectable and oral steroids (Tab and Inj. Dexamethasone, Inj. methylprednisolone or Inj. hydrocortisone)
2. Injectable (ceftriaxone and Amikacin) and Oral (Amox-clav) Antibiotics
3. Antipyretics: Paracetamol
4. Oral Anticoagulants (Apixaban 2.5 mg/ 5 mg)
5. IV Fluids: Ringers lactate, Normal Saline and 5% D
6. Antitussives and / or Honey
7. Anti-emetics
8. Insulin (Inj. Insugen R, Inj Mixtard 30/70)
9. Space halers, spacer, Budecort 200 mg

Staff:

1. Staff nurse: For 20 beds, two nurses will be required per shift. So 8 nurses would be posted for a 20 bedded centre, 2 per shift and 2 on off. The nurse to patient ratio at the centre will not exceed 1 nurse to every 10 patients.
2. Nurse-Manager: One Nurse Manager (a mid-level Nursing Professional) will manage the centre and ensure essential housekeeping practices, monitoring and care of patients, infection prevention and waste management functions.
3. Physician: A physician (MBBS) will be available round the clock. Minimum of 4 physicians would be required for 20-40 beds (one per shift). The physician will be trained using standardised training program. She can be supported by twice a day virtual rounds by senior physicians.

Clinical Care Protocols

Care will be provided as per standard protocols. We will use the standards as specified as issued by AIIMS/ ICMR¹ (Annexure II).

In addition, the treatment for co-morbidities will be managed, as decided by the physician.

Patients will be encouraged to lie in prone positions. They would also be encouraged to do light walking.

¹ [Annexure II AIIMS COVID treatment protocol.pdf](#)

Admission, Discharge & Referral criteria:

1. Admission criteria:

Patients has RT-PCR confirmed COVID or strong suspicion of Clinical COVID (Fever >101.4 °F), cough, coryza or respiratory distress / laboured breathing)

- a. Respiratory Rate >24 but less than 30
- b. SpO₂: < 94% but more than 85% (after oxygenation)
Or: Six-minute walking test positive² or exertional hypoxia:

Six- minute walking test:

Directions-

- i. The patient should walk in preferably a straight line for 5- 6 minutes while continuously monitoring his/her SpO₂
- ii. The test should be stopped if the saturation drops below 90% or if there is drop of 4% or more in the patient's oxygen saturation.
 - i. Record the SpO₂ at the beginning and end of test.

Exclusion criteria:

- i. Dyspnea or fatigue on examination
- ii. Patient more than 70 years of age or pregnant women
- iii. If the SpO₂ is 93% or less at room air

- c. Continuation or reappearance of high grade fever beyond seven days

2. Discharge criteria:

- a. Oxygen levels >94% without oxygen for 2 consecutive days
- b. Fever less than 101°F for 2 consecutive days (without antipyretics)
- c. Resolution of breathlessness
- d. No light headedness on standing (normal blood pressure)

There will be no need for testing prior to discharge. At the time of discharge, the patient will be advised to isolate himself at home and self-monitor their health for a total of 7 days.

3. Referral Criteria:

- a. Oxygen levels go below 85% despite 5-10 litres/ min of Oxygen flow
- b. Worsening of general condition
- c. Significant co-morbidity that is unmanageable (such as renal condition or diabetes)

Basic Life Support Ambulance (BLSA) equipped with sufficient oxygen support – 108 would be made available for referral. At referral, complete details and course of the patient would be entered in the referral card. CHC would also speak to the referral hospital for availability of bed.

² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7258841/pdf/ane-publish-ahead-of-print-10.1213.ane.000000000004986.pdf>

Recording and monitoring:

On admission, the condition of the patient and details of the comorbidities will be recorded on a standardised sheet. It will clearly record at the minimum, following details: major symptoms, days since beginning of symptoms, any comorbidities, medications, vitals, and SpO₂.

Admitted patients will be monitored for:

- Temperature: 4 hourly and SOS when patient reports fever
- SpO₂ & PR: Hourly
- Subjective assessment of breathing (comfortable, laboured breathing, distressed): hourly
- BP Twice a day

These parameters would be recorded in the monitoring sheet (Annexure III)

Personal Protection protocols

Staff delivering clinical care:

Gown, gloves, N95 with surgical mask over it, eye protection (goggles/face shield)

Staff supporting care delivery:

Surgical masks at all times, eye protection if possible

Transporters (ambulance drivers):

Gown, surgical mask (add N95 if aerosolizing procedure); eye protection (goggles/face shield)

Cleaning staff:

Gown, gloves, surgical mask (add N95 if aerosolizing procedure); eye protection (goggles/face shield)

Counselling:

Patients would be counselled on the following:

1. Relieve the patient's anxiety by briefing him/her on the disease and his condition:
Explain the patient in clear terms about the disease and steps that will be taken to help him recover.
2. Make the patient understand the reason for isolation: Brief the patient on why isolation is advised to COVID positive patients.
3. Update the patient's family on their condition twice a day: Due to the restricted access to the patients ward, the patient's attendant should be briefed on the patient's condition to alleviate any fear he/she might have. It is also necessary to establish that the patient's attendant has not had close contact with a COVID positive patient in recent time. (Advice immediate isolation in such cases)
4. Advice the patient to walk if possible during his/her stay at the COVID Health Centre: The patient should be asked to do light walking as an exercise if the oxygen saturation permits.
5. Give home care messages to the patients post discharge: Counsel the patients on home care measures post discharge. Advice vaccine in all patients who have not been vaccinated, 6 weeks after recovery.

Annexures:

Annexure I: CHC power back up requirement (Attached separately)

Annexure II: AIIMS protocol for COVID-19 treatment

Annexure III: Patient monitoring sheet



**COVID HEALTH CENTRE
Patient Monitoring Sheet**

Name: _____ **Age:** _____ **Sex:** _____ **Address:** _____

RT-PCR (date): _____ **SRF Id:** _____ **Admission date & time:** _____

Existing Medical conditions: _____ **Medications:** _____

Day	Day 1						Day 2						Day 3						Day 4					
	(On Admission)																							
Time	0800	1200	1600	2000	0000	0400	0800	1200	1600	2000	0000	0400	0800	1200	1600	2000	0000	0400	0800	1200	1600	2000	0000	0400
Vitals																								
Temperature																								
Pulse																								
Respiratory Rate																								
SpO2																								
Blood pressure																								
Blood sugar level																								
Symptoms																								
Shortness of breath																								
Cough																								
Drugs/ Oxygen																								

Day	Day 13						Day 14						Day 15						Day 16					
Date																								
Time	0800	1200	1600	2000	0000	0400	0800	1200	1600	2000	0000	0400	0800	1200	1600	2000	0000	0400	0800	1200	1600	2000	0000	0400
Vitals																								
Temperature																								
Pulse																								
Respiratory Rate																								
SpO2																								
Blood pressure																								
Blood sugar level																								
Symptoms																								
Shortness of breath																								
Cough																								
Drugs/ Oxygen																								

Annexure IV: Troubleshooting guide for hospital engineers and service technicians

Problem	Probable cause(s) and solution(s)
The concentrator does not turn on	No mains power. Inspect and check power cord, electrical connections, circuit breaker (if equipped), internal fuse (if equipped; sometimes located on the PCB), on/off switch, PCB.
The concentrator operates, but the compressor shuts down intermittently	Check gross particle filter, cabinet fan, capacitor for the compressor, cabinet thermal switch (if equipped), valve(s), PCB. Compressor may have a faulty internal switch.
The concentrator's compressor does not turn on	Inspect and check electrical connections to the compressor, capacitor and PCB.
The concentration is within specifications, but flow fluctuates	Check all filters and replace if necessary. Pressure regulator needs to be adjusted, repaired or replaced.
The concentration is within specifications, but the oxygen monitor indicates low concentration	Tubing to oxygen monitor is kinked or oxygen monitor is faulty. Repair tubing or replace sensor.
The concentrator runs, but oxygen concentration is low	Check all filters and replace if necessary. Check compressor pressure and flow output; replace or rebuild if necessary. Sieve beds may be faulty and require replacement.
The concentrator overheats	Check ventilation fan operation; replace if necessary. Inspect and wash gross particle filter. Power may be in an overvoltage or undervoltage condition, check the UPS (if installed).
Oxygen does not flow out of the concentrator	Check system power. Inspect oxygen tubing and cannula for kinks or plugs. Check all filters and replace if necessary. Check internal tubing and fittings for leaks or kinks. Check compressor pressure and flow output; replace or rebuild if necessary.