

Standard Operating Procedure for COVID-19 pandemic



ZMC/SRHF Covid-19 task force
(compiled in consultation with WHO & MoHFW GOI
guidelines)

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Overview

The COVID-19 pandemic in India is part of the worldwide pandemic declared by World Health Organization on March 11, 2020. An outbreak of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) was reported in Wuhan, China in mid-December 2019. The disease, named COVID-19 by WHO, is characterized by several symptoms including fever, cough and shortness of breath. The COVID-19 virus is transmitted mainly through close physical contact and respiratory droplets, while airborne transmission is possible during aerosol generating medical procedures. The median incubation period is 5.1 days (range 2–14 days). The precise interval during which an individual with COVID-19 is infectious is uncertain. As per the current evidence, the period of infectivity starts 2 days prior to onset of symptoms and lasts up to 8 days. The extent and role played by pre-clinical/ asymptomatic infections in transmission still remain under investigation.

The COVID-19 started in India on 30 January 2020 from Kerala through the three students who returned from Wuhan, China. Up to 09 April 2020, more than a hundred confirmed cases of COVID-19 were identified from various parts of India; the majority of them have travel history to affected regions. Meanwhile, the first death was reported on 12 March 2020. The first victim was a 76-year-old man, who had returned from Saudi Arabia. As of 22 June 2020, the Ministry of Health and Family Welfare (MoHFW) has confirmed a total of 425,282 cases, 237,196 recoveries (including 1 migration) and 13,699 deaths in the country. India currently has the largest number of confirmed cases in Asia, and has the fourth highest number of confirmed cases in the world with the number of total confirmed cases breaching the 100,000 mark on 19 May and 200,000 on 3 June. India's case fatality rate is relatively lower at 2.80%, against the global 6.13%, as of 3 June. Six cities account for around half of all reported cases in the country – Mumbai, Delhi, Ahmedabad, Chennai, Pune and Kolkata.

On 22 March, India observed a 14-hour voluntary public curfew at the instance of the prime minister. It was followed by mandatory lockdowns in COVID-19 hotspots and all major cities. Further, on 24 March, the Prime Minister ordered a nationwide lockdown for 21 days, affecting the entire 1.3 billion population of India. On 14 April, the PM extended the nationwide lockdown till 3 May which was followed by two-week extensions starting 3th May and 17th May with substantial relaxations. Beginning 1st June the Government has started *unlocking* the country (barring *containment zones*) in three unlock phases.

Timeline of COVID 19 in Mizoram:

February 10, 2020	First suspect case seen in ZMC
March 24, 2020	First positive case detected in Mizoram
May 9, 2020	First positive case in Mizoram discharged from ZMC
April 7, 2020	First RT-PCR for 2019-nCoV done in ZMC
June 1, 2020	Cluster of 12 positive cases detected in Mizoram
June 28, 2020	Mizoram covid-19 update (DIPR) : <i>Total cases 151, Recovered 55, Active cases 96, Deaths 0</i> . Out of the 151 cases in Mizoram, 54 cases were admitted in ZMC. Among these, 34 patients have recovered till date

❖ **CASE DEFINITION:**

SUSPECT CASE-

- A. 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 location reporting community transmission of COVID-19 disease during the 14 days prior to symptom onset;

OR

- B. A patient with any acute respiratory illness AND having been in contact with a confirmed or probable COVID-19 case in the last 14 days prior to symptom onset;

OR

- C. A patient with severe acute respiratory illness (fever and at least one sign/symptom of respiratory disease, e.g., cough, shortness of breath; AND requiring hospitalization) AND in the absence of an alternative diagnosis that fully explains the clinical presentation.

PROBABLE CASE-

- A. A suspect case for whom testing for the COVID-19 virus is inconclusive.

OR

- B. A suspect case for whom testing could not be performed for any reason.

CONFIRMED CASE-

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

❖ **CLINICAL FEATURES:**

Common clinical signs and symptoms include Fever, Cough, Fatigue, Shortness of breath, Expectoration, Myalgia, Rhinorrhea, Sore throat, Diarrhea, Anosmia or Ageusia preceding the onset of respiratory symptoms.

Older people and immune-suppressed patients in particular may present with atypical symptoms such as fatigue, reduced alertness, reduced mobility, diarrhoea, loss of appetite, delirium, and absence of fever. Children might not have reported fever or cough as frequently as adults.

The major risk factors for severe disease are:

- *Age more than 60 years (increasing with age).*
- *Underlying non-communicable diseases (NCDs): diabetes, hypertension, cardiac disease, chronic lung disease, cerebro-vascular disease, chronic kidney disease, immune-suppression and cancer*

Table 1: Clinical severity and assessment parameters

Clinical Severity	Clinical presentation	Clinical parameters	Remarks
Mild	Patients with uncomplicated upper respiratory tract infection, may have mild symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache	Without evidence of breathlessness or Hypoxia (normal saturation)	# Managed at Covid Care Centre # Managed at home subject to fulfillment of conditions stipulated in guidelines

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Moderate	Pneumonia with no signs of severe disease	<p>Adolescent or adult with presence of clinical features of dyspnea and or hypoxia, fever, cough, including SpO₂<94% (range 90-94%) on room air, Respiratory Rate more or equal to 24 per minute.</p> <p>Child with presence of clinical features of dyspnea and or hypoxia, fever, cough, including SpO₂ <94% (range 90-94%) on room air, Respiratory Rate more or equal to 24 per minute.</p> <p>Fast breathing (in breaths/min): < 2 months: ≥ 60; 2–11 months: ≥ 50; 1–5 years: ≥ 40</p>	Managed in Dedicated Covid Health Centre (DCHC)
Severe	Severe Pneumonia	<p>Adolescent or adult: with clinical signs of Pneumonia plus one of the following; respiratory rate >30 breaths/min, severe respiratory distress, SpO₂ <90% on room air.</p> <p>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 in drawing, fast breathing (in breaths/min): <2 months ≥60; 2–11 months ≥50; 1–5 years ≥40.</p> <p>The diagnosis is clinical; chest imaging can exclude complications.</p>	Managed in Dedicated Covid Hospital

	<p>Acute Respiratory Distress Syndrome</p>	<p>Onset: new or worsening respiratory symptoms within one week of known clinical insult.</p> <p>Chest imaging (Chest X ray and portable bed side lung ultrasound): bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules.</p> <p>Origin of Pulmonary infiltrates: respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of infiltrates/ oedema if no risk factor present.</p> <p>Oxygenation impairment in adults:</p> <p><u>Mild ARDS:</u> $200 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}$ (with PEEP or CPAP $\geq 5 \text{ cm H}_2\text{O}$)</p> <p><u>Moderate ARDS:</u> $100 \text{ mmHg} < \text{PaO}_2/\text{FiO}_2 \leq 200 \text{ mmHg}$ with PEEP $\geq 5 \text{ cm H}_2\text{O}$)</p> <p><u>Severe ARDS:</u> $\text{PaO}_2/\text{FiO}_2 \leq 100 \text{ mmHg}$ with PEEP $\geq 5 \text{ cm H}_2\text{O}$)</p> <p>When PaO_2 is not available, $\text{SpO}_2/\text{FiO}_2 \leq 315$ suggests ARDS (including in non-ventilated patients)</p> <p>Oxygenation impairment in Children</p> <p>Note Oxygenation Index (OI) and OSI (Oxygen Saturation Index)</p> <p>Use OI when available. If PaO_2 not available, wean FiO_2 to maintain $\text{SpO}_2 < 97\%$ to calculate OSI or $\text{SpO}_2/\text{FiO}_2$ ratio:</p>	
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		<p>using SpO₂)</p> <p>Bi-level (NIV or CPAP) ≥5 cm H₂O via full face mask: PaO₂/FiO₂ ≤ 300 mmHg or SpO₂/FiO₂ ≤264</p> <p>Mild ARDS (invasively ventilated):</p> <p>4 ≤ OI < 8 or 5 ≤ OSI < 7.5</p> <p>Moderate ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3</p> <p>Severe ARDS (invasively ventilated):</p> <p>OI ≥ 16 or OSI ≥ 12.3</p>	
Severe (Continued)	Sepsis	<p>Adults: Acute life-threatening organ dysfunction caused by a dys-regulated host response to suspected or proven infection. 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.</p> <p>Children: suspected or proven infection and ≥2 age based Systemic Inflammatory Response Syndrome (SIRS) criteria, of which one must be abnormal temperature or white blood cell count</p>	

	<p>Septic Shock</p>	<p>Adults: persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP \geq65 mmHg and serum lactate level $>$ 2 mmol/L</p> <p>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 weak pulse; tachypnea; mottled or cool skin or petechial or purpuric rash; high lactate; reduced urine output ; hyperthermia or hypothermia</p>	
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❖ **INFECTION PREVENTION AND CONTROL PRACTICES**

Infection prevention control (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 2: Infection prevention and control practices

At triage	Give suspect patient a triple layer surgical mask and direct patient to separate area, an isolation room if available. Keep at least 1 meter 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 standard precautions	Apply standard precautions according to risk assessment for all patients, at all times, when providing any diagnostic and care services. Standard precautions include hand hygiene and the use of personal protective equipment (PPE) when risk of splashes or in contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also include appropriate patient placement; prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment. Best practices for safely managing health care waste should be followed.
Apply droplet precautions	Droplet precautions prevent large droplet transmission of respiratory viruses. Use a triple layer surgical mask if working within 1-2 meters 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

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	<p>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</p>
Apply contact precautions	<p>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.</p>
Apply airborne precautions when performing an aerosol generating procedure	<p>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 liters/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.</p> <p>Because of uncertainty around the potential for aerosolization, high-flow nasal oxygen (HFNO), NIV, including bubble CPAP, should be used with airborne precautions until further evaluation of safety can be completed. There is insufficient evidence to classify nebulizer therapy as an aerosol-generating procedure that is associated with transmission of COVID-19. More research is needed.</p>

❖ Guidelines on rational use of Personal Protective Equipment (MoHFW & WHO)

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.

➤ **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 for COVID-19 infection are those who are in close contact with a suspect/confirmed COVID-19 patient or who care for such patients.

➤ **Preventive measures for COVID-19 disease**

Based on the available evidence, the COVID-19 virus is transmitted between people through close contact and droplets, not by airborne transmission. The people most at risk of infection are those who are in close contact with a COVID- 19 patient or who care for COVID-19 patients.

Preventive and mitigation measures are key. The most effective preventive measures in the community include:

- performing hand hygiene frequently with an alcohol-based handrub if your hands are not visibly dirty or with soap and water if hands are dirty;
- avoiding touching your eyes, nose, and mouth;
- practicing respiratory hygiene by coughing or sneezing into a bent elbow or tissue and then immediately disposing of the tissue;
- wearing a medical mask if you have respiratory symptoms and performing hand hygiene after disposing of the mask;
- maintaining social distance (a minimum of 1 metre) from persons with respiratory

symptoms.

Additional precautions are required by health care workers to protect themselves and prevent transmission in the healthcare setting. Precautions to be implemented by health care workers caring for patients with COVID-19 include using PPE appropriately; this involves selecting proper PPE and being trained in how to put on, remove, and dispose of it.

PPE is only one effective measure within a package of administrative and environmental and engineering controls, as described in WHO's Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care. These controls are summarized here.

- ② **Administrative controls** include ensuring resources for infection prevention and control (IPC) measures, such as appropriate infrastructure, the development of clear IPC policies, facilitated access to laboratory testing, appropriate triage and placement of patients, adequate staff-to-patient ratios, and training of staff.
- ② **Environmental and engineering controls** aim at reducing the spread of pathogens and the contamination of surfaces and inanimate objects. They include providing adequate space to allow social distance of at least 1 m to be maintained between patients and between patients and health care workers and ensuring the availability of well-ventilated isolation rooms for patients with suspected or confirmed COVID-19.

COVID-19 is a respiratory disease that is different from Ebola virus disease (EVD), which is transmitted through infected bodily fluids. Because of these differences in transmission, the PPE requirements for COVID-19 are different from those required for EVD. Specifically, coveralls (sometimes called Ebola PPE) are not required when managing COVID-19 patients.

➤ **Disruptions in the global supply chain of PPE**

The current global stockpile of PPE is insufficient, particularly for medical masks and respirators; the supply of gowns and goggles is soon expected to be insufficient also. Surging global demand – driven not only by the number

of COVID-19 cases but also by misinformation, panic buying, and stockpiling – will result in further shortages of PPE globally. The capacity to expand PPE production is limited, and the current demand for respirators and masks cannot be met, especially if widespread inappropriate use of PPE continues.

Recommendations for optimizing the availability of PPE

In view of the global PPE shortage, the following strategies can facilitate optimal PPE availability.

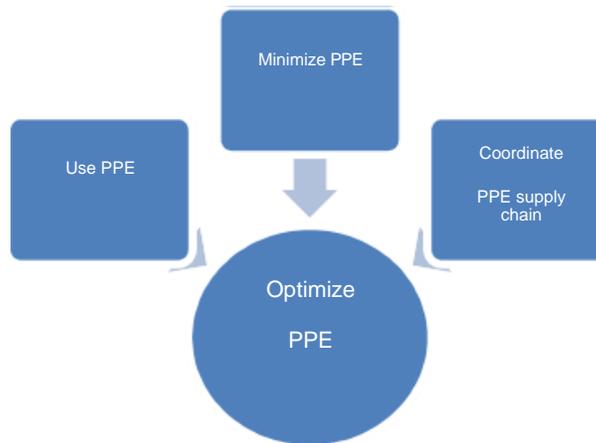


Figure: Strategies to optimize the availability of personal protective equipment (PPE)

1. Minimize the need for PPE

The following interventions can minimize the need for PPE while protecting health care workers and others from exposure to the COVID-19 virus in health care settings.

- Consider using telemedicine to evaluate suspected cases of COVID-19, thus minimizing the need for these persons to go to health care facilities for evaluation.
- Use physical barriers to reduce exposure to the COVID-19 virus, such as glass or plastic windows. This approach can be implemented in areas of the health care setting where patients will first present, such as triage areas, the registration desk at the emergency department, or at the pharmacy window where medication is collected.
- Restrict health care workers from entering the rooms of COVID-19 patients if they are not involved in direct care. Consider bundling activities to minimize the number of

times a room is entered (e.g. check vital signs during medication administration or have food delivered by health care workers while they are performing other care) and plan which activities will be performed at the bedside.

Ideally, visitors will not be allowed but if this is not possible, restrict the number of visitors to areas where COVID-19 patients are being isolated; restrict the amount of time visitors are allowed to spend in the area; and provide clear instructions about how to put on and remove PPE and perform hand hygiene to ensure that visitors avoid self-contamination.

2. Ensure PPE use is rational and appropriate

PPE should be used based on the risk of exposure (e.g. type of activity) and the transmission dynamics of the pathogen (e.g. contact, droplet or aerosol). The overuse of PPE will have a further impact on supply shortages. Observing the following recommendations will ensure rational use of PPE.

- The type of PPE used when caring for COVID-19 patients will vary according to the setting and type of personnel and activity (see Table).

Health care workers involved in the direct care of patients should use the following PPE: gowns, gloves, medical mask, and eye protection (goggles or face shield).

- Specifically, for aerosol-generating procedures (e.g. tracheal intubation, non-invasive ventilation, tracheostomy, cardiopulmonary resuscitation, manual ventilation before intubation, bronchoscopy) health care workers should use respirators, eye protection, gloves and gowns; aprons should also be used if gowns are not fluid resistant.
- Respirators (e.g. N95, FFP2 or equivalent standard) have been used for an extended time during previous public health emergencies involving acute respiratory illness when PPE was in short supply. This refers to wearing the same respirator while caring for multiple patients who have the same diagnosis without removing it, and evidence indicates that respirators maintain their protection when used for extended periods. However, using one respirator for longer than 4 hours can lead to discomfort and should be avoided.
- Among the general public, persons with respiratory symptoms or those caring for COVID-19 patients at home should receive medical masks. For additional information, see Home care for patients with COVID-19 presenting with mild

symptoms and management of their contacts.

For persons without symptoms, wearing a mask of any type is not recommended. Wearing medical masks when they are not indicated may cause unnecessary cost and a procurement burden and create a false sense of security that can lead to the neglect of other essential preventive measures. For additional information, see Advice on the use of masks in the community, during home care, and in health care settings in the context of COVID-19.

3. Coordinate PPE supply chain management mechanisms.

The management of PPE should be coordinated through essential national and international supply chain management mechanisms that include but are not restricted to:

- Using PPE forecasts based on rational quantification models to ensure the rationalization of requested supplies;
- Monitoring and controlling PPE requests from countries and large responders;
- Promoting a centralized request management approach to avoid duplication of stock and ensuring strict adherence to essential stock management rules to limit wastage, overstock, and stock ruptures;
- Monitoring the end-to-end distribution of PPE;
- Monitoring and controlling the distribution of PPE from medical Facilities store.

Table 3. Recommended personal PPE during the outbreak of COVID-19 outbreak, according to the setting, personnel, and type of activity: **(World Health Organization)**

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Health care facilities			
Inpatient facilities			
Patient room	Health care workers	Providing direct care to COVID-19 patients	Medical mask Gown, Gloves Eye protection (goggles or face shield)
		Aerosol-generating procedures performed on COVID-19 patients	Respirator N95 or FFP2 standard, or equivalent. Gown, Gloves Eye protection Apron
	Cleaners	Entering the room of COVID-19 patients	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals) Boots or closed work shoes
	Visitors	Entering the room of a COVID- 19 patient	Medical mask Gown Gloves
Other areas of patient transit (e.g. wards, corridors).	All staff, including health care workers.	Any activity that does not involve contact with COVID-19 patients	No PPE required
Triage	Health care workers	Preliminary screening not involving direct contact ^c .	Maintain spatial distance of at least 1 metre. No PPE required
	Patients with respiratory symptoms	Any	Maintain spatial distance of at least 1 metre. Provide medical mask if tolerated by patient.
	Patients without respiratory symptoms	Any	No PPE required
Laboratory	Lab technician	Manipulation of respiratory samples	Medical mask Gown, Gloves Eye protection (if risk of splash)

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Administrative areas	All staff, including health care workers.	Administrative tasks that do not involve a contact with COVID-19 patients.	No PPE required
Outpatient facilities			
Consultation room	Health care workers	Physical examination of patient with respiratory symptoms	Medical mask Gown,Gloves Eye protection
	Health care workers	Physical examination of patients without respiratory symptoms	PPE according to standard precautions and risk assessment.
	Patients with respiratory symptoms	Any	Provide medical mask if tolerated.
	Patients without respiratory symptoms	Any	No PPE required
	Cleaners	After and between consultations with patients with respiratory symptoms.	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Waiting room	Patients with respiratory symptoms	Any	Provide medical mask if tolerated. Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure spatial distance of at least 1 metre from other patients.
	Patients without respiratory symptoms	Any	No PPE required
Administrative areas	All staff, including health care workers	Administrative tasks	No PPE required
Triage	Health care workers	Preliminary screening not involving direct contact ^c .	Maintain spatial distance of at least 1 metre. No PPE required

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	Patients with respiratory symptoms	Any	Maintain spatial distance of at least 1 metre. Provide medical mask if tolerated.
	Patients without respiratory symptoms	Any	No PPE required
Community			
Home	Patients with respiratory symptoms	Any	Maintain spatial distance of at least 1 metre. Provide medical mask if tolerated, except when sleeping.
	Caregiver	Entering the patient's room, but not providing direct care or assistance	Medical mask
	Caregiver	Providing direct care or when handling stool, urine, or waste from COVID-19 patient being cared for at home	Gloves Medical mask Apron (if risk of splash)
	Health care workers	Providing direct care or assistance to a COVID-19 patient at home	Medical mask Gown Gloves Eye protection
Public areas (e.g. schools, shopping malls, train stations).	Individuals without respiratory symptoms	Any	No PPE required

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Points of entry			
Administrative areas	All staff	Any	No PPE required
Screening area	Staff	First screening (temperature measurement) not involving direct contact ^c	Maintain spatial distance of at least 1 metre. No PPE required
	Staff	Second screening (i.e. interviewing passengers with fever for clinical symptoms suggestive of COVID-19 disease and travel history)	Medical mask Gloves
	Cleaners	Cleaning the area where passengers with fever are being screened	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Temporary isolation area	Staff	Entering the isolation area, but not providing direct assistance	Maintain spatial distance of at least 1 metre. Medical mask Gloves
	Staff, health care workers	Assisting passenger being transported to a health care facility	Medical mask Gown, Gloves Eye protection
	Cleaners	Cleaning isolation area	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Ambulance or transfer vehicle	Health care workers	Transporting suspected COVID-19 patients to the referral health care facility	Medical mask Gowns Gloves Eye protection
	Driver	Involved only in driving the patient with suspected COVID-19 disease and the driver's compartment is separated from the COVID-19 patient	Maintain spatial distance of at least 1 metre. No PPE required
		Assisting with loading or unloading patient with suspected COVID-19	Medical mask Gowns Gloves Eye protection

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		No direct contact with patient with suspected COVID-19, but no separation between driver's and patient's compartments	Medical mask
	Patient with suspected COVID-19.	Transport to the referral health care facility.	Medical mask if tolerated
	Cleaners	Cleaning after and between transport of patients with suspected COVID-19 to the referral health care facility.	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Special considerations for rapid-response teams assisting with public health investigations			
Community			
Anywhere	Rapid-response team investigators	Interview suspected or confirmed COVID-19 patients or their contacts.	No PPE if done remotely (e.g. by telephone or video conference) Remote interview is the preferred method.
		In-person interview of suspected or confirmed COVID-19 patients without direct contact	Medical mask Maintain spatial distance of at least 1 metre. The interview should be conducted outside the house or outdoors, and confirmed or suspected COVID-19 patients should wear a medical mask if tolerated.
		In-person interview with asymptomatic contacts of COVID-19 patients	Maintain spatial distance of at least 1 metre. No PPE required The interview should be performed outside the house or outdoors. If it is necessary to enter the household environment, use a thermal imaging camera to confirm that the individual does not have a fever, maintain spatial distance of at least 1 metre and do not touch anything in the household environment.

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, EN455
 - b. EU standard directive 89/686/EEC Category III, EN374
 - c. ANSI/SEA105-2011
 - 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, EN166/2002
 - b. ANSI/SEA87.1-2010

1.4 N-95 Masks

- Shape that will not collapse easily
- High filtration efficiency
- Good breath ability, with expiratory valve
- Quality compliant with standards for medical N95 respirator:
 - a. NIOSH N95, EN 149 FFP2, or equivalent
- Fluid resistance: minimum 80mmHg 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 snugly 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, EN166/2002
 - b. ANSI/SEA87.1-2010

2 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. (ISI specifications or equivalent)

3 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, EN455
2. EU standard directive 89/686/EEC Category III, EN374
3. ANSI/SEA 105-2011
4. ASTM D6319-10

4 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) 4/6grips
- 10) Size: 2.2 x 1.2Mts
- 11) Standards:
 - a) ISO16602:2007
 - b) ISO16603:2004
 - 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

2. 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. **(MoHFW)**

Table 4:

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Help desk/ Registration counter	Provide information to patients	Mild risk	Triple layer medical mask Latex examination gloves	Physical distancing to be followed at all times
2	Doctors chamber	Clinical management	Mild risk	Triple layer medical mask Latex examination gloves	No aerosol generating procedures should be allowed.
3	Chamber of Dental/ENT doctors/ Ophthalmology doctors	Clinical management	Moderate risk	N-95 mask Goggles Latex examination gloves + face shield	Aerosol generating procedures anticipated. Face shield, when a splash of body fluid is expected
4	Pre- anesthetic check-up clinic	Pre-anesthetic check-up	Moderate risk	N-95 mask Goggles* Latex examination gloves	* Only recommended when close examination of oral cavity/dentures is to be done
5	Pharmacy counter	Distribution of drugs	Mild risk	Triple layer medical mask Latex examination gloves	Frequent use of hand sanitizer is advised over gloves.
6	Sanitary staff	Cleaning frequently touched surfaces/ Floor	Mild risk	Triple layer medical mask Latex examination gloves	



#All hospitals should identify a separate triage and holding area for patients with Influenza like illness so that suspect COVID cases are triaged and managed away from the main out-patient department.

Table 5: In-patient Department (Non-COVID Hospital & Non-COVID treatment areas of a hospital which has a COVID block)

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Ward/individual rooms	Clinical management	Mild risk	Triple layer medical mask Latex examination gloves	Patients stable. No aerosol generating activity.
2	ICU/ Critical care	Critical care management	Moderate risk	N-95 mask Goggles Nitrile examination gloves +Face shield	Aerosol generating activities performed. Face shield, when a splash of body fluid is expected
3	Ward/ICU /critical care	Dead body packing	Low Risk	Triple Layer medical mask Latex examination gloves	
4	Ward/ICU/ Critical care (Non-COVID)	Dead body transport to mortuary	Low Risk	Triple Layer medical mask Latex examination gloves	
5	Labor room	Intra-partum care	Moderate Risk	Triple Layer medical mask Face shield Sterile latex gloves Coverall N-95 mask*	Patient to be masked in the Labor room, if possible. *If the pregnant woman is a resident

6	Operation Theater	Performing surgery, administering general anaesthesia	Moderate Risk	Triple Layer medical mask Face shield (- wherever feasible) Sterile latex gloves + Goggles	Already OT staff shall be wearing For personnel involved in aerosol generating procedures
				N-95 mask*	*If the person being operated upon is a resident of containment zone
7	Sanitation	Cleaning frequently touched surfaces/ floor/ changing linen	Low Risk	Triple Layer medical mask Latex examination gloves	

Table 6: Emergency department (non-covid)

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1	Emergency	Attending emergency cases	Mild risk	Triple Layer medical mask Latex examination gloves	No aerosol generating procedures are allowed
2		Attending to severely ill patients while performing aerosol generating procedure	High risk	Full complement of PPE (N-95 mask, coverall, goggle, Nitrile examination gloves, shoe cover)	

Table 7 : Other supportive/ Ancillary services

S.No.	Setting	Activity	Risk	Recommended PPE	Remarks
1.	Routine Laboratory	Sample collection and transportation and testing of routine (non-respiratory) samples	Mild risk	Triple layer medical mask Latex examination gloves	
		Respiratory samples	Moderate risk	N-95 mask Latex examination gloves	
2	Radio-diagnosis, Blood bank, etc.	Imaging services, blood bank services etc.	Mild risk	Triple layer medical mask Latex examination gloves	
3	CSSD/Laundry	Handling linen	Mild risk	Triple layer medical mask Latex examination gloves	
4	Other supportive services incl. Kitchen	Administrative Financial Engineering** and dietary** services, etc.	Low risk	Face cover	** Engineering and dietary service personnel visiting treatment areas will wear personal protective gears appropriate to that area

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	Low risk	Triple layer medical mask Latex examination gloves	

	Management of SARI patient	High risk	Full complement of PPE (N-95 mask, coverall, goggle, latex examination gloves, shoe cover)	While performing aerosol generating procedure
	Driving the ambulance	Low risk	Triple layer medical mask Latex examination gloves	Driver helps in shifting patients to the emergency

Points to remember while using PPE

1. Standard precaution to be followed at all times
2. PPEs are not alternative to basic preventive public health measures such as hand hygiene, respiratory etiquettes which must be followed at all times.
3. Always follow the laid down protocol for disposing off PPEs as detailed in infection prevention and control guideline available on website of MoHFW.

In addition, patients and their attendants to be encouraged to put on face cover.

❖ Risk Assessment and Management of exposure of Health Care Workers in the context of Covid-19 (WHO)

The health care personnel working in hospitals are at increased risk of acquiring the COVID-19 disease, if there is a breach in the personal protection while managing patients.

The health-work force is a valuable and scarce resource. Large number of COVID-19 affected health personnel getting isolated for treatment and their close contacts undergoing quarantine affects the health/ hospital service delivery.

This tool is for health care facilities with COVID 19 patients. The form should be completed for all HCWs who have been exposed to a patient with confirmed COVID-19. This tool aids in the risk assessment for HCWs after exposure and provides recommendations for their management.

The objectives are:

- To determine the risk categorization of each HCW after exposure to a COVID-19 patient (see below Part 1: COVID-19 virus exposure risk assessment form for HCWs);
- To inform the management of the exposed HCWs based on risk (see below Part 2: Management of health worker exposed to COVID-19 virus).

Facilities using these forms are encouraged to share deidentified data with WHO to guidance related to IPC. Data shared with WHO should not include any personally identifiable information (Questions 2A, 2B and 2G).

Part 1: COVID-19 virus exposure risk assessment form for HCWs

1. Interviewer information	
A. Interviewer name:	
B. Interview date (DD/MM/YYYY):	__/__/____
C. Interviewer phone number:	
D. Does the HCW have a history of staying in the same household or classroom environment with a confirmed COVID-19 patient?	<input type="checkbox"/> Yes <input type="checkbox"/> No
E. Does the HCW have history of traveling together in close proximity (within 1 meter) with a confirmed COVID-19 patient in any kind of conveyance?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Yes, to questions 1 D – 1E is considered community exposure to COVID-19. HCWs should be managed as such. The management recommendations in Part 2: Management of health workers exposed to COVID-19 virus apply only to exposure in health care settings

2. Health worker information	
A. Last name:	
B. First name:	
C. Age	
D. Sex:	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Prefer not to answer
E. City:	
F. Country:	
G. Contact details (phone number):	
H. Type of health care personnel:	<input type="checkbox"/> Medical doctor <input type="checkbox"/> Physician assistant <input type="checkbox"/> Registered nurse (or equivalent) <input type="checkbox"/> Assistant nurse, nurse technician (or equivalent) <input type="checkbox"/> Radiology /X-ray technician <input type="checkbox"/> Phlebotomist <input type="checkbox"/> Ophthalmologist <input type="checkbox"/> Physical therapist <input type="checkbox"/> Respiratory therapist <input type="checkbox"/> Nutritionist/dietitian <input type="checkbox"/> Midwife <input type="checkbox"/> Pharmacist <input type="checkbox"/> Pharmacy technician or dispenser <input type="checkbox"/> Laboratory personnel <input type="checkbox"/> Admission/reception clerk <input type="checkbox"/> Patient transporter <input type="checkbox"/> Catering staff <input type="checkbox"/> Cleaner <input type="checkbox"/> Other (specify):
I. Type of health care facility:	Tick all that apply: <input type="checkbox"/> Outpatient

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	<input type="checkbox"/> Emergency <input type="checkbox"/> Medical unit <input type="checkbox"/> Intensive care unit <input type="checkbox"/> Cleaning services <input type="checkbox"/> Laboratory <input type="checkbox"/> Pharmacy <input type="checkbox"/> Other, specify:
3. Health worker interactions with COVID-19 patient information	
A. Date of health worker first exposure to confirmed COVID-19 patient:	Date (DD/MM/YYYY): _____ / _____ / _____ <input type="checkbox"/> Not known
B. Name of health care facility where patient received care:	
C. Type of health care setting:	<input type="checkbox"/> Hospital <input type="checkbox"/> Outpatient clinic <input type="checkbox"/> Primary health centre <input type="checkbox"/> Home care for patients with mild symptoms <input type="checkbox"/> Other (specify):
D. City:	
E. Country:	
F. Multiple COVID-19 patients in health care facility	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If yes, number of patients (approximate if exact number not known):
4. HCW activities performed on COVID-19 patient in health care facility	
A. Did you provide direct care to a confirmed COVID-19 patient?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
B. Did you have face-to-face contact (within 1 metre) with a confirmed COVID-19 patient in a health care facility?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
C. Were you present when any aerosol-generating procedures were performed on the patient? See below for examples	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
- If yes, what type of procedure?	<input type="checkbox"/> Tracheal intubation <input type="checkbox"/> Nebulizer treatment <input type="checkbox"/> Open airway suctioning <input type="checkbox"/> Collection of sputum <input type="checkbox"/> Tracheotomy <input type="checkbox"/> Bronchoscopy <input type="checkbox"/> Cardiopulmonary resuscitation (CPR) <input type="checkbox"/> Other (specify):
D. Did you have direct contact with the environment where the confirmed COVID-19 patient was cared for? E.g. bed, linen, medical equipment, bathroom etc	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown
E. Were you involved in health care interaction(s) (paid or unpaid) in another health care facility during the period above?	<input type="checkbox"/> Other health care facility (public or private) <input type="checkbox"/> Ambulance <input type="checkbox"/> Home care <input type="checkbox"/> No other health care facility

If the health worker responds 'Yes' to any of the Questions 4A–4D the health worker should be considered as being exposed to COVID-19 virus.

5. Adherence to IPC procedures during health care interactions	
<p>For the following questions, please quantify the frequency with which you wore PPE, as recommended: 'Always, as recommended' means more than 95% of the time; 'Most of the time' means 50% or more but not 100%; 'occasionally' means 20% to under 50% and 'Rarely' means less than 20%.</p>	
A. During a health care interaction with a COVID-19 patient, did you wear personal protective equipment (PPE)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
- If yes, for each item of PPE below, indicate how often you used it:	
- 1. Single-use gloves	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 2. Medical mask	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 3. Face shield or goggles/protective glasses	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 4. Disposable gown	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
B. During a health care interaction with the COVID-19 patient, did you remove and replace your PPE according to protocol (e.g. when medical mask became wet, disposed the wet PPE in the waste bin, performed hand hygiene, etc.)?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
C. During a health care interaction with the COVID-19 patient, did you perform hand hygiene before and after touching the COVID-19 patient (whether or not you were wearing gloves)?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
D. During a health care interaction with the COVID-19 patient, did you perform hand hygiene before and after any clean or aseptic procedure was performed (e.g. while inserting a peripheral vascular catheter, urinary catheter, intubation, etc.)?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
E. During a health care interaction with the COVID-19 patient, did you perform hand hygiene after exposure to body fluid?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
F. During a health care interaction with the COVID-19 patient, did you perform hand hygiene after touching the patient's surroundings (bed, door handle, etc.), regardless of whether you were wearing gloves?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely

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G. During a health care interaction with the COVID-19 patient, were high-touch surfaces decontaminated frequently (at least three times daily)?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
6. Adherence to IPC measures when performing aerosol-generating procedures (e.g. tracheal intubation, nebulizer treatment, open airway suctioning, collection of sputum, tracheotomy, bronchoscopy, cardiopulmonary resuscitation (CPR), etc.).	
For the following questions, please quantify the frequency with which you wore PPE, as recommended: 'Always, as recommended' means more than 95% of the time; 'Most of the time' means 50% or more but not 100%; 'occasionally' means 20% to under 50% and 'Rarely' means less than 20%.	
A. During aerosol-generating procedures on a COVID-19 patient, did you wear personal protective equipment (PPE)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
- If yes, for each item of PPE below, indicate how often you used it:	
- 1. Single-use gloves	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 2. N95 mask (or equivalent respirator)	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 3. Face shield or goggles/protective glasses	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 4. Disposable gown	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
- 5. Waterproof apron	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
B. During aerosol-generating procedures on the COVID-19 patient, did you remove and replace your PPE according to protocol (e.g. when medical mask became wet, disposed the wet PPE in the waste bin, performed hand hygiene, etc.)?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
C. During aerosol-generating procedures on the COVID-19 patient, did you perform hand hygiene before and after touching the COVID-19 patient, regardless of whether you were wearing gloves?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
D. During aerosol-generating procedures on the COVID-19 patient, did you perform hand hygiene before and after any clean or aseptic procedure was performed?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely

E. During aerosol-generating procedures on the COVID-19 patient, did you perform hand hygiene after touching the patient's surroundings (bed, door handle, etc), regardless of whether you were wearing gloves?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
F. During aerosol-generating procedures on the COVID-19 patient, were high-touch surfaces decontaminated frequently (at least three times daily)?	<input type="checkbox"/> Always, as recommended <input type="checkbox"/> Most of the time <input type="checkbox"/> Occasionally <input type="checkbox"/> Rarely
7. Accidents with biological material	
A. During a health care interaction with a COVID-19 patient, did you have any type of accident with body fluid/respiratory secretions? See below for examples	<input type="checkbox"/> Yes <input type="checkbox"/> No
- If yes, which type of accident?	<input type="checkbox"/> Splash of biological fluid/respiratory secretions in the mucous membrane of eyes <input type="checkbox"/> Splash of biological fluid/respiratory secretions in the mucous membrane of mouth/nose <input type="checkbox"/> Splash of biological fluid/respiratory secretions on non- intact skin <input type="checkbox"/> Puncture/sharp accident with any material contaminated with biological fluid/respiratory secretions

- **Risk categorization of health workers exposed to COVID-19 virus**

1. High risk for COVID-19 virus infection

The HCW did not respond 'Always, as recommended' to Questions:

- 5A1 – 5G, 6A – 6F
- Or responded 'Yes' to 7A.

2. Low risk for COVID-19 virus infection

All other answers

Part 2: Management of HCWs exposed to COVID-19 virus

1. Institutional Mechanism for preventing and responding to Healthcare Associated Infections (HAIs) among HCWs

Hospitals shall activate its Hospital Infection Control Committee (HICC). The HICC in the health facility is responsible for implementing the Infection Prevention and Control (IPC) activities and organizing regular trainings on IPC for HCWs.

A Nodal Officer (Infection Control Officer) shall be identified by each hospital to address all matters related to Healthcare Associated Infections (HAIs). With reference to preventing such infection among healthcare workers, he/she will ensure that:

- i. Healthcare workers in different settings of hospitals shall use PPEs appropriate to their risk profile as detailed in the guidelines issued by this Ministry (available at: <https://www.mohfw.gov.in/pdf/GuidelinesonrationaluseofPersonalProtectiveEquipment.pdf> & [equipmentsettingapproachforHealthfunctionariesworkinginnonCOVID19areas.pdf](https://www.mohfw.gov.in/pdf/equipmentsettingapproachforHealthfunctionariesworkinginnonCOVID19areas.pdf))
- ii. All healthcare workers have undergone training on Infection Prevention and Control and they are aware of common signs and symptoms, need for self-health monitoring and need for prompt reporting of such symptoms.
- iii. Provisions have been made for regular (thermal) screening of all hospital staff.
- iv. All healthcare workers managing COVID-19 cases are being provided with chemoprophylaxis under medical supervision.
- v. Provisions have been made for prompt reporting of breach of PPE by the hospital staff and follow up action.

2. Action for Healthcare Workers

- i. Ensure that all preventive measures like frequent washing of hands/use of alcohol based hand sanitizer, respiratory etiquettes (using tissue/handkerchief while coughing or sneezing), etc. are followed at all times.
- ii. He/she shall use appropriate PPE at all times while on duty.
- iii. A buddy system* to be followed to ensure that there is no breach in infection prevention control practices.
- iv. Any breach in PPE and exposure is immediately informed to the nodal officer/HoD of the department
- v. HCWs after leaving the patient care units (wards/OPDs/ICUs) at the doctor's duty rooms/hostels/canteen or outside the HCF must follow social distancing and masking to prevent transmission to/acquiring infection from other HCWs who may be positive.
- vi. Pregnant/lactating mothers and immuno-compromised healthcare workers shall inform their medical condition to the hospital authorities for them to get posted only

in non-Covid areas.

3. *Buddy system: Under this approach, two or more-person team is formed amongst the deployed hospital staff who share responsibilities for his/her partner's safety and well-being in the context of (i) Appropriately donning and doffing of PPEs, (ii) maintaining hand hygiene and (iii) taking requisite steps on observing breach of PPEs.

4. SOP for health work force deployment during COVID-19

▪ SOP to be followed in case HCW reports exposure/breach of PPE

All the Healthcare workers must report every exposure to COVID-19 to the concerned nodal officer and HoD of the concerned department immediately.

The Nodal officer will get the exact details of exposure to ascertain whether the exposure constitutes a high risk or low risk exposure as described below:

• High risk exposure:

- HCW or other person providing care to a COVID-19 case or lab worker handling respiratory specimens from COVID-19 cases without recommended PPE or with possible breach of PPE
- Performed aerosol generating procedures without appropriate PPE.
- HCWs without mask/face-shield/goggles:
 - having face to face contact with COVID-19 case within 1 metre for more than 15 minutes
 - having accidental exposure to body fluids

• Low risk exposure:

- Contacts who do not meet criteria of high risk exposure

The Nodal Officer/Head of the Department will form a sub-committee to assess the level of exposure and the risk as per assessment format at Annexure I. As per their assessment:

- For doctors, nursing officers and other health workers with high risk exposure, the quarantine period shall be initially for one week only.
- Thereafter taking profile of such doctors, nursing officers and other health workers, a decision shall be taken by the Nodal Officer/Head of the Department (or his appointed Sub-committee) for further period of one week.
- After a week, they shall be tested as per ICMR testing protocol, actively monitored for development of symptoms and managed as per laid down protocol.
 - If they test positive but remain asymptomatic they will follow protocol for very mild/mild/pre- symptomatic cases as described in para 5.2.1 (a) below.
 - If they test negative and remain asymptomatic, complete 14 day quarantine and return to work.

- Should symptoms develop, follow the guidance para 5.2.
- Low risk contacts shall continue to work. They will self-monitor their health for development of symptoms. In case symptoms develop, the guidance under para 5.2 would be followed.

▪ **SOP to be followed in case HCW reports symptoms suggestive of COVID-19**

- ✓ If any healthcare worker who is manifesting signs and symptoms suggestive of COVID-19, he/she will be isolated immediately and the following procedure will follow:
 - a. In case of mild/very mild/pre-symptomatic case, he/she will have an option of home isolation, subject to the conditions stipulated in the revised guidelines for home isolation of very mild/pre-symptomatic COVID-19 cases(available at: <https://www.mohfw.gov.in/pdf/RevisedguidelinesforHomelsofverymildpresymptomaticCOVID19cases10May2020.pdf>). Such cases would end their home isolation as per timeline provided in the said guidelines.
 - b. In cases where home isolation is not feasible, such mild/very mild/pre-symptomatic cases will be admitted to a COVID Care Center#.
 - c. Moderate cases that require oxygen therapy shall be managed at a Dedicated COVID Health Center#
 - d. Severe cases will be managed in a Dedicated COVID Hospital#.

For cases admitted COVID Health facilities, their discharge will be governed guidelines available at: <https://www.mohfw.gov.in/pdf/ReviseddischargePolicyforCOVID19.pdf>

The details of categorization of health facilities as COVID Care center, Dedicated COVID Health Center and Dedicated COVID Hospitals along with categorization of patients (mild/moderate/severe) is available at:<https://www.mohfw.gov.in/pdf/FinalGuidanceonMangaementofCovidcasesversion2.pdf>.

- ✓ Those who test negative, will be managed as in non-COVID area as per their clinical diagnosis. Their resuming work will be based on the clinical diagnosis and the medical certification by the treating doctor.
- ✓ For HCWs (with low risk exposure), who continue to work and develop symptoms:
 - And test positive, further management would be based on their clinical presentation and as described in para 5.2 (1) (a) above
 - Those who test negative, will return to work subject to medical certification for ailment

- ✓ Discharge of COVID-19 positive HCWs will be in accordance with the discharge policy (available at: <https://www.mohfw.gov.in/pdf/ReviseddischargePolicyforCOVID19.pdf>).

Quarantine of healthcare workers, other than what is stipulated above is not warranted.

❖ **Current testing strategy (ICMR) Version 5, dated 18/05/2020:**

- 2 All symptomatic (ILI symptoms) individuals with history of international travel in the last 14 days.
- 3 All symptomatic (ILI symptoms) contacts of laboratory confirmed cases.
- 4 All symptomatic (ILI symptoms) health care workers / frontline workers involved in containment and mitigation of COVID19.
- 5 All patients of Severe Acute Respiratory Infection (SARI).
- 6 Asymptomatic direct and high-risk contacts of a confirmed case to be tested once between day 5 and day 10 of coming into contact.
- 7 All symptomatic ILI within hotspots/containment zones.
- 8 All hospitalised patients who develop ILI symptoms.
- 9 All symptomatic ILI among returnees and migrants within 7 days of illness.
- 10 No emergency procedure (including deliveries) should be delayed for lack of test. However, sample can be sent for testing if indicated as above (1-8), simultaneously.

NB.

- *ILI case is defined as one with acute respiratory infection with fever \geq 38°C and cough.*
- *SARI case is defined as one with acute respiratory infection with fever \geq 38° C AND cough AND requiring hospitalization.*
- *All testing in the above categories is recommended by real time RT-PCR test only.*

❖ LABORATORY DIAGNOSIS & SPECIMEN HANDLING

Sample collection

Preferred sample Throat and nasal swab in viral transport media (VTM) and transported in cold chain.

Alternate Nasopharyngeal swab, BAL or endotracheal aspirate which has to be mixed with the viral transport medium and transported in cold chain.

General guidelines

- Use appropriate PPE for specimen collection (droplet and contact precautions for URT specimens; airborne precautions for LRT specimens). Maintain proper infection control when collecting specimens
- Restricted entry to visitors or attendants during sample collection
- Complete the requisition form for each specimen submitted
- Proper disposal of all waste generated

Respiratory specimen collection methods:

A. Lower respiratory tract

- Bronchoalveolar lavage, tracheal aspirate, sputum
- Collect 2-3 mL into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container.

B. Upper respiratory tract

- Nasopharyngeal swab AND oropharyngeal swab

Oropharyngeal swab (e.g. throat swab): Tilt patient's head back 70 degrees. Rub swab over both tonsillar pillars and posterior oropharynx and avoid touching the tongue, teeth, and gums. Use only synthetic fiber swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden shafts. Place swabs immediately into sterile tubes containing 2-3 ml of viral transport media.

Combined nasal & throat swab: Tilt patient's head back 70 degrees. While gently

rotating the swab, insert swab less than one inch into nostril (until resistance is met at turbinates). Rotate the swab several times against nasal wall and repeat in other nostril using the same swab. Place tip of the swab into sterile viral transport media tube and cut off the applicator stick. For throat swab, take a second dry polyester swab, insert into mouth, and swab the posterior pharynx and tonsillar areas (avoid the tongue). Place tip of swab into the same tube and cut off the applicator tip.

Nasopharyngeal swab: Tilt patient's head back 70 degrees. Insert flexible swab through the nares parallel to the palate (not upwards) until resistance is encountered or the distance is equivalent to that from the ear to the nostril of the patient. Gently, rub and roll the swab. Leave the swab in place for several seconds to absorb secretions before removing.

Clinicians may also collect lower respiratory tract samples when these are readily available (for example, in mechanically ventilated patients). In hospitalized patients in Dedicated Covid Hospitals (severe cases with confirmed COVID - 19 infection, repeat upper respiratory tract samples should be collected to demonstrate viral clearance.

Recommended Test

Real time or Conventional RT-PCR test is recommended for diagnosis. SARS-CoV-2 antibody tests are not recommended for diagnosis of current infection with COVID-19.

Dual infections with other respiratory infections (viral, bacterial and fungal) have been found in COVID-19 patients. Depending on local epidemiology and clinical symptoms, test for other potential etiologies (e.g. Influenza, other respiratory viruses, malaria, dengue fever, typhoid fever) as appropriate.

For COVID-19 patients with severe disease, also collect blood cultures, ideally prior to initiation of antimicrobial therapy.

SPECIMEN COLLECTION, PACKAGING AND TRANSPORT GUIDELINES FOR 2019-nCoV

Title: Specimen Collection, Packaging and Transport Guidelines for 2019 Novel Coronavirus (2019-nCoV)	SOP number: ICMR-NIV/2019-nCoV/Specimens_01 Prepared by: Dr. Y.K. Gurav Date: 19/01/2020 Reviewed by: Dr. V. Potdar Date: 20/01/2020 Approved by: Dr. P. Abraham Date: 20/01/2020
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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 a clinician.
 - By following all biosafety precautions and using personal protective equipment (PPEs), clinical samples need to be sent to the 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 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	Collecti on materials	Transp ort to laborato ry	Storage till testing	Comme nt
Nasopharyngeal and oropharyngeal swab	Dacron or polyester flocced 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

**For transport of samples for viral detection, use VTM (viral transport medium) containing antifungal and antibiotic supplements. Avoid repeated freezing and thawing of specimens.*

Specimen labelling and processing:

- Personal protective equipment (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.

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			
<p>1. Use PPE while handling specimen</p> 	<p>2. Seal the neck of the sample vials using parafilm</p> 	<p>3. Cover the sample vials using absorbent material</p> 	<p>4. Arrange primary container (vial) in secondary container</p> 
<p>5. Placing the centrifuge tube inside a zip-lock pouch</p> 	<p>6. Placing the zip-lock pouch inside a sturdy plastic container and seal the neck of the container</p> 	<p>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</p>	<p>7. Using a thermocol box As an outer container and placing the secondary container within it, surrounded by hard- frozen gel packs</p> 
<p>7. Using a hard card-board box as an outer container and placing the secondary container and the gel packs</p> 	<p>8. Placing the completed Specimen Referral Form (available on www.niv.co.in) and request letter inside a leak-proof, zip-lock pouch</p> 	<p>9. Securing the zip-lock pouch with the Specimen Referral Form on the outer container</p> 	<p>10. Attaching the labels:</p> <ul style="list-style-type: none"> • Senders' address, contact number; Consignee's address /contactnumber; • Biological substance-Category B; • 'UN 3373'; Orientation label, Handle with care 
<p>Documents to accompany:</p> <p>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)]</p>			
<p>Routing of samples:</p> <ul style="list-style-type: none"> • 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: 4110001). • For shipment-related queries/information, kindly contact Dr Sumit Bharadwaj (Scientist B, Influenza Group) on email: sumitduttbhardwaj@gmail.com, phone 020-26006290/26006390 			

❖ **MANAGEMENT** (home and hospital)- MoHFW , WHO

□ **Indications for hospital admission of suspected and confirmed COVID-19 cases:**

✓ ***Current recommendation is to admit ALL symptomatic COVID-19 confirmed cases regardless of severity.***

✓ ***In the event of large number of COVID-19 cases, the following criteria may be applied to consider for admission (Any ONE of the following five criteria):***

1. Respiratory rate > 30/min

2. SpO₂ < 92%

3. Confusion/drowsiness

4. Systolic BP < 90 mmHg or diastolic BP < 60 mmHg

5. Any two of the following

-Age > 65 years

-Comorbidities (hypertension, heart disease, chronic lung disease, pregnancy, immunocompromised)

-Radiological features suggestive of pneumonia

➤ **Baseline INVESTIGATIONS and Treatment** (to be sent on admission) : Chest x-ray, CECT thorax (if indicated) CBC, LFT, KFT, ABG, CRP, Procalcitonin (if available), ECG, Serum electrolytes, ABO/Rh typing and viral markers.

- Paracetamol for fever
- Anti-tussive syrup to reduce cough
- Head end elevation
- Oral hygiene with chlorhexidine mouthwash BD
- Glycemic control to maintain blood sugar between 140 and 180 mg/dl

- Ulcer prophylaxis with proton pump inhibitors
- Thromboprophylaxis with subcutaneous low molecular weight heparin and DVT pump (if available)
- Foley's catheter and Ryle's tube SOS
- Central venous catheter SOS

- Bed sore prevention by position change every 2 hours

- **Management of mild/Uncomplicated cases:**

Mild cases can be managed at CCC, First referral Units, CHC, sub-district and district hospitals or at home subject to conditions stipulated in the home isolation guidelines

Detailed clinical history is taken including that of co-morbidities. Patient is followed up daily for temperature, vitals and Oxygen saturation (SpO₂).

Counsel patients with mild COVID-19 about signs and symptoms of complications that should prompt urgent care.

Patients with risk factors for severe illness should be monitored closely, given the possible risk of deterioration.

If they develop any worsening symptoms (such as light headedness, difficulty breathing, chest pain, dehydration, etc.), they should be immediately admitted to a Dedicated Covid Health Centre or Dedicated Covid Hospital.

Caregivers of children with mild COVID-19 should monitor for signs and symptoms of clinical deterioration requiring urgent re-evaluation. These include difficulty in breathing/fast or shallow breathing (for infants: grunting, inability to breastfeed), blue lips or face, chest pain or pressure, new confusion, inability to awaken/not interacting when awake, inability to drink or keep down any liquids.

Mild COVID-19 cases may be given symptomatic treatment such as

- Antipyretic (Paracetamol) for fever and pain,
- Adequate nutrition and appropriate rehydration.
- Tab Hydroxychloroquine (HCQ) may be considered for any of those having high risk features for severe disease (such as age > 60; Hypertension, diabetes, chronic lung/kidney/ liver disease, Cerebrovascular disease and obesity) under strict medical supervision.
- Antussive syrup (eg. Dextromethorphan, levodropropizine) to reduce droplet transmission
- Plenty of warm nourishing oral fluids
- Balanced diet
- Adequate sleep and rest
- Saline gargle for sore throat if present

• **Management of Moderate Cases :**

Patients with suspected or confirmed moderate COVID-19 (pneumonia) is to be isolated to contain virus transmission. Patients with moderate disease may present to an emergency unit or primary care/out patient department, or be encountered during community surveillance activities, such as active house to house search or by telemedicine.

The defining clinical assessment parameters are Respiratory Rate of ≥ 24 and oxygen saturation (SpO₂) of less than 94% on room air (range 90-94%).

Such patients will be isolated in Dedicated Covid Health Centre (DCHC) or District hospital or Medical College hospitals.

The patient will undergo detailed clinical history including co-morbid conditions, measurement of vital signs, Oxygen saturation (SpO₂) and radiological examination of Chest X-ray, Complete Blood Count and other investigations as indicated.

Antibiotics should not be prescribed routinely unless there is clinical suspicion of a bacterial infection.

Clinical Management of Moderate cases

Oxygen Support:

- Target SpO₂: 92 -96% (88-92% in patients with COPD)
- The device for administering oxygen (nasal prongs, mask, or masks with breathing /non-rebreathing reservoir bag) depends upon the increasing requirement of oxygen therapy. If HFNC or simple nasal cannula is used, N95 mask should be applied over it.
- Awake proning may be used as a rescue therapy.
- All patients should have daily 12-lead ECG
- Follow CRP, D-dimer & Ferritin every 48-72 hourly (if available); CBC with differential count, Absolute Lymphocyte count, KFT/LFT daily

- Tab. Hydroxychloroquine (400mg) BD on 1st day followed by 200mg 1 BD for 4 days. (after ECG Assessment)
- Consider IV methylprednisolone 0.5 to 1 mg/kg or Dexamethasone 0.1 to 0.2 mg/kg for 3 days (preferably within 48 hours of admission or if oxygen requirement is increasing and if inflammatory markers are increased). Review the duration of administration as per clinical response.

Anticoagulation

- Prophylactic dose of UFH or LMWH (e.g., enoxaparin 40 mg per day SC)
- Control of co-morbid condition
- Monitor for:
 - Increased work of breathing (use of accessory muscles)
 - Hemodynamic instability
 - Increase in oxygen requirement

If any of the above occurs, shift to Dedicated Covid Hospital.

Few patients with COVID-19 experience a secondary bacterial infection. Consider empiric antibiotic therapy as per local antibiogram and guidelines in older people, immune-compromised patients, and children < 5 years of age.

Close monitoring of patients with moderate COVID-19 is required for signs or symptoms of disease progression. Provision of mechanisms for follow up and transportation to Dedicated Covid Hospital should be available.

▪ **Management of Severe Cases:**

Early supportive therapy and monitoring

- a. Give supplemental oxygen therapy immediately to patients with Severe Covid and respiratory distress, hypoxaemia, or shock: Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target SpO₂ ≥ 90% in non-pregnant adults and SpO₂ ≥ 92- 96% 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 SpO₂ ≥ 94%. All areas where patients with Severe Covid 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 Severe Covid when there is no evidence of shock.

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; FiO₂ 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 Cannula oxygenation (HFNO) 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. 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. 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).

There has been concern raised about generation of aerosols while using HFNO and NIV. However, 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. 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.

- 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% FiO₂ 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 cmH₂O). 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. dys-synchrony, 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 16-18 hours per day is recommended but requires sufficient human resources and expertise to be performed safely.
- 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 FiO₂ required to maintain SpO₂. In patients with moderate-severe ARDS (PaO₂/FiO₂<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).

- **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 two of the three 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.
- 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 raising test, 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 \geq 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.

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 or Dexamethasone 0.2-0.4 mg/kg/day. Note that a larger dose of glucocorticoid will delay the removal of coronavirus due to immunosuppressive effects.

Prophylactic dose of UFH or LMWH (e.g., enoxaparin 40 mg per day SC) should be given for anti-coagulation. Control of co-morbid conditions should be ensured.

For pregnant severe cases, 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 counseling.

• Investigational Therapies :

At present, use of these therapies is based on a limited available evidence. As the situation evolves, and when more data become available, the evidence will be accordingly incorporated, and recommendation upgraded. Further, use of these drugs is subjected to limited availability in the country as of now. Currently, these drugs should only be used in a defined subgroup of patients:

1. **Remdesivir** (under Emergency Use Authorization) may be considered in patients with moderate disease (those on oxygen) with none of the following contraindications:

- AST/ALT > 5 times Upper limit of normal (ULN)
- Severe renal impairment (i.e., eGFR < 30ml/min/m² or need for hemodialysis)
- Pregnancy or lactating females
- Children (< 12 years of age)

Dose: 200 mg IV on day 1 followed by 100 mg IV daily for 5 days

2. **Convalescent plasma** (Off Label) may be considered in patients with moderate disease who are not improving (oxygen requirement is progressively increasing) despite use of steroids. Special prerequisites while considering convalescent plasma include:

- a. ABO compatibility and cross matching of the donor plasma
 - b. Neutralizing titer of donor plasma should be above the specific threshold (if the latter is not available, plasma IgG titer (against S-protein RBD) above 1:640 should be used)
- Recipient should be closely monitored for several hours post transfusion for any transfusion related adverse events
 - Use should be avoided in patients with IgA deficiency or immunoglobulin allergy

Dose: Dose is variable ranging from 4 to 13 ml/kg (usually 200 ml single dose given slowly over not less than 2 hours)

3. **Tocilizumab** (Off Label) may be considered in patients with moderate disease with progressively increasing oxygen requirements and in mechanically ventilated patients not improving despite use of steroids. Long term safety data in COVID 19 remains largely unknown. Special considerations before its use include:

- a. Presence of raised inflammatory markers (e.g., CRP, Ferritin, IL-6)

- b. Patients should be carefully monitored post Tocilizumab for secondary infections and neutropenia
- c. Active infections and Tuberculosis should be ruled out before use.

Dose: 8mg/kg (maximum 800 mg at one time) given slowly in 100 ml NS over 1 hour; dose can be repeated once after 12 to 24 hours if needed

4. **Favipiravir** is approved for the treatment of mild to moderate Covid-19 disease in adults by DCGI on 19th June 2020.

The recommended dosage of favipiravir for adults is 1800 mg orally twice daily on 1st day followed by 800 mg orally twice daily, up to maximum of 14 days. Contraindications: Women known or suspected to be pregnant (Early embryonic deaths and teratogenicity have been observed in animal studies), lactating women, severe renal and hepatic impairment. Hypersensitivity to the active substances or to any of the excipients.

5. **Hydroxychloroquine:** This drug has demonstrated in vitro activity against SARS-CoV2 and was shown to be clinically beneficial in several small single center studies though with significant limitations. Nonetheless, several large observational studies with severe methodologic limitations have shown no effect on mortality or other clinically meaningful outcomes. As such, the evidence base behind its use remains limited as with other drugs and should only be used after shared decision making with the patients while awaiting the results of ongoing studies. As is the case with other antivirals, this drug should be used as early in the disease course as possible to achieve any meaningful effects and should be avoided in patients with severe disease. An ECG should ideally be done before prescribing the drug to measure QTc interval (and HCQ avoided if QTc is >500 ms)

Dose: 400 mg BD on day 1 followed by 400mg daily for next 4 days.

This document will be updated as more data emerge. The document contains some potential off label/investigational use of medications and is based on a consensus of experts along with the available evidence. An informed and shared decision making is essential before prescribing any of these therapies.

Figure 2: SUSPECTED COVID-19 CASE MANAGEMENT ALGORITHM, ZMC

Q(+) / (-) = Quarantine needed / not needed

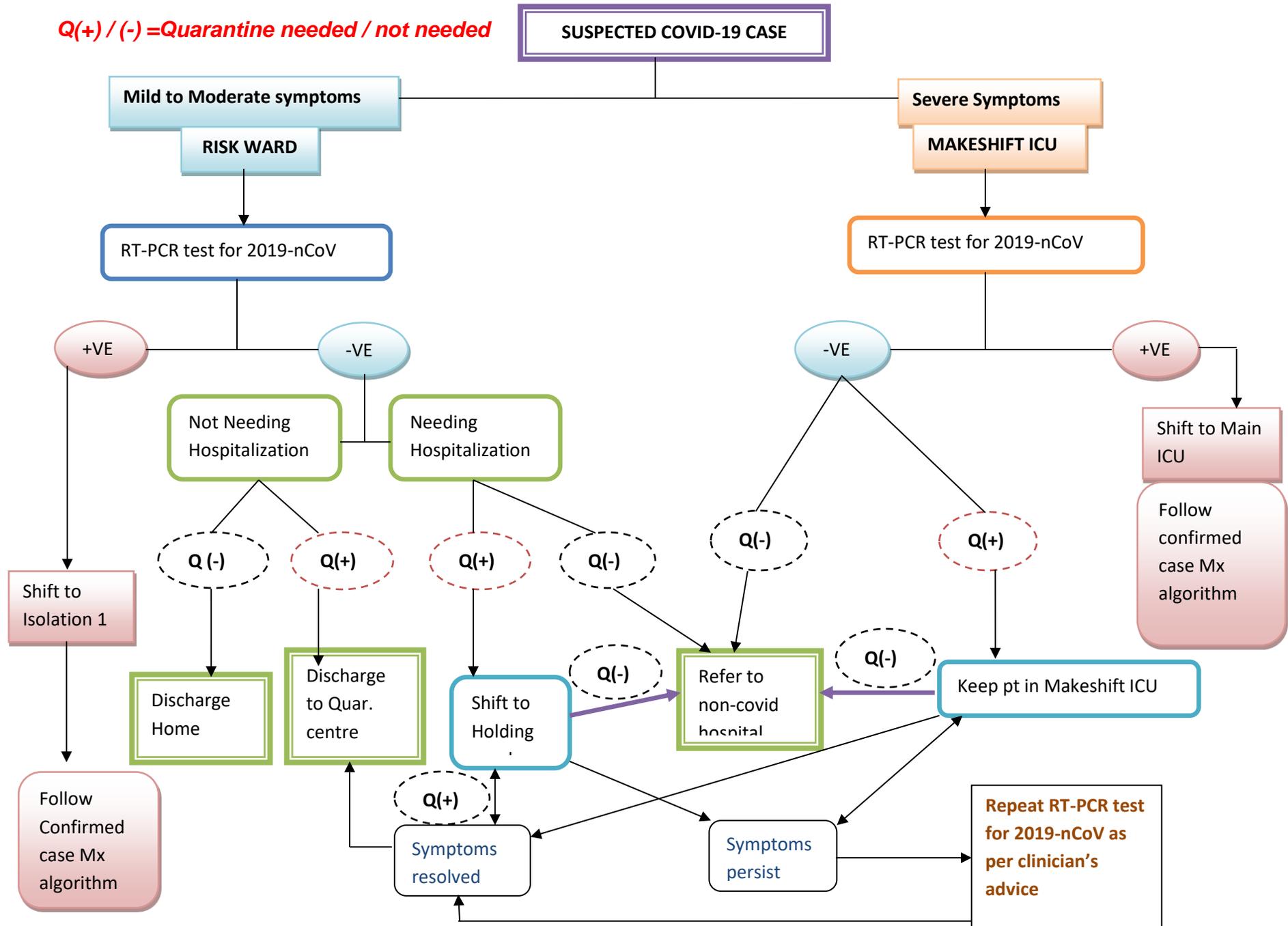


Figure 3: CONFIRMED COVID-19 CASE MANAGEMENT ALGORITHM, ZMC

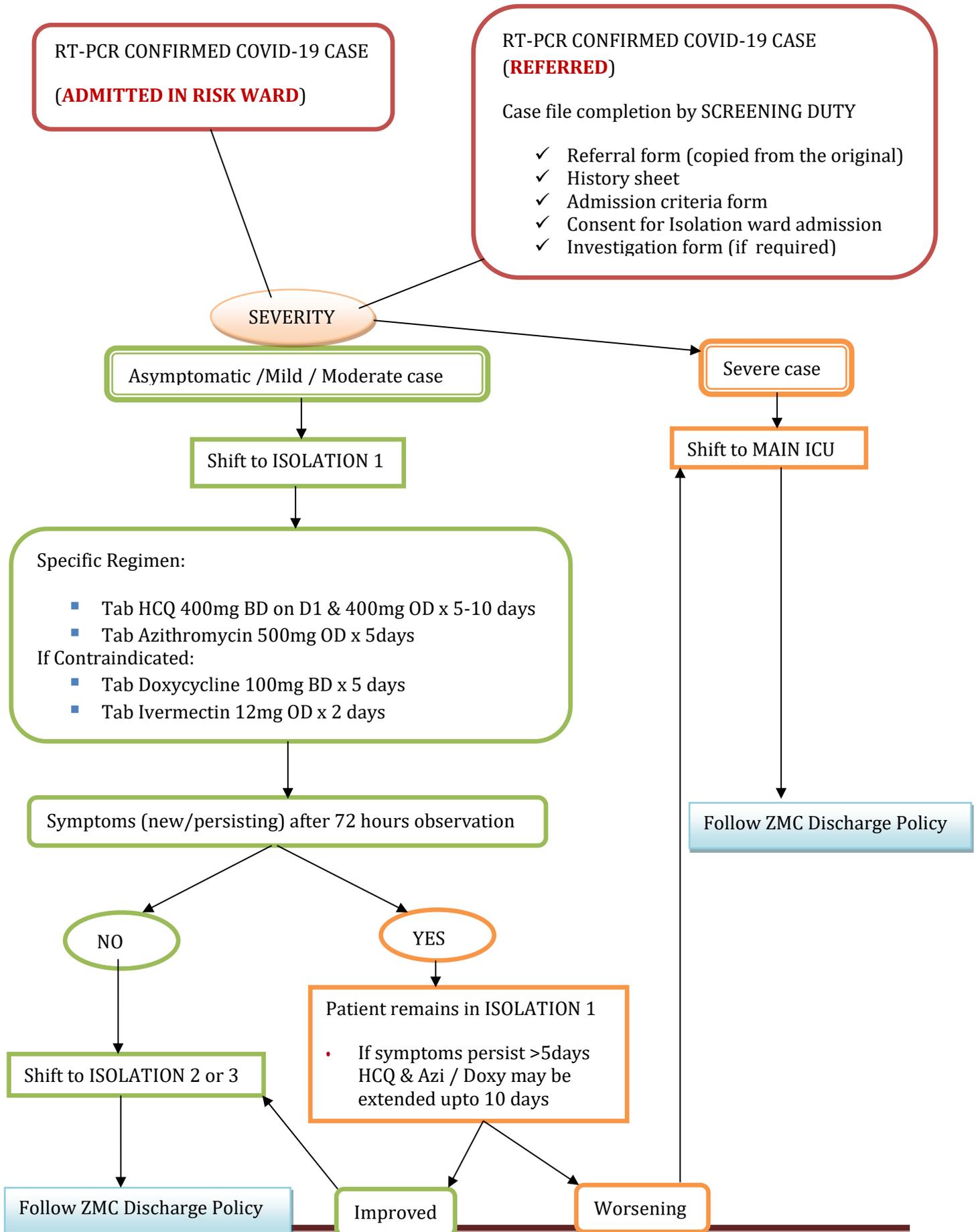


Figure 4: Clinical Guidance (MoHFW)

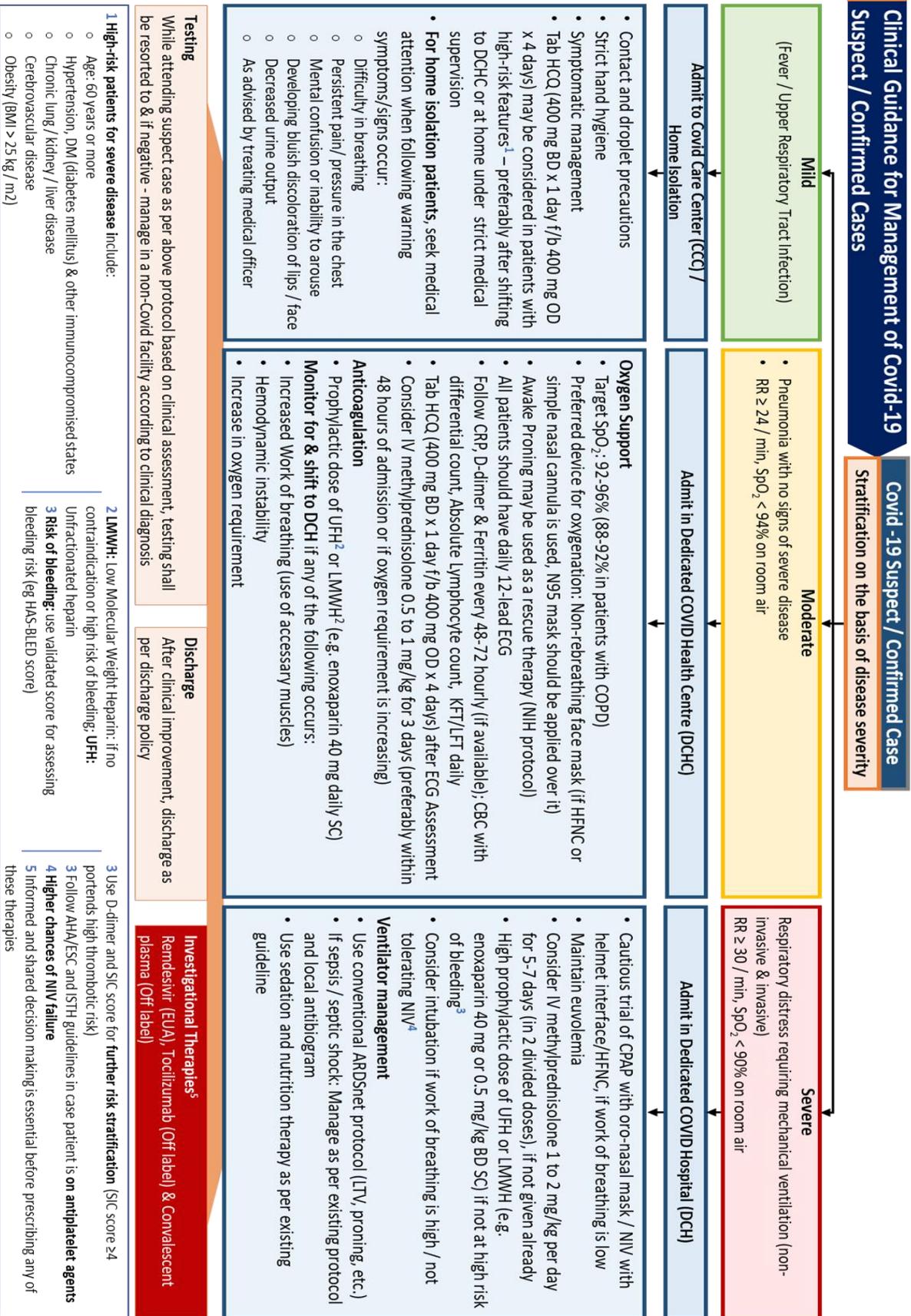
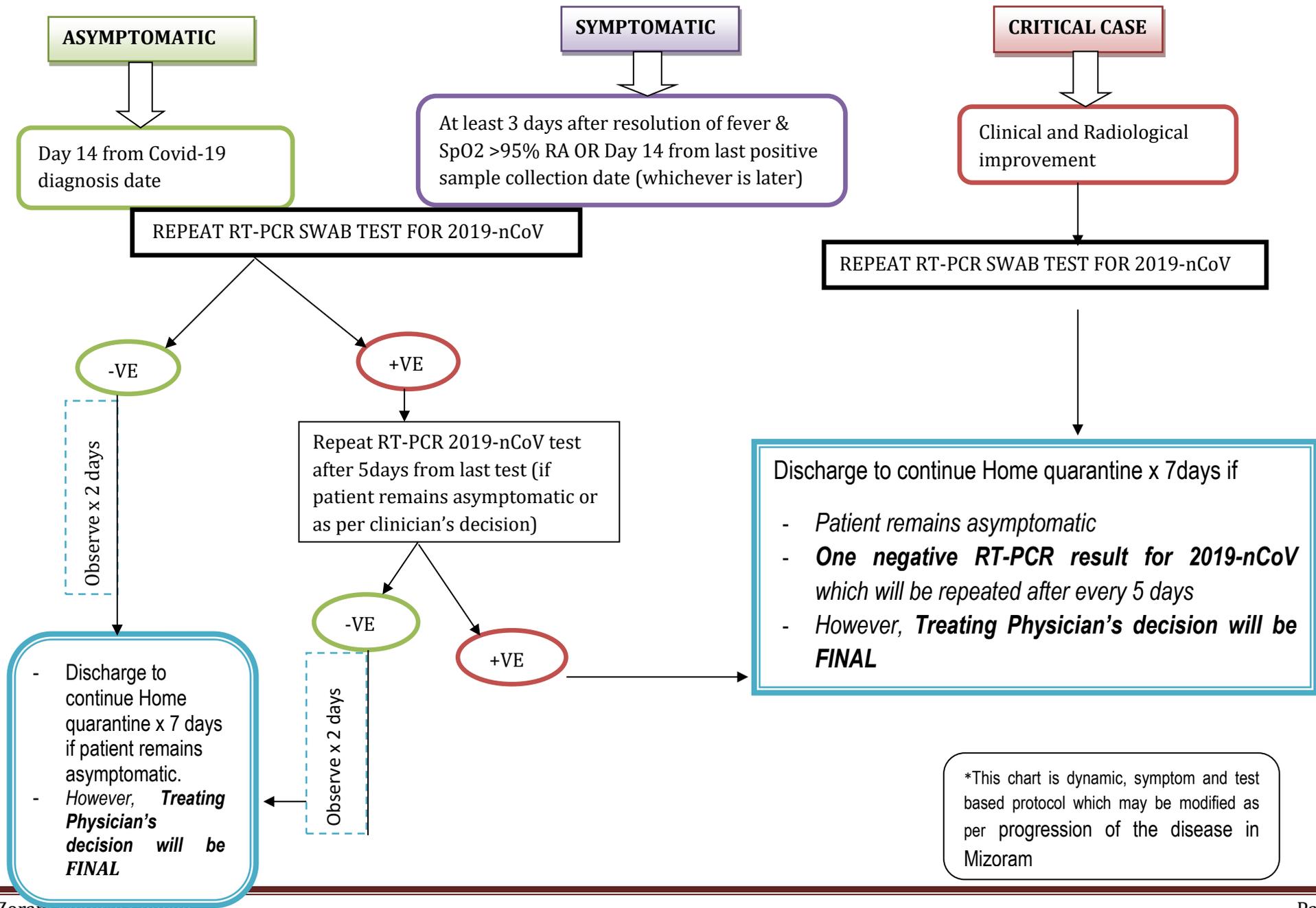


Figure 5: DISCHARGE PROTOCOL FOR COVID-19 PATIENTS, ZMC



➤ The Stress of Pandemic on Mental health

The SARS epidemic was associated with increased in PTSD, stress and psychological distress in patients and clinicians. For such events, the impact on mental health can occur in the immediate aftermath and then persist over long time period. Even in the context of COVID -19 pandemic, it appears likely that there will be substantial increases in psychological distress, anxiety and depression.

Coping with Stress: Here are some tips for coping with stress

- **Exercise:** Exercise releases endorphins in the brain which make you feel good.
- **Ventilate your emotion:** To ensure your emotions are not building up, release your emotion from time to time by taking it out, share it with close friends or expressing it out as drawings or paintings
- **Mental time-out:** As your body needs to rest so does your mind, taking a 10 min break thinking what you like, meditation, practising mindfulness can help. Even only 3 deep breathes can change things a lot
- **Get the right information:** Avoid flooding your mind with all the breaking news, your mind is not big to handle it. Get reliable information or get news periodically.
- Keep your mind busy by doing work for which you didn't have time before.
- Good food, good sleep is the best rest you can give your mind.
- Seek help if you are still overwhelmed.

1. Anxiety/ Acute Stress Reaction:

Symptoms: Restlessness, excessive worrying, fearfulness, apprehension, tension, palpitation and elevated pulse rate, dizziness.

Treatment: Tab. Paroxetine 12.5mg (Wrest CR/ Paradise XR) 1 tab HS Plus Clonazepam 0.5mg as needed.

2. Depression:

Symptoms: Low mood, loss of interest, loss of energy, negative feeling, decrease self-esteem, hopelessness, helplessness, worthlessness, suicidal ideas and increased guilt.

Treatment: Tab Sertraline 50mg (SRT-50) 1 tab HS plus Clonazepam 0.5mg as needed.

3. Psychosis:

Symptoms: Hallucination, Delusion and loss of touch with reality, irrelevancies and abnormal behaviour.

Treatment: Tab Olanzapine 10 mg (Oltha) 1 tab HS plus clonazepam 0.5mg as needed.

(Although there are little research on their interaction with hydroxychloroquine, the above drugs are considered quite safe in all patient and does not have much interaction with hydroxychloroquine. SSRIs except Citalopram and Escitalopram have negligible prolongation of QTc interval and olanzapine have been used successfully for treating psychosis in SLE patient taking hydroxychloroquine for a long time.)

4. Opioids Dependence Syndrome:

Symptoms: Bodyache, Restlessness, Increased saliva, lacrimation running nose, sweating, diarrhoea, insomnia.

Treatment: Tab. Tramadol SR 100mg

3 tabs morning ... 2 tabs 2pm.... 3tabs Hs for 2 days

Then 2 tabs morning ... 1 tab 2pm.... 2tabs Hs for 2 days

Then 1 tab morning 2tabs Hs for 2 days

Then 1 tab Hs for 2 days

5. Alcohol Dependence Syndrome:

Symptoms: Tremor, nausea, vomiting, insomnia, anxiety, excessive sweating, delirium, hallucination.

Treatment: Tab. Librium 10mg

3 tabs morning ... 2 tabs 2pm.... 3tabs Hs for 2 days

Then 2 tabs morning ... 1 tab 2pm.... 2tabs Hs for 2 days

Then 1 tab morning 2tabs Hs for 2 days

Then 1 tab Hs for 2 days

Plus Tab Ativan 2mg

2 tabs HS for 4 days

Then 1 Tab HS for 7 days

❖ **Standard Operating Procedure for COVID-19 management in Pregnant women**

Introduction : The following advice is provided as a resource for Zoram medical college Healthcare Professionals based on a combination of available evidence, good practice and expert advice. The priorities are the provision of safe care to women with suspected/confirmed COVID-19 and the reduction of onward transmission. Please be aware that this is very much an evolving situation and this guidance is a living document that may be updated if or when new information becomes available. This guidance will be kept under regular review as new evidence emerges. If you would like to suggest additional areas for this guidance to cover, any clarifications required or to submit new evidence for consideration, please email drmamawii@gmail.com.

Epidemiology : Pregnant women do not appear to be more susceptible to the consequences of infection with COVID-19 than the general population. Data are limited but special consideration should be given to pregnant women with concomitant medical illnesses who could be infected with COVID-19 until the evidence base provides clearer information. There are no reported deaths in pregnant women at the moment.

Transmission : Most cases of COVID-19 globally have evidence of human to human transmission. However, recent cases have appeared where there is no evidence of contact with infected people. This virus appears to spread readily, through respiratory, fomite or faecal methods. Healthcare providers are recommended to employ strict infection prevention and control (IPC) measures; guidance is available as per local Health Protection guidance. Only one case of possible vertical transmission (transmission from mother to baby antenatal or intrapartum) has been reported in the literature. Expert opinion is that the fetus is unlikely to be exposed during pregnancy. A case series published by Chen et al tested amniotic fluid, cord blood, neonatal throat swabs and breastmilk samples from COVID-19 infected mothers and all samples tested negative for the virus. Furthermore, in a different paper by Chen et al, three placentas of infected mothers were swabbed and tested negative for the virus. Transmission is therefore most likely to be as a neonate. There is currently no evidence concerning transmission through genital fluids. The management of the neonate during early bonding and feeding are discussed below.

Effect on the mother/symptoms: The large majority of women will experience only mild or moderate cold/flu like symptoms. Cough, fever and shortness of breath are other relevant symptoms. More severe symptoms such as pneumonia and marked hypoxia are widely described with COVID-19 in older people, the immuno-suppressed and those with long-term conditions such as diabetes, cancer and chronic lung disease. These symptoms could occur in pregnant women so should be identified and treated promptly. At present there is one reported case of a woman with COVID-19 who required mechanical ventilation at 30 weeks' gestation, following which she had an emergency caesarean section and made a good recovery. Within the general population there is evolving evidence that there could be a cohort of asymptomatic individuals or those with very minor symptoms that are carrying the virus, although the incidence is unknown.

Effect on the fetus : There are currently no data suggesting an increased risk of miscarriage or early pregnancy loss in relation to COVID-19. Case reports from early pregnancy studies with SARS and MERS do not demonstrate a convincing relationship between infection and increased risk of miscarriage or second trimester loss. As there is no evidence of intrauterine fetal infection with COVID-19 it is therefore currently considered unlikely that there will be congenital effects of the virus on fetal development. There are case reports of preterm birth in women with COVID-19, but it is unclear whether the preterm birth was always iatrogenic, or whether some were spontaneous. Iatrogenic delivery was predominantly for maternal indications related to the viral infection, although there was evidence of fetal compromise and prelabour premature rupture of membrane, in at least one report.

- **Advice for health professionals to share with pregnant women**

Travel advice for pregnant women: Pregnant women should follow the advice given by state government. All individuals, including pregnant women, should ensure that they have adequate insurance arrangements prior to travel. Finally, pregnant women should check that their travel insurance will provide cover for birth and care of a newborn baby if they give birth while abroad.

General advice for pregnant women who may have been exposed to COVID-19 or are experiencing symptoms suggestive of COVID-19 : Pregnant women concerned about exposure or symptoms indicating possible infection with

COVID-19 in Mizoram should call their doctor or helpline (102) or visit ZMC Falkawn, if it is an emergency.

Women returning from areas of the world which indicate a possible increased risk for coronavirus transmission or who have been in contact with a known case of COVID-19 should phone 102 or ZMC/SRHF casualty.

Diagnostic swabs will be arranged if indicated, following advice from Covid 19 task force, ZMC. Women with symptoms suggestive of Covid19 should be advised to self-isolate until advised otherwise. Advice on self-isolation for mild confirmed cases is still being developed.

Advice regarding self-isolation for women with possible or confirmed:

Pregnant women who have been advised to self-isolate should stay indoors and avoid contact with others for 14 days. IDSP currently provides guidance for:

- People who are advised to self-isolate
- People who live in the same accommodation as someone who is self-isolating.

For women who are advised to self-isolate, the guidance currently recommends to:

- Not go to school, work, health care setting or public areas
- Not use public transport
- Stay at home and not allow visitors
- Ventilate the rooms where they are by opening a window
- Separate themselves from other members of their household as far as possible, using their own towels, crockery and utensils and eating at different times
- Use friends, family or delivery services to run errands, but advise them to leave items outside.

Women should be advised to contact their maternity care provider (e.g. midwife or antenatal clinic), to discuss attendance for routine antenatal appointments. Pregnant women who are due to attend routine maternity appointments should contact their maternity care provider, to inform them that they are currently in self-isolation for

possible/confirmed COVID-19, and request advice on attendance.

Pregnant women are advised not to attend maternity triage units unless in need of urgent obstetric or medical care. If women are concerned and require urgent medical advice, they are encouraged to call the maternity triage unit in the first instance. If attendance at the maternity unit or hospital is advised, pregnant women are advised to travel by private transport, and maternity triage unit notified before entering the hospital premises.

Diagnosis of COVID-19: The process of COVID-19 diagnosis is changing rapidly. If diagnostic tests are advised, pregnant women should follow advice given, which should not be altered based on pregnancy status. In Mizoram, pregnant women should be investigated and diagnosed as per local/IDSP/Health criteria. Obstetricians and midwives should liaise with their local Task force on COVID-19 team for further details about arrangements for testing and notification reporting of a positive test result.

Advice for services caring for women with suspected or confirmed

COVID-19 :

The following suggestions apply to all hospital/clinic attendances for women with suspected or confirmed COVID-19: The following advice mostly refers to the care of women in the second or third trimesters of pregnancy. Care of women in the first trimester should include attention to the same infection prevention and investigation/diagnostic guidance, as for non-pregnant adults.

- Women should be advised to attend via private transport where possible or call 102 for advice as appropriate. If an ambulance is required, the call handler should be informed that the woman is currently in self-isolation for possible COVID-19.
- Women should be asked to alert a member of maternity staff to their attendance when on the hospital premises, but prior to entering the hospital
- Staff providing care should take personal protective equipment (PPE) precautions as per local guidelines
- Women should be met at the maternity unit entrance by staff wearing appropriate PPE and provided with a surgical face mask (not FFP3 mask). The face mask

should not be removed until the woman is isolated in a suitable room.

- Women should immediately be escorted to an isolation room, suitable for the majority of care during their hospital visit or stay

For overnight stays, isolation rooms should ideally have an ante-chamber for donning and removing staff PPE equipment and ensuite bathroom facilities

- Rooms should have negative pressure in comparison to the surrounding area, if available
- Only essential staff should enter the room and visitors should be kept to a minimum
- Remove non-essential items from the clinic/scan room prior to consultation
- All clinical areas used will need to be cleaned after use as per local / / Health protection guidance
- Women should immediately be escorted to an isolation room, suitable for the majority of care during their hospital visit or stay.

Women presenting for care with unconfirmed COVID-19 but symptoms suggestive of possible infection-

Maternity departments with direct entry for patients and the public should have in place a system for identification of potential cases as soon as possible to prevent potential transmission to other patients and staff. This should be at first point of contact (either near the entrance or at reception) to ensure early recognition and infection control. This should be employed before a patient sits in the maternity waiting area.

Services should follow guidance available from the college protocol about whether the woman is at risk of COVID-19. If women meet the “epidemiological criteria” to be tested (at the time of writing, travel to an affected area or exposure to a known case) and show symptoms, they should be tested. Until test results are available, they should be treated as though they have confirmed COVID-19.

Pregnant women may attend for pregnancy reasons and have coincidental symptoms meeting current COVID-19 case definition. There are some situations where overlap between pregnancy symptoms and COVID-19 symptoms may cause confusion (e.g. fever

with ruptured membranes). In cases of uncertainty seek additional advice or in case of emergency treat as suspected COVID-19 until advice can be sought.

In the event of a pregnant woman attending with an obstetric emergency and being suspected or confirmed to have COVID-19, maternity staff must first follow SOP guidance. This includes transferring to an isolation room and donning appropriate PPE. This can be time consuming and stressful for patients and health professionals. Once this is done, the obstetric emergency should be dealt with as the priority. Do not delay obstetric management in order to test for COVID-19.

Further care, in all cases, should continue as for a woman with confirmed COVID-19, until a negative test result is obtained.

Attendance for routine antenatal care in women with suspected or confirmed COVID-19 :

Routine appointments for women with suspected or confirmed COVID-19 (growth scans, OGTT, antenatal community or secondary care appointments) should be delayed until after the recommended period of isolation. Advice to attend more urgent pre-arranged appointments (fetal medicine surveillance, high risk maternal secondary care) will require a senior decision on urgency and potential risks/benefits.

Trusts are advised to arrange local, robust communication pathways for senior maternity staff members to screen and coordinate appointments missed due to suspected or confirmed COVID-19.

If it is deemed that obstetric or midwifery care cannot be delayed until after the recommended period of isolation, infection prevention and control measures should be arranged locally to facilitate care. Pregnant women in isolation who need to attend should be contacted by a local care coordinator to rebook urgent appointments / scans, preferably at the end of the working day.

Attendance for unscheduled/urgent antenatal care in women with suspected or confirmed COVID-19 Where possible, early pregnancy (EPU) or maternity triage units should provide advice over the phone. If this requires discussion with a senior

member of staff who is not immediately available, a return telephone call should be arranged.

Local protocols are required to ensure women with confirmed or suspected COVID-19 are isolated on arrival to triage units and full PPE measures are in place for staff

Medical, midwifery or obstetric care should otherwise be provided as per routine.

Women who develop new symptoms during admission (antenatal, intrapartum or postnatal): There is an estimated incubation period of 0-14 days (mean 5-6 days); an infected woman may therefore present asymptotically, developing symptoms later during an admission.

Health professionals should be aware of this possibility, particularly those who regularly measure patient vital signs (e.g. Health Care Assistants). Local guidance should be available on whom to contact for further assessment of the patient the event of new onset respiratory symptoms or unexplained fever.

Women attending for intrapartum care with suspected/confirmed COVID-19 and no/mild symptoms

All women should be encouraged to call the maternity unit for advice in early labour. Women with mild COVID-19 symptoms can be encouraged to remain at home (self-isolating) in early (latent phase) labour as per standard practice.

If birth at home or in a midwifery-led unit is planned, a discussion should be initiated with the woman regarding the potentially increased risk of fetal compromise in women infected with COVID-19 (as was noted in the Chinese case series of nine women).

The woman should be advised to attend an obstetric unit for birth, where the baby can be monitored using continuous electronic fetal monitoring. This guidance may change as more evidence becomes available.

Attendance in labour: Once settled in an isolation room, a full maternal and fetal assessment should be conducted to include:

- Assessment of the severity of COVID-19 symptoms should follow a multi-disciplinary team approach including an infectious diseases or medical specialist
- Maternal observations including temperature, respiratory rate and oxygen saturations

- Confirmation of the onset of labour, as per standard care
- Electronic fetal monitoring using cardiotocograph (CTG) - In two Chinese case series, including a total of 18 pregnant women infected with COVID-19 and 19 babies (one set of twins), there were 8 reported cases of fetal compromise. Given this relatively high rate of fetal compromise, continuous electronic fetal monitoring in labour is currently recommended for all women with COVID-19.
- If the woman has signs of sepsis, investigate and treat as per ACOG guidance on sepsis in pregnancy, but also consider active COVID-19 as a cause of sepsis and investigate according to guidance

If there are no concerns regarding the condition of either the mother or baby, women who would usually be advised to return home until labour is more established, can still be advised to do so, if appropriate transport is available.

Women should be given the usual advice regarding signs and symptoms to look out for, but in addition should be told about symptoms that might suggest deterioration related to COVID-19 following consultation with the medical team (e.g. difficulty in breathing, fever greater than 38.0°C).

If labour is confirmed, then care in labour should ideally continue in the same isolation room. The following considerations apply to women in spontaneous or induced labour:

Care in labour-

- When a woman with COVID-19 is admitted to the Delivery Suite, the following members of the multi-disciplinary team should be informed: consultant obstetrician, consultant anaesthetist, midwife-in-charge, consultant neonatologist and neonatal nurse in charge
- Efforts should be made to minimize the number of staff members entering the room and units should develop a local policy specifying essential personnel for emergency scenarios
- Maternal observations and assessment should be continued as per standard practice, with the addition of hourly oxygen saturations - Aim to keep oxygen saturation >94%, titrating oxygen therapy accordingly

- If the woman has signs of sepsis, investigate and treat as per ACOG guidance on sepsis in pregnancy, but also consider active COVID-19 as a cause of sepsis and investigate according to guidance

- Given the rate of fetal compromise reported in the Chinese case series, the current recommendation is for continuous electronic fetal monitoring in labour. This recommendation may be altered as more evidence becomes available.

- There is currently no evidence to favour one mode of birth over another and therefore mode of birth should be discussed with the woman, taking into consideration her preferences and any obstetric indications for intervention.

Mode of birth should not be influenced by the presence of COVID-19, unless

the woman's respiratory condition demands urgent delivery. At present, there are no recorded cases of vaginal secretions being tested for COVID-19.

However, a stool sample from a male patient with diarrhoea in the USA did test positive for the virus

- When caesarean birth or other operative procedure is advised, For Category 1 CS, donning PPE is time consuming. This may impact on the decision to delivery interval but it must be done. Women and their families should be told about this possible delay.

- An individualised decision should be made regarding shortening the length of the second stage of labour with elective instrumental birth in a symptomatic woman who is becoming exhausted or hypoxic

- Given a lack of evidence to the contrary, delayed cord clamping is still recommended following birth, provided there are no other contraindications. The baby can be cleaned and dried as normal, while the cord is still intact.

General advice for obstetric theatre:

- Elective procedures should be scheduled at the end of the operating list

- Non-elective procedures should be carried out in a second obstetric theatre, where available, allowing time for a full post-operative theatre clean according to local/ guidance

- The number of staff in the operating theatre should be kept to a minimum, all of whom must wear appropriate PPE

- All staff (including maternity, neonatal and domestic) should have been trained in the use of

PPE so that 24-hour emergency theatre use is available and possible delays reduced

Elective caesarean birth: Where women with symptomatic COVID-19 have scheduled appointments for preoperative care and elective caesarian birth, an individual assessment should be made whether it is safe to delay the appointment to minimize the risk of infectious transmission to other women, healthcare workers, and postnatally to her infant. When the operation cannot be delayed, the following points are to be followed.

- Provide epidural or spinal anesthesia as required and to avoid general anesthesia unless absolutely necessary
- If general anesthesia is needed, either for pre-existent reasons such as coagulopathy, because of urgency or because of mother's condition, the advice is as follows;
- Use of PPE causes communication difficulties, so an intubation checklist must be used.
- Rapid sequence induction as per usual practice ensuring tight seal during pre-oxygenation so as to avoid aerosolisation.
- Videolaryngoscopy by most experienced anaesthetist available.
- In case of difficult intubation, plan B/C is to use a supraglottic airway, plan C is to use FONA scalpel-bougie-tube.
- The anaesthetist performing intubation is likely to get respiratory secretions on their gloves. They should therefore consider wearing a second pair of gloves for the procedure, and remove 19 once the ET tube is secured, or if necessary, remove the gloves, wash hands and re-glove, whilst keeping the rest of the PPE on.
- Determine position of tube without using auscultation – chest wall expansion R=L, End Tidal CO₂

Departments should consider running dry-run simulation exercises to prepare staff, build confidence and identify areas of concern.

Planned induction of labour:

As for elective caesarean birth, an individual assessment should be made regarding the urgency of planned induction of labour for women with mild symptoms and confirmed COVID-19. If induction of labour cannot safely be delayed, the general advice for services providing care to women admitted to hospital when affected by suspected/confirmed COVID-19 should be followed. Women should be admitted into an isolation room, in which they should ideally be cared for the entirety of

their hospital stay.

Additional considerations for women with confirmed COVID-19 and moderate/severe symptoms .

The following recommendations apply in addition to those specified for women with no/mild symptoms.

Women admitted during pregnancy (not in labour)

- A multi-disciplinary discussion planning meeting ideally involving a consultant physician (infectious disease specialist where available), consultant obstetrician, midwife-in-charge and consultant anaesthetist responsible for obstetric care should be arranged as soon as possible following admission. The discussion and its conclusions should be discussed with the woman. The following should be discussed:

- Key priorities for medical care of the woman;
- Most appropriate location of care (e.g. intensive care unit, isolation room in infectious disease ward or other suitable isolation room) and lead specialty;
- Concerns amongst the team regarding special considerations in pregnancy, particularly the condition of the baby

- The priority for medical care should be to stabilise the woman's condition with standard supportive care therapies

➤ Particular considerations for pregnant women are:

- Radiographic investigations should be performed as for the non-pregnant adult; this includes chest X-ray and CT of the chest. Reasonable efforts to protect the fetus from radioactive exposure should be made, as per usual protocols.
- The frequency and suitability of fetal heart rate monitoring should be considered on an individual basis, taking into consideration the gestational age of the fetus and the maternal condition. If urgent delivery is indicated for fetal reasons, birth should be expedited as normal, as long as the maternal condition is stable.
- If maternal stabilisation is required before delivery, this is the priority, as it is in other maternity emergencies e.g. severe pre-eclampsia
- An individualised assessment of the woman should be made by the team to decide

whether elective birth of the baby is indicated, either to assist efforts in maternal resuscitation or where there are serious concerns regarding the fetal condition. Individual assessment should consider: the maternal condition, the fetal condition, the potential for improvement following elective birth and the gestation of the pregnancy. The priority must always be the wellbeing of the mother.

- There is no evidence to suggest that steroids for fetal lung maturation, when they would usually be offered, cause any harm in the context of COVID-19. Steroids should therefore be given where indicated. As is always the case, urgent delivery should not be delayed for their administration.

Women requiring intrapartum care

- •The neonatal team should be informed of plans to deliver the baby of a woman affected by moderate to severe COVID-19, as far in advance as possible
- With regards to mode of birth, an individualised decision should also be made, with no obstetric contra-indication to any method (see above). Caesarean section should be performed if indicated based on maternal and fetal condition as in normal practice.
- Given the association of COVID-19 with acute respiratory distress syndrome, women with moderate-severe symptoms of COVID-19 should be monitored using hourly fluid input/output charts, and efforts targeted towards achieving neutral fluid balance in labour, in order to avoid the risk of fluid overload.

Postnatal management & Neonatal care: There are limited data to guide the postnatal management of babies of mothers who tested positive for COVID-19 in the third trimester of pregnancy. Reassuringly, there is no evidence at present of (antenatal) vertical transmission.

All babies of women with suspected or confirmed COVID-19 need to also be tested for COVID-19.

Literature from China has advised separate isolation of the infected mother and her baby for 14 days. However, routine precautionary separation of a mother and a healthy baby should not be undertaken lightly, given the potential detrimental effects on feeding and bonding. Given the current limited evidence we advise that women and healthy infants, not otherwise requiring neonatal care, are kept together in the immediate post-partum period.

A risks/benefits discussion with neonatologists and families to individualise care in babies that may be more susceptible is recommended. We emphasise that this guidance may change as knowledge evolves. All babies born to COVID-19 positive mothers should have appropriate close monitoring and early involvement of neonatal care, where necessary. Babies born to mothers testing positive for COVID-19 will need neonatal follow-up and ongoing surveillance after discharge.

Infant feeding: It is reassuring that in six Chinese cases tested, breastmilk was negative for COVID-19; however, given the small number of cases, this evidence should be interpreted with caution. The main risk for infants of breastfeeding is the close contact with the mother, who is likely to share infective airborne droplets. In the light of the current evidence, we advise that the benefits of breastfeeding outweigh any potential risks of transmission of the virus through breastmilk. The risks and benefits of breastfeeding, including the risk of holding the baby in close proximity to the mother, should be discussed with her. This guidance may change as knowledge evolves. For women wishing to breastfeed, precautions should be taken to limit viral spread to the baby:

- Hand washing before touching the baby, breast pump or bottles;
- Wearing a face-mask for feeding at the breast;
- Follow recommendations for pump cleaning after each use;
- Consider asking someone who is well to feed expressed milk to the baby For women bottle feeding with formula or expressed milk, strict adherence to sterilisation guidelines is recommended. Where mothers are expressing breastmilk in hospital, a dedicated breast pump should be used.

Discharge and readmission to hospital: Any mothers or babies requiring readmission for postnatal obstetric or neonatal care during the period of home isolation due to suspected or confirmed COVID-19 are advised to phone ahead to contact their local unit. The place of admission will depend on the level of care required for mother or baby.

Advice for services caring for women following recovery from confirmed COVID-19.

Advice for service caring for women following recovery from confirmed COVID-19 Antenatal care for pregnant women following confirmed COVID-19 illness further antenatal care should be arranged 14 days after the period of acute illness ends. This 14-day period may be reduced as in information on infectivity in recovery becomes available. Referral to antenatal ultrasound services for fetal growth surveillance is recommended, 14 days following resolution of acute illness. Although there isn't yet evidence that fetal growth restriction (FGR) is a risk of COVID-19, two-third of pregnancies with sars were affected by FGR and a placental abruption occurred in a MERS case, so ultrasound follow-up seems prudent.

❖ GUIDELINES FOR SURGICAL PROCEDURES

This protocol contains the general guidelines for Surgical Procedures in a Covid 19 affected area.

Guidance for Triage of Non-Emergent Surgical Procedures

It is not possible to define the medical urgency of a case solely on whether a case is on an elective surgery schedule. While some cases can be postponed indefinitely, the vast majority of the cases performed are associated with progressive disease (such as cancer, vascular disease and organ failure) that will continue to progress at variable, disease-specific rates. As these conditions persist, and in many cases, advance in the absence of surgical intervention, it is important to recognize that the decision to cancel or perform a surgical procedure must be made in the context of numerous considerations, both medical and logistical.

Following careful review of the situation, we recommend the following:

- Hospitals and surgery centers should consider both their patients' medical needs, and their logistical capability to meet those needs, in real time.
- The medical need for a given procedure should be established by a surgeon with direct expertise in the relevant surgical specialty to determine what medical risks will be incurred by case delay.
- Logistical feasibility for a given procedure should be determined by administrative personnel with an *understanding of hospital and community limitations*, taking into consideration facility resources (beds, staff, equipment, supplies, etc.) **and** provider and community safety and well-being.
- Case conduct should be determined based on a merger of these assessments using contemporary knowledge of the evolving national, local and regional conditions, recognizing that marked regional variation may lead to significant differences in regional decision-making.
- The risk to the patient should include an aggregate assessment of the real risk of proceeding and the real risk of delay, including the expectation that a delay of 6-8 weeks or more may be required to emerge from an environment in which COVID-19 is less prevalent.
- Although COVID-19 is a clear risk to all, it is but one of many competing risks for patients requiring surgical care. ***Thus, surgical procedures should be considered not based solely on COVID-associated risks, but rather on an assimilation of all available medical and logistical information.***

To further assist in the surgical decision-making process to triage non-emergent operations, we suggests that surgeons look at the Elective Surgery Acuity Scale (ESAS) from St. Louis University (below). Each surgical specialty has specific guidelines that are pertinent to the procedures within that specialty.

Elective Surgery Acuity Scale (ESAS)

Reprinted with permission: Sameer Siddiqui MD, FACS, St Louis University

Tiers/Description	Definition	Locations	Examples	Action
Tier 1a	Low acuity surgery/healthy patient Outpatient surgery Not life threatening illness	HOPD ASC Hospital with low/no COVID- 9 census	Carpal tunnel release Penile prosthesis EGD Colonoscopy	Postpone surgery or perform at ASC
Tier 1b	Low acuity surgery/unhealthy patient	HOPD ASC Hospital with low/no COVID-19 census		Postpone surgery or perform at ASC
Tier 2a	Intermediate acuity surgery/healthy patient Not life threatening but potential for future morbidity and mortality. Requires in hospital stay	HOPD ASC Hospital with low/no COVID-19 census	Low risk cancer Non urgent spine Ureteral colic	Postpone surgery if possible or consider ASC
Tier 2b	Intermediate acuity surgery/unhealthy patient	HOPD ASC Hospital with low/no COVID-19 census		Postpone surgery if possible or consider ASC
Tier 3a	High acuity surgery/healthy patient	Hospital	Most cancers Highly symptomatic patients	Do not postpone
Tier 3b	High acuity surgery/unhealthy patient	Hospital		Do not postpone

HOPD – Hospital Outpatient Department

ASC – Ambulatory Surgery Center

Considerations for Optimum Surgeon Protection Before, During, and After Operation

There are presently increasing amounts of information concerning protecting the health care worker, including in the operation room. This section brings together the latest information, data, and recommendations for personnel in the operating room, as well as how to minimize risk of COVID infection afterwards. In this section, the following issues are addressed.

Use of Personal Protective Equipment

- Use of **personal protective equipment** is recommended by for every operative procedure performed on a *patient with confirmed COVID-19 infection or a patient where there is suspicion for infection.*
- **N95 respirators** or respirators that offer a higher level of protection should be used when performing or present for an aerosol-generating procedure (e.g. OR patient intubation) in COVID-19 or suspected infected patient.
- Disposable respirators and facemasks should be removed and **discarded appropriately** in accordance with local policy.
- Perform **hand hygiene** after discarding the respirator or facemask.
- Donning and doffing personal protective N-95 masks as per protocol.
- **Fit testing** is paramount to ensure proper mask fit.

There is a distinct possibility that personal protective equipment, including acceptable masks (such as the N95 mask) may be in **short supply**. We have developed protocols for preserving supplies of masks and protective equipment.



3/25/2020

PPE Recommendations *Updated 3/25/2020*

Patient Care for Patients Not Suspected for COVID-19	Patient Care for Patients Suspected or Positive for COVID-19	Aerosol Generating Procedures ¹ on Patients Suspected or Positive for COVID 19 AND Airway Procedures on All Patients
<p>WHEN:</p> <ul style="list-style-type: none"> • Patient has no COVID symptoms • Closer than 6 feet from patient for more than 1 minute <p>WHERE:</p> <ul style="list-style-type: none"> • Ambulatory Clinics • Emergency Department • Acute Care Units • Intensive Care Units • Procedural Areas <p>PPE Required:</p> <ul style="list-style-type: none"> • Surgical/ear loop mask 	<p>WHEN:</p> <ul style="list-style-type: none"> • Patient has COVID symptoms <u>OR</u> has a COVID test pending or with positive result <p>WHERE:</p> <ul style="list-style-type: none"> • Ambulatory Clinics • Emergency Department • Acute Care Units • Intensive Care Units • Procedural Areas <p>PPE Required:</p> <ul style="list-style-type: none"> • Eye protection/face shield • Surgical/ear loop mask • Gown • Gloves 	<p>WHEN:</p> <ul style="list-style-type: none"> • Aerosol generating procedures¹ are being performed <p>WHERE:</p> <ul style="list-style-type: none"> • Ambulatory Clinics • Emergency Department • Acute Care Units • Intensive Care Units • Procedural Areas <p>PPE Required:</p> <ul style="list-style-type: none"> • PAPR <u>OR</u> N95 Respirator + Face Shield/Eye Protection • Gown • Gloves

Note for all categories shown: Hand hygiene required upon entry and exit, regardless of whether the patient is under isolation, or PPE are worn.

¹ **Aerosol Generating Procedures Include:** laryngoscopy/intubation, non-invasive ventilation, CPR, bronchoscopy, open suction, nasotracheal suction, nebulizer treatments

PPE for Specimen Collection: Nasopharyngeal swabs often generate a strong cough reflex. Standard/Contact/Droplet precautions are recommended.

Intubation Risks

- **Aerosolization and droplet transmission** of the COVID-19 virus are important hazards for surgical personnel.
- Aerosolization and droplet transmission hazard increases with procedures such as endotracheal intubation, tracheostomy, gastrointestinal endoscopy and during the evacuation of pneumoperitoneum and aspiration of body fluids during laparoscopic procedures.
- Surgeons and personnel not needed for intubation should remain **outside the operating room until anesthesia induction and intubation are completed** for patients with or suspected of having COVID-19 infection.
- Negative pressure operating rooms and/or anterooms when available are recommended.
- A recent [study](#) in the New England Journal of Medicine shows how long COVID-19 might remain infectious on **different surfaces** (e.g. cardboard 1 day, plastic 3-4 days).

Specific Operative Risk Issues

- Have **minimum number of personnel** in the operating room, including during intubation, as well as throughout. No visitors or observers.
- Use **smoke evacuator** when electrocautery is used.
- Consider **avoiding laparoscopy** (ACS Bulletin COVID-19 [Newsletter](#), SAGES [recommendations](#))
- **Tracheostomy** considerations are important because of the high risk for aerosolization. A guide for tracheostomy: Source : <https://www.entuk.org/tracheostomy-guidance-during-covid-19-pandemic>)

Standard operative procedure for tracheostomy in COVID 19 positive patient/Unknown status

- Most skilled anaesthetic and ENT clinician performing anaesthetic and procedure, to ensure that the procedure is safe, accurate and swift
- Reduce unnecessary team members to essential staff
- Preparation and Gowning:
 1. Use FFP3 mask.
 2. Eye/face protection should be worn for performing tracheostomy or changing a tracheostomy tube due to the risk of respiratory secretions or body fluids. One of the following options are suitable:
 - surgical mask with integrated visor
 - full face shield/visor
 3. Fluid resistant disposable gown should be worn. If non-fluid resistant gown is used a disposable plastic apron must be worn underneath. A sterile disposable gown must be used for surgical tracheostomy.
 4. Gloves must be appropriate to allow palpation, use of stitches and surgical instruments. Consider using Eclipse system or “double-gloving”.
- Cuffed non-fenestrated tracheostomy should be used to avoid aerosolizing the virus
- Every effort should be made not to pierce the cuff of the endotracheal tube when performing tracheotomy

- Initial advancement of the endotracheal tube should be performed prior to tracheostomy window being made
 - If possible, cease ventilation whilst window in the trachea is being performed and check the cuff is still inflated before recommencing ventilation
 - Ventilation to cease prior to tracheostomy tube insertion and ensure swift and accurate placement of tracheostomy tube with prompt inflation of the cuff
 - Confirm placement with end tidal CO₂
 - Ensure there is no leak from the cuff and the tube is secured in position
 - HME (Heat and moisture exchanger) should be placed on the tracheostomy to reduce shedding of the virus should the anaesthetic tubing be disconnected
 - Avoid disconnecting HME but if necessary, disconnect distal to HME
-

Post tracheostomy care

- RCoA suggests avoiding humidified wet circuits as theoretically it will reduce the risks of contamination of the room if there is an unexpected circuit disconnection
- Avoid changing the tracheostomy tube until COVID-19 has passed, will have to review with infectious diseases
- Cuff to remain inflated and check for leaks
- Make every effort not to disconnect the circuit

After Operation/Recovery

- If transport of a patient with or suspected to have COVID-19 infection to an outside recovery area or intensive care unit is necessary, handoff to a **minimum number of transport personnel** who are waiting outside the operating room should be considered. Personnel should wear **personal protective equipment** as recommended, Personal protective equipment should **not be the same as worn during the procedure**.
- Some recommendations are:
 - **Remove clothes worn from home and keep in garment bag.**
 - **Wear scrub clothes after arrival at hospital**
 - **After separating from the patient remove scrub clothes; consider showering before changing into a clean scrub suit or home clothes**
 - **Wash hands frequently and maintain safe social distancing**

Going Home—What Should Be Done to Keep Your Family Safe

- Healthcare institutions and systems may make hotel accommodations available for healthcare workers who **cannot or prefer not to go home** following patient care activities.
- Be alert to the fact that viral contamination of surfaces is a known means of transmission of infection.
- Keep hand **sanitizer and/or disposable gloves** for use of ATM, vending machines, gasoline pumps, and transfer of items at the time of purchases.

- Clean your **cell phone** frequently before, during, and after patient care activities. Cell phones may be kept in a Ziploc bag during work activities. The phone can be used while in the bag
- Consider removing clothes and washing them **upon arrival home**.
- Consider reducing physical contact with family members and **wash hands frequently**.
- Clean hard surfaces at home with an **effective disinfectant solution** (e.g. 60% alcohol).

Disclaimer

These guidelines are meant to serve patients based on estimates of risk for *average* patients (in terms of clinical condition, patient health, hospital resource availability) associated with each strategy.

- These should not be considered rigid guidelines, and are not intended to supplant clinical judgement or the development of consensus regarding institutional approaches to treatment. There is a great deal of uncertainty around this evolving pandemic and information may change rapidly.
- It is possible that the strategies outlined in this document could be replaced as our understanding of unique challenges that COVID-19 poses within each country, state, and healthcare environment evolves.

Recommendations for Management of Elective Surgical Procedures

Inpatient Facilities

- Reschedule elective surgeries as necessary.
- Shift elective urgent inpatient diagnostic and surgical procedures to outpatient settings, when feasible.
- Limit visitors to COVID-19 patients.
- Plan for a surge of critically ill patients and identify additional space to care for these patients. Include options for:
 - Using alternate and separate spaces in the ER, ICUs, and other patient care areas to manage known or suspected COVID-19 patients.
 - Separating known or suspected COVID-19 patients from other patients ("cohorting").
 - Identifying dedicated staff to care for COVID-19 patients.

Time is of the essence. Please be vigilant and take a leadership role in your practice setting so that these recommendations begin to take hold immediately.

Rationing of Services: (SAGES and EAES Recommendations)

1. **All elective surgical and endoscopic cases should be postponed at the current time.**

However, as the numbers of COVID-19 patients requiring care is expected to escalate over the next few weeks, the surgical care of patients should be limited to those whose needs are imminently life threatening including patients with malignancy that could progress, or with active symptoms that require urgent care. This minimizes the risk to both, patient and health care team, as well as minimizes utilization of necessary resources, such as beds, ventilators, and personal protective equipment (PPE).

2. **All non-essential staff should be allowed to stay home and telework.**
3. **All non-urgent OPD visits should be cancelled or postponed, unless needed to triage active symptoms or manage wound care.**
4. **Multidisciplinary team (MDT) meetings should be held virtually as possible** and/or limited to core team members only, including surgeon, pathologist, Clinical Nurse Specialist, radiologist, oncologist and coordinator. The MDT is responsible for the decision making and classifying the patient's priority level of need for surgery.

Procedural Considerations:

1. It is strongly recommended that consideration be given to the possibility of viral contamination to staff during surgery either open, laparoscopic or robotic and that protective measures are strictly employed for OR staff safety and to maintain a functioning workforce.
2. Proven benefits of MIS of reduced length of stay and complications should be strongly considered in these patients, in addition to the potential for ultrafiltration of the majority or all aerosolized particles. Filtration of aerosolized particles may be more difficult during open surgery.
3. There may be enhanced risk of viral exposure to proceduralists/ endoscopists from endoscopy and airway procedures. When these procedures are necessary, strict use of PPE should be considered for the whole team,

Practical Measures for Surgery:

1. Consent discussion with patients must cover the risk of COVID-19 exposure and the potential consequences.
2. If readily available and practical, surgical patients should be tested pre-operatively for COVID-19.
3. If needed and possible, intubation and extubation should take place within a negative pressure room. (<https://www.asahq.org/in-the-spotlight/coronavirus-covid-19-information>, <https://icmanaesthesiacovid-19.org>)
4. Operating rooms for presumed, suspected or confirmed COVID-19 positive patients should be appropriately filtered and ventilated and if possible, should be different than rooms used for other emergent surgical patients. Negative pressure rooms should be considered, if available.
5. Only those considered essential staff should be participating in the surgical case and unless there is an emergency, there should be no exchange of room staff.

6. All members of the OR staff should use PPE as recommended by national or international organization including the WHO. Appropriate gowns and face shields should be utilized. **These measures should be used in all surgical procedures during the pandemic regardless of known or suspected COVID status.**
7. Electrosurgery units should be set to the lowest possible settings for the desired effect. Use of monopolar electrosurgery, ultrasonic dissectors, and advanced bipolar devices should be minimized, as these can lead to particle aerosolization.⁽⁹⁻¹⁵⁾ If available, monopolar diathermy pencils with attached smoke evacuators should be used.
8. Surgical equipment used during procedures with COVID-19 positive or Persons Under Investigation (PUI) /suspected COVID patients should be cleaned separately from other surgical equipment.

Practical Measures for Endoscopy (<https://www.asge.org/home/joint-gi-society-message-covid-19>, <https://www.bsg.org.uk>)

1. The ability to control aerosolized virus during endoscopic procedures is lacking, so all members in the endoscopy suite or operating room should wear appropriate PPE, including gowns and face shields.
2. Since patients can present with gastrointestinal manifestations of COVID-19, all emergent endoscopic procedures performed in the current environment should be considered as high risk.
3. Since the virus has been found in multiple cells in the gastrointestinal tract and all fluids including saliva, enteric contents, stool and blood, surgical energy should be minimized.^(16, 17)
4. Endoscopic procedures that require additional insufflation of CO₂ or room air by additional sources should be avoided until we have better knowledge about the aerosolization properties of the virus. This would include many of the endoscopic mucosal resection (EMR) and endoluminal procedures.
5. Removal of caps on endoscopes could release fluid and/or air and should be avoided.
6. Endoscopic equipment used during procedures with COVID-19 positive or PUI patients should be cleaned separately from other endoscopic equipment.

Recommendations to Reduce the Risk of Aerosolization During Laparoscopy

We recommend that surgeons use a closed filtration system during laparoscopy and for evacuation of the pneumoperitoneum at the end of the case as resources and availability allow. Many commercial filtration systems reportedly can filter more than 99.9 percent of particles as small as 0.08 to 0.1 microns in diameter. These particles exceed the N95 designation, which requires that at least 95 percent of small particles (0.3 microns) be filtered. The use of laparoscopy should be based on local current standards of practice and are outside the scope of these recommendations.

Laparoscopic ports should be inspected for adequate seal prior to use and reassessed frequently for leak while in use. If ports do develop a leak, the seals/ports should be changed immediately when it is safe to do so. The procedural pneumoperitoneum should be set at the lowest pressure that facilitates safe and efficient operative conduct.

Smoke evacuators should be attached to ports that allow for efficient laparoscopy in terms of allowing a clear view of the operator at a rate that minimizes resource/carbon dioxide (CO₂) use. If insufflation or evacuator tubing needs to be moved from one port to another, the ports should be set to the closed position before detaching and reattaching the tubing. All ports should remain in situ and closed while desufflation is occurring.

To facilitate efficient desufflation, evacuator tubing should be moved to the most nondependent port, and the patient should be repositioned to allow CO₂ removal. Extraction of surgical specimens should occur after the desufflation technique described here is completed. The ports may be left in place and the desufflation procedure repeated if the operating surgeon decides to 'look back in' after specimen extraction.

Royal Colleges of Surgeons Issue Guidance for Managing COVID-19 Patients

The surgical royal colleges of the U.K. and Ireland have published guidance for surgeons working during the COVID-19 pandemic, the guidance sets out the following key priorities for surgery during the pandemic:

- Maintain emergency surgery capabilities
- Protect and preserve the surgical workforce
- Fulfill alternate surgical roles
- Fulfill alternate non-surgical roles

Guidelines on Delaying Cancer Surgery During COVID-19

- Decisions about whether to proceed with elective surgeries must consider the available resources of local facilities. The parties responsible for preparing the facility to manage coronavirus patients should be sharing information at regular intervals about constraints on local resources, especially personal protective equipment (PPE), which is running low in many jurisdictions.
- Cancer care coordination should use virtual technologies as much as possible, locating multidisciplinary experts by virtual means, to assist with decision making and establishing triage criteria.
- **Three Phases of Pandemic**

The ACS has also organized decision making into three phases that reflect the acuity of the local COVID-19 situation:

- Phase I. Semi-Urgent Setting (Preparation Phase) — few COVID-19 patients, hospital resources not exhausted, institution still has ICU ventilator capacity and COVID-19 trajectory not in rapid escalation phase
- Phase II. Urgent Setting — many COVID-19 patients, ICU and ventilator capacity limited, operating room supplies limited
- Phase III. Hospital resources are all routed to COVID-19 patients, no ventilator or ICU capacity, operating room supplies exhausted; patients in whom death is likely within hours if surgery is deferred

Guidelines on Delaying Cancer Surgery During COVID-19 - Medscape - Mar 26, 2020.

BREAST CANCER SURGERY

Phase I Surgery should be restricted to patients who are likely to experience compromised survival if it is not performed within next 3 months. This includes patients completing neoadjuvant treatment, those with clinical stage T2 or N1 ERpos/PRpos/HER2-negative tumors, patients with triple negative or HER2-positive tumors, discordant biopsies that are likely to be malignant, and removal of a recurrent lesion.

Phase II Restricted to patients whose survival is threatened if surgery is not performed within the next few days. These would include incision and drainage of [breast abscess](#), evacuating a hematoma, revision of an ischemic [mastectomy](#) flap, and revascularization/revision of an autologous tissue flap (autologous reconstruction should be deferred).

Phase III Surgical procedures would be restricted to patients who may not survive if surgery is not performed within a few hours. This includes incision and drainage of breast abscess, evacuation of a hematoma, revision of an ischemic mastectomy flap, and revascularization/revision of an autologous tissue flap (autologous reconstruction should be deferred).

COLORECTAL CANCER SURGERY

Phase I This would include cases needing surgical intervention as soon as feasible, while recognizing that the status of each hospital is likely to evolve over the next week or two. These patients would include those with nearly obstructing [colon cancer](#) or [rectal cancer](#); cancers that require frequent transfusions; asymptomatic colon cancers; rectal cancers that do not respond to neoadjuvant chemoradiation; malignancies with a risk of local perforation and [sepsis](#); and those with early stage rectal cancers that are not candidates for adjuvant therapy.

Phase II This comprises patients needing surgery as soon as feasible, but recognizing that hospital status is likely to progress over the next few days. These cases include patients with a nearly obstructing colon cancer where stenting is not an option; those with nearly obstructing rectal cancer (should be diverted); cancers with high (inpatient) transfusion requirements; and cancers with pending evidence of local perforation and sepsis. All colorectal procedures typically scheduled as routine should be delayed.

In Phase III If the status of the facility is likely to progress within hours, the only surgery that should be performed would be for perforated, obstructed, or actively bleeding (inpatient transfusion dependent) cancers or those with sepsis. All other surgeries should be deferred.

Other Cancer Types

Although the ACS also doesn't have specific guidelines for all cancer types, a few are included in their general recommendations for the specialty.

Delays, in general, are not recommended for neurosurgery, which would include brain cancers. In pediatrics, most cancer surgery is considered "urgent," where a delay of days to weeks could prove detrimental to the patient. This would comprise all solid tumors, including the initial biopsy and resection following neoadjuvant therapy.

COVID-19 Guidelines for Triage of Emergency General Surgery Patients

Guiding Principles

- The goal is to provide timely surgical care to patients presenting with urgent and emergent surgical conditions while optimizing patient care resources (e.g. hospital and intensive care unit beds, personal protective equipment, ventilators) and preserving the health of caregivers.
- There is no substitute for sound surgical judgement
- Procedures and operations should be performed if delaying the procedure or operation is likely to prolong the hospital stay, increase the likelihood of later hospital admission, or cause harm to the patient.
- Patients who have failed attempts at medical management of a surgical condition should be considered for surgery to decrease the future use of resources
- Multidisciplinary shared decisions regarding surgical scheduling should be made in the context of available institutional resources that will be variable and rapidly evolving. <https://www.facs.org/covid-19/clinical-guidance/review-committee>

Specific Conditions to Consider

Acute Hemorrhoidal Thrombosis/Necrosis

Most acute hemorrhoidal conditions can be managed non-operatively based on the judgment of the surgeon. Where possible, management under local anesthesia in an outpatient setting may be appropriate. Emergency surgical procedures should generally be reserved for significant bleeding and severe disease or disease unresponsive to non-operative measures.

Perianal or Perirectal Abscess

Perianal abscesses that are superficial and localized may be managed with incision and drainage with local anesthesia based on the surgeon's usual indications. Incision and drainage of larger perirectal abscesses in the operating room should not be delayed in order to ensure adequate initial drainage, prevent extension of the disease to an invasive infection and shorten hospital stay. If the operating room is not available percutaneous drainage should be considered as an alternative and temporizing measure.

Soft Tissue Infections

Superficial and localized abscesses may be managed with incision and drainage with local anesthesia. Incision and drainage in the operating room of larger abscesses or those with an intramuscular component is preferred to ensure adequate initial drainage and shorten hospital stay.

Patients with concern for necrotizing soft tissue infections should proceed with emergent debridement.

Acute Pancreatitis with Necrosis

Antimicrobial therapy should be used if infected necrosis is confirmed. The “step up” approach is recommended which includes: percutaneous drainage, endoscopic debridement or by interventional radiologic techniques (note that I/R techniques may be preferred in COVID positive patients due to risk of aerosolization with endoscopy), followed by laparoscopic or open operative drainage if no other option available.

Pneumoperitoneum, Intestinal Ischemia, Intestinal Obstruction

Patients presenting with suspected bowel perforation, intestinal ischemia, closed loop obstruction, or obstruction secondary to incarcerated hernia should proceed with emergent surgery. Non-operative management of small bowel obstruction secondary to adhesions should follow usual practice.

Appendicitis, Uncomplicated

There is some evidence that suggests that patients with uncomplicated appendicitis can be managed with IV antibiotics followed by transition to PO antibiotics. High failure rates of this approach (30-50%) have been noted with appendicolith and with CT evidence of disease extension outside of the RLQ. Based on the surgeon’s judgment and the patient condition, a trial of antibiotics can be considered. Short stay or outpatient laparoscopic appendectomy is likely associated with a shorter length of stay. The duration of hospital stay should be weighed against the use of OR resources in this circumstance and should be based on surgeon judgment.

Complicated appendicitis can be managed per usual practice. In brief, all patients should receive IV antibiotics until clinically improving, followed by transition to PO antibiotics. Patients with a defined abscess should undergo percutaneous drainage. Patients with evidence of perforation may be managed with percutaneous drainage or operation based on patient condition. Patients who fail non-operative management should proceed to surgery expeditiously

Symptomatic Cholelithiasis

Patients with symptomatic cholelithiasis and chronic cholecystitis should have their pain managed. If this is feasible, surgery should be delayed and performed electively. For patients with crescendo symptoms, and for those with pain refractory to medical management, consider laparoscopic cholecystectomy.

Choledocholithiasis

Patients with choledocholithiasis without signs of cholangitis may be managed expectantly. For those with larger stones, and those who fail to spontaneously pass their stone, an ERCP with sphincterotomy, followed by elective cholecystectomy in a delayed fashion is appropriate. Note that appropriate precautions should be taken for ERCP in patients with COVID-19 infection as it should be considered an aerosolizing procedure.

Acute Cholecystitis

Healthy patients with acute cholecystitis should undergo laparoscopic cholecystectomy to minimize hospital stay. If the patient is too high risk for surgery or an operating room is not available then consider IV antibiotics. Patients who fail to clinically improve on antibiotics, and those with signs of sepsis should undergo percutaneous cholecystostomy in addition to the administration of IV antibiotics

Cholangitis

Patients with ascending cholangitis often respond to broad spectrum antibiotics and appropriate resuscitation. For patients that fail to clinically improve and those with sepsis, ERCP and sphincterotomy are indicated. If there is a concern for concomitant cholecystitis, percutaneous cholecystostomy may be appropriate. Note that appropriate precautions should be taken for ERCP in patients with COVID-19 infection as it should be considered an aerosolizing procedure. Cholecystectomy should be performed in a delayed fashion.

Diverticulitis

Uncomplicated diverticulitis can be managed with usual care which includes IV antibiotics with transition to PO antibiotics. Patients who present with purulent or feculent peritonitis with diffuse pneumoperitoneum should undergo surgery. Hinchey class 1 and 2 diverticulitis should be managed with percutaneous drainage in addition to antimicrobial therapy. Patients with phlegmon may be successfully managed with antibiotics, with percutaneous drainage reserved for subsequent abscess development. Patients who fail non-operative management should proceed to surgery expeditiously

COVID-19 Guidelines for Triage of Pediatric Patients

Guiding Principles

- The goal is to provide timely surgical care to children with emergent and urgent pediatric surgical issues while optimizing patient care resources (e.g. hospital and intensive care unit beds, personal protective equipment, ventilators) and preserving the health of caregivers.
- There is no substitute for sound surgical judgement
- Surgery should be performed only if delaying the procedure is likely to prolong hospital stay, increase the likelihood of later hospital admission or cause harm to the patient.
- Children who have failed attempts at medical management of a surgical condition should be considered for surgery to decrease the future use of resources (e.g. recurrent infections in a branchial cleft cyst following course of antibiotics).
- Multidisciplinary shared decisions regarding surgical scheduling should be made in the context of available institutional resources that will be variable and rapidly evolving.
- Telemedicine and teleconsult services should be used for patient and physician interaction when available.

The following list contains examples and is not meant to be comprehensive.

Emergency Cases

Delay is life threatening.

- **Acute intestinal obstruction**
 - Abnormalities of intestinal rotation
 - Incarcerated inguinal hernia
 - Pyloromyotomy for hypertrophic pyloric stenosis
 - Intussusception reduction not amenable to radiographic reduction
- **Extracorporeal life support**

- **Intestinal perforation**
 - Necrotizing enterocolitis with perforation
- **Trauma with uncontrolled hemorrhage or penetration**
- **Ischemia**
 - Testicular torsion
 - Ovarian torsion
 - Limb ischemia from trauma or iatrogenic
- **Most congenital anomalies**
 - Esophageal atresia with tracheoesophageal fistula
 - Symptomatic congenital diaphragmatic hernia
 - Intestinal atresia
 - Intestinal diversion for anorectal anomalies
 - Intestinal diversion for Hirschsprung disease not improved with irrigations
- **Appendectomy for acute appendicitis**

Depending on institutional resources outpatient or short stay should be considered for uncomplicated appendicitis in order to maintain hospital beds; depending on available resources patients with complicated appendicitis should receive parenteral antibiotics and percutaneous drainage if an abscess is present.
- **Esophageal or tracheal foreign body ingestion**

Special note should be made of higher risk of COVID-19 for endoscopic procedures.

Urgent Cases

Delays of days to weeks may be detrimental.

- **Most cancer surgery**
 - Solid tumors (initial biopsy, resection following neoadjuvant therapy; consideration should be given for continuing chemotherapy in patients who will require postoperative intensive care or ventilation)
- **Portoenterostomy for biliary atresia with jaundice**
- **Abscess incision and drainage**
- **Resection or diversion for acute exacerbation of inflammatory bowel disease not responsive to medical management**
- **Vascular access device insertion**

Consideration should be given to peripherally inserted central catheters.
- **Repair of symptomatic inguinal hernia**
- **Cholecystectomy for symptomatic cholelithiasis**
- **Gastrostomy** if required for discharge

Elective Cases

Delay results in minimal patient risk.

- **Vascular access device removal** (not infected)
- **Chest wall reconstruction**
- **Asymptomatic inguinal hernia**
- **Anorectal malformation reconstruction following diversion**
- **Hirschsprung disease reconstruction following diversion**
- **Inflammatory bowel disease reconstruction following diversion**
- **Enterostomy closure**
- **Breast lesion excision (i.e. fibroadenoma)**
- **Branchial cleft cyst/sinus excision**
- **Thyroglossal duct cyst excision**
- **Fundoplication**
- **Orchiopexy**

- **Bariatric surgery**
- **Splenectomy for hematologic disease**
- **Cholecystectomy for biliary colic**
- **Repair of asymptomatic choledochal cyst**

Compiled from guidelines and protocols of:

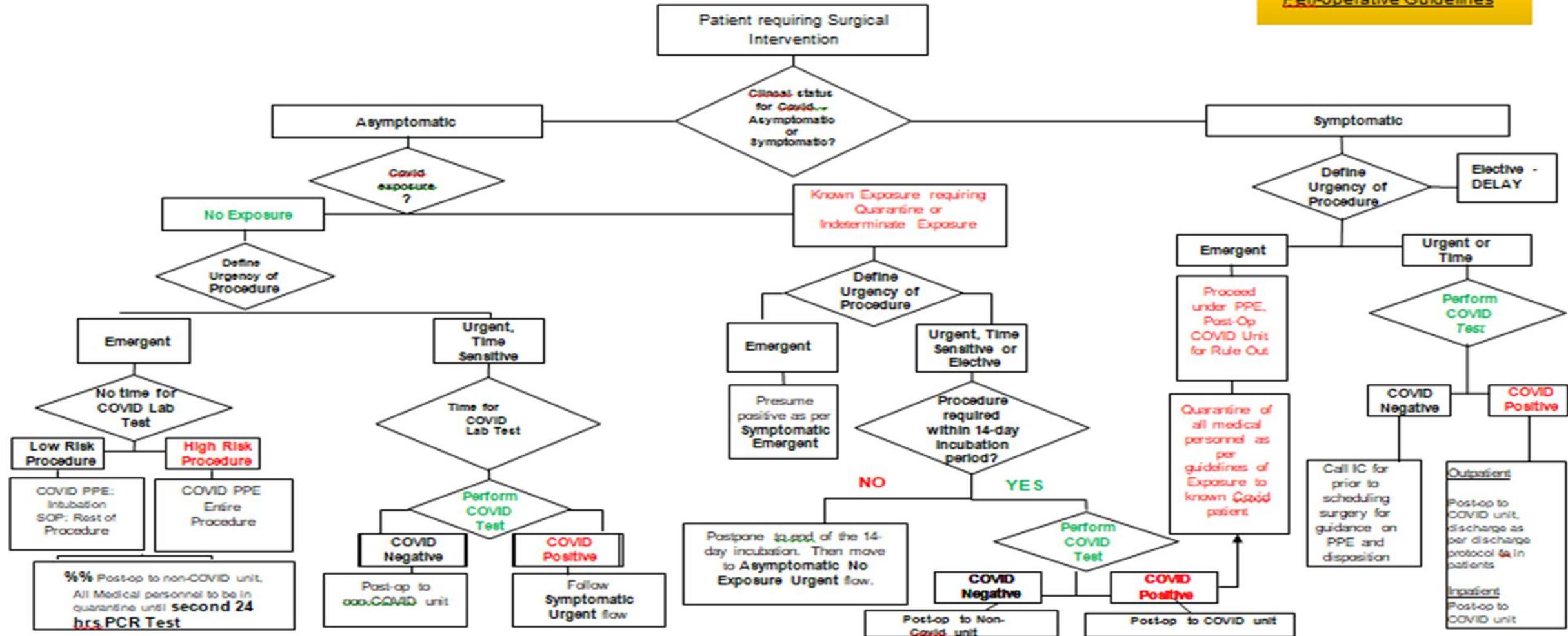
American College of surgeons Guidelines ([facs.org](https://www.facs.org))

SAGES- Society of American Gastrointestinal Endoscopic Surgeons ([sages.org](https://www.sages.org))

ASI- Association of Surgeons of India ([asiindia.org](https://www.asiindia.org))

COVID-19 CONTINGENCY Procedure Guidelines

Zoram Medical College
Peri-operative Guidelines



Operational Principles: These guidelines provide decision support for the perioperative management of patients requiring anesthesia and surgical services. They are fluid and reflect the changing prevalence of COVID-19 and knowledge thereof. They are prioritized in the context of PPE availability, PPE reuse capability, and testing capacity.

- All perioperative patients will be clinically screened for symptoms of COVID-19 (new cough, shortness of breath, fever in the last 7 days; known exposure to COVID-19 positive person).
- Patients will be categorized as asymptomatic, asymptomatic with exposure risk, or symptomatic
- Pre-symptomatic patients may shed SARS-CoV-2 from the nasopharynx and oropharynx
- Pre-symptomatic patients require appropriate considerations and PPE for Aerosol Generating Procedures (AGP) including intubation.
- All patients undergoing urgent, time sensitive, and elective procedures will undergo laboratory testing for COVID-19 (this is true regardless of need for anesthesia services).
- All COVID laboratory testing must be performed within 72 hours pre-procedure (no exceptions).
- Time allowing, all medically necessary time-sensitive cases and elective cases will be asked to socially distance for 2 weeks prior to COVID testing and self quarantine from time of testing until day of their surgical procedure.
- It is recognized that emergency cases and some urgent cases may be time prohibited with respect to testing and social distancing; appropriate PPE and workflow will be required
- The number of providers in any operating room will be minimized as per prevailing guidelines.

❖ Perinatal–Neonatal management of COVID-19 Infection

CASE DEFINITION:

Suspected Case of Neonatal Covid-19:

1. History of exposure to COVID-19 positive adult (irrespective of symptoms):

- Mother had COVID-19 infection within 14 days before birth, or
- History of contact with COVID-19 positive persons (including mother, family members in the same household or direct healthcare provider) in the postnatal period

Timing of test: At birth (if mother had COVID-19) or at detection of the history of contact with COVID-19 positive person (postnatal exposure). If a sample is not obtained at birth due to logistic reasons, it should be obtained as soon as possible. Rooming-in should not be postponed if testing is delayed.

If the first test is negative, a repeat test should be done after 5-14 days of birth/exposure. However, the test should be done immediately, if new symptoms (respiratory distress, lethargy, seizures, apnea, refusal to feed, diarrhea) appear.

2. Irrespective of history of exposure:

- Presenting with pneumonia or SARI that requires hospitalization, with onset at more than 48-72 h of age, unless there is another underlying illness that completely explains the respiratory signs and symptoms.

Features that suggest acute respiratory illness in a neonate are respiratory distress, with or without cough, with or without fever.

CARE OF BABY IN THE DELIVERY ROOM:

1. **Newborn Care Corner (NCC)** identified for the care of any suspected neonate delivered in our designated Covid Labour room (C-LR) at ZMC/SRF
2. This NCC is situated approximately 2 meters away from the mother's delivery area (as per recommendation)
3. NCC is equipped with a servo-controlled radiant warmer, resuscitation kit, suctioning equipments and oxygen delivery system.
4. **Minimum number of personnel should attend** (one in low-risk cases and two in high-risk cases where extensive resuscitation may be anticipated) **and wear a full set of PPE** (Refer to Box IV for details)
5. For stable babies, delayed cord clamping and skin to skin contact permissible.

6. For sick babies,

- **Neonatal Resuscitation** to be done as per the latest NRP guidelines
- If PPV is needed, self-inflating bag may be used
- **Endotracheal intubation** to be done, if needed, irrespective of mother's Covid status.
- Endotracheal administration of medications should be avoided.

POST NATAL CARE: (refer to flowcharts)

1. **Stable Covid suspect neonates should be roomed-in with their mothers in the Post natal ward (PNW)** if mother is not sick and **until maternal Covid status is known**
2. **Stable babies may be exclusively breastfed** after thorough counselling with the parents (*Breastfeeding is not contraindicated, but precautions to prevent neonatal infection should be taken*).
 - Mother should always wash hands before touching the baby
 - Mother should wear a face mask (3-ply mask in hospital) while breastfeeding/expressing milk and perform droplet precautions at all times.
 - In case of difficulties in breastfeeding, contact Paedia on-call.
 - The mother-baby dyad must be isolated from other suspected and infected cases.

3. If rooming-in is not possible because of the **sickness of the mother**, the neonate can be fed expressed breast milk of the mother by a trained healthy family member, assisted by nurses.
4. If safe, well babies are to be discharged at the earliest, followed by telephonic follow-up or home visit by a designated healthcare worker may be considered.
5. **If the mother is a proven Covid**, the neonate **will be separated from the mother for a while**
 - cared for by a nurse in **“Covid suspect area” in NICU**, if sick (or)
 - cared by a family member not in contact with mother or other suspected/proven case, if stable.
 - to **facilitate early rooming-in**, **Covid testing** on baby will **be conducted** as per the testing guidelines and **reported on priority**.
6. **“Covid suspect area”** in NICU, has cot/radiant warmers being separated at a distance of at least 1 meter (as recommended).
7. NICU being air-conditioned, 12 air changes/hour and filtering of exhaust air is ensured and this is not part of the central air conditioning.
8. Staffs involved in care of such neonates are separated from the rest, equipped with the right kind of PPE at all times.

Points on Feeding of a neonate/child of mothers with suspected or proven COVID-19:

Relatively few cases have been reported of infants confirmed with COVID-19; those that have been reported experienced mild illness. No vertical transmission has been documented. Amniotic fluid from six mothers positive for COVID-19 and cord blood and throat swabs from their neonates who were delivered by caesarean section all tested negative for the COVID-19 virus by RT-PCR. Breastmilk samples from the mothers after the first lactation were also all negative for the COVID-19 virus (68, 69). Breastfeeding protects against morbidity and death in the post-neonatal period and throughout infancy and childhood. The protective effect is particularly strong against infectious diseases that are prevented through both direct transfer of antibodies and other anti-infective factors and long-lasting transfer of immunological competence and memory.

Therefore, infants born to mothers with suspected, probable, or confirmed COVID-19 should be fed according to standard infant feeding guidelines, while applying necessary precautions for IPC.

World Health Organization (2020). Clinical management of COVID-19: interim guidance, 27 May 2020.
<https://apps.who.int/iris/handle/10665/332196>.

TESTING STRATEGY FOR NEONATES:

AAP Guidelines updated 2nd April 2020

When neonate cannot be tested

- To be treated as Covid positive for 14 days
- Explain the danger signs & educate the family
- Mother should continue to maintain precautions until she meets the criteria for non-infectivity.

Guidelines of the Federation of Obstetric and Gynecological Societies of India (FOGSI), National Neonatology Forum of India (NNF), and Indian Academy of Pediatrics (IAP)

Box I: Guidelines for Testing of Neonates for COVID-19
<p>Which neonates?</p> <ul style="list-style-type: none">• Neonates born to mothers with COVID-19 infection within 14 d of delivery or up to 28 d after birth• Symptomatic neonates exposed to close contacts with COVID-19 infection• Irrespective of h/o exposure, presenting with unexplained severe acute respiratory infection after 48-72 hours of life.
<p>When?</p> <ul style="list-style-type: none">• If symptomatic, specimens should be collected as soon as possible• If asymptomatic and roomed-in, test only if and when mother's test comes positive.• If born to mother with COVID-19, neonate to be tested at 48 hours of life. <p>If mother is COVID-19 positive and baby's initial sample is negative, another sample may be repeated at 5-14 days of life.</p>
<p>What sample?</p> <ul style="list-style-type: none">• Not mechanically ventilated: Upper respiratory nasopharyngeal swab (NP). Collection of oropharyngeal swabs (OP) is a lower priority and if collected should be combined in the same tube as the NP.• Mechanically ventilated: Tracheal aspirate sample should be collected and tested as a

lower respiratory tract specimen

How to collect?

Upper nasopharyngeal swab

- Use only synthetic fiber swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden shafts, as they may contain substances that inactivate some viruses and inhibit PCR testing.
- Insert a swab into nostril parallel to the palate. Swab should reach depth equal to distance from nostrils to outer opening of the ear. Leave swab in place for several seconds to absorb secretions. Slowly remove swab while rotating it.
- Place swabs immediately into sterile tubes containing 2-3 mL of viral transport media.

Oropharyngeal swab (e.g., throat swab)

Swab the posterior pharynx, avoiding the tongue.

Nasopharyngeal wash/aspirate or nasal aspirate

Collect 2-3 mL into a sterile, leak-proof, screw-cap sputum collection cup or sterile dry container.

Other samples

Currently not advised; stool, urine and blood specimens, since the isolation is less reliable than from respiratory specimens. Do not take these specimens for testing (based on current advisory recommendations)

What PPE is needed for sample collection?

Clinicians should wear appropriate personal protective equipment during sampling.

Nasopharyngeal swab

- Hand hygiene
- Disposable single use glove
- Disposable plastic apron
- Surgical facemask
- Eye protection (surgical mask with integrated visor or full-face shield or visor or goggles/safety spectacles)

For any sampling from lower respiratory tract in intubated neonates a full set of PPE is a must

- Hand hygiene
- disposable single use glove
- Long sleeved disposable gown

SOP for COVID-19

- N95 mask or another respirator mask
- Eye protection

Labelling the sample

Label each specimen container with the patient's name, hospital ID number, specimen type and the date the sample was collected. Handle the sample with precautions under biosafety level 3 (BSL-3) conditions until is rendered non-infectious by laboratory.

How to store?

Samples should be collected in viral transport media procured from microbiology laboratory and transported immediately in icepacks. One can use disposable thermocol cartons or plastic bags with ice cubes for in-house transport. If sending to another laboratory, store specimens at 2-8°C for up to 72 h after collection. Storage can be done in a refrigerator dedicated for this purpose. If a delay in testing or shipping is expected, store specimens at -70°C or below. This requires deep freezers.

How to send?

If transporting by shipping, the samples need to be packed as per instructions Guidance for sample Collection, Packaging and Transportation for Novel Coronavirus.

Where to send?

Authorized laboratories (See MOHFW website for latest list)

What test?

Reverse Transcriptase PCR is a rapid test for detecting COVID-19

Other test for symptomatic babies?

CBC (leucopenia and thrombocytopenia), LFT (elevated liver enzymes), RFT, CRP and Chest X-ray

MANAGEMENT:

- **Respiratory support for neonates with suspected/confirmed COVID-19 is guided by principles of lung protective strategy including use of non-invasive ventilation.**
- CPAP should be preferred over NIPPV and High Flow Nasal cannulas (HFNC). As they are aerosol generating equipment so their use must be following consultant's advice.
- Healthcare providers should practice contact and droplet isolation and wear N95 mask while providing care in the area where neonates with suspected/confirmed COVID-19 are being provided respiratory support.
- **Intubation should be only for usual indications.**
- Consider use of pre-medication for non-emergent intubation and intubation should be performed by the most experienced person.
- Consider use of aerosol box during intubation and suction, in-line suction device, HEPA filters.
- The area providing respiratory support should be a negative air pressure area.
- Treatment for RDS, HIE and other neonatal problems, as per usual protocol, except for caution about CPAP/NIV as mentioned before.
 - Antibiotics only if bacterial infection is suspected or confirmed

• **Specific anti-COVID-19 treatment is not recommended in symptomatic neonates.**

- Use of adjunctive therapy such as systemic corticosteroids, intravenous gamma globulin and convalescent plasma is NOT recommended in symptomatic neonates with suspected or confirmed COVID-19.

Precautions while performing aerosol generating procedures

- Remove all HCWs from the room, except those needed for the procedure
- Close the door of the room
- Ensure that the exhaust fan is ON
- Ensure AC if any in another room is switched off. (As it will draw the air in)
- Switch off all ceiling fans in the area
- Ensure full PPE are worn as per guidelines
- Remove any high risk HCW from the room (e.g., Diabetic)

Airway management

BOX II: Airway management strategy	
Preparation	<ul style="list-style-type: none"> • PPE donned personnel -Airway operator (Most experienced person), Nurse • SpO2monitor, Suction tubing and catheter attached to wall suction (check pressure and working) • Intubation tray -Face-mask (all sizes), Ambu with reservoir,O2 tubing, Laryngoscope with blade (00,0,1), 2mL syringe • Bag,T-piece, and Tubing for indigenous CPAP, RAM Cannula • Appropriate ETT (2.5,3,3.5)-Preferably cuffed •Drug tray (nurse) -Prefilled, diluted labelled syringes with drugs Adrenaline, Saline flush, Dynaplast with non-sticky edges, Durapore
Assessment	<ul style="list-style-type: none"> • Assess need for PPV • If yes-Proceed further
Positioning	<ul style="list-style-type: none"> • Apply shoulder roll • Use intubation box to cover head & thorax and a disposable sheet under head as the bed may get contaminated by secretion • Ensure Intubation tray, RAM Cannula, Suction catheter & ETT inside the hood
PPV	<ul style="list-style-type: none"> • Airway operator-Assess need for PPV • Start PPV with Bag and appropriate size mask and looks for chest rise • Nurse-Attaches Spo2 probe and reservoir if needed • Assess for need of Intubation/CPAP/Npo2
CPAP/Nasal Prongs	<ul style="list-style-type: none"> • CPAP: Restricted Use (< 1kg/<32 weeks with Downes score 4-6) else use Nasal prongs o2 •Nurse-Fills urobag with water and attaches to Oxygen source • Airway operator-Attaches interface and fixes it with durapore
Intubation	<ul style="list-style-type: none"> • Proceed for laryngoscopy if deemed necessary (elective if <32

SOP for COVID-19

	<p>weeks/1kg with Downes score >6)</p> <ul style="list-style-type: none"> • Suction if necessary • Visualize glottis & intubate upto desired depth • Nurse-Check for symmetrical chest rise/air entry • Once sure of correct position, Nurse inflates ET cuff with 1-1.5 ml air
Post-intubation management	<ul style="list-style-type: none"> • Airway operator holds the ETT & nurse fixes with dynaplast • Airway operator continue IPPR and nurse removes the hood • Hood kept for cleaning using 1% sodium hypochlorite • Shift to either “Covid suspect area” in NICU or “Covid positive area” in main ICU using Indigenously designed trolley with intubation box

Steps for Rapid sequence INTUBATION

BOX III: Rapid Sequence Intubation	
Preparation	<ul style="list-style-type: none"> • PPE donned personnel -Airway operator (Most experienced person), airway assist, nurse • SpO2 monitor attached, ventilator with disposable circuit & expiratory filter (kept on standby), Suction tubing and catheter attached to wall suction (check pressure and working) • Intubation tray (left side of patient head) -Face-mask, Ambu with reservoir, Laryngoscope with blade (00,0,1), 2mL syringe • Appropriate cuffed ETT on right side, fixing length marked • Drug tray (nurse) -Prefilled, diluted labelled syringes with drugs - Atropine, Midazolam, Fentanyl, Vecuronium, Adrenaline, Saline flush, Dynaplast with non-sticky edges • Intubation trolley (atleast 2 M from patient)-0.5 mm size smaller & bigger ETT.
Positioning	<ul style="list-style-type: none"> • Apply shoulder roll • Use intubation box to cover head & thorax and a disposable sheet under head as the bed may get contaminated by secretion

SOP for COVID-19

	<ul style="list-style-type: none"> • Ensure Intubation tray, suction catheter & ETT inside the hood
Pre-medication	<ul style="list-style-type: none"> • IV Atropine -0.02 mg/k
Pre-oxygenation	<ul style="list-style-type: none"> • Preoxygenate with CPAP/Nasal prongs • If unsuccessful, give positive pressure breaths with AMBU bag and mask assembly
Induction/ Paralysis	<ul style="list-style-type: none"> • Once SpO₂ is maintained in gestation appropriate range, administer drugs • IV Midazolam -0.1 mg/kg (Only for term) • IV Fentanyl -2 mcg/kg • Wait for cessation of respiration (30-40 sec)
Placement with proof	<ul style="list-style-type: none"> • Proceed for laryngoscopy after SpO₂ is maintained in desired range • Suction if necessary • Visualize glottis & intubate - look for mist • Airway assist inflates ET cuff with 1-1.5 ml air, attaches ventilator • Look for chest rise, heart rate and Spo₂
Post-intubation management	<ul style="list-style-type: none"> • Airway operator holds the ETT & nurse fixes with dynaplast • Airway operator removes the hood • Hood kept for cleaning using 1% sodium hypochlorite • Disposable sheet to be rolled without touching inner surface and disposed • Airway assist titrates ventilator setting

Management of suspected/ proven COVID pneumonia in the neonate:

When to use CPAP

- No prophylactic CPAP
- Neonates < 34 weeks/< 1800 grams with Respiratory distress (Downes score 3 or more)
- Gestational age < 35 weeks + Apnea Maximum Settings (beyond which consider intubation):
PEEP- 8 cm H₂O, Flow- 5L/min, Fio₂- 60%

When to Use Nasal Prongs oxygen

- Neonates < 34 weeks/< 1800 grams with Mild Respiratory distress (Downes score ≤ 2)

SOP for COVID-19

- Gestational age \geq 34 weeks with Mild to moderate respiratory distress (Downes score <6)
Maximum Flow: < 35 weeks- 1 L/min, ≥ 35 weeks- 2 L/min

When to consider Intubation

Any neonate with suspect/proven COVID having

1. Severe respiratory distress (Downes score >6) Or
2. Failed to maintain age appropriate Spo₂ despite maximum CPAP support (PEEP- 8 cm H₂O, Flow- 5 L/min)

Action plan:

Step 1: Take airborne precautions (Complete PPE) – Coverall suit, Hood, leg covers, Fit tested N95 respirator, full sleeve gown, face shield/goggles, double gloves

Step 2: Assessment for intubation: Clinical + Pulse oximetry + Radiograph

Note: Prefer early intubation; is preferred; NIMV & HFNC must be avoided at all costs due to high failure rate, risk of aerosol generation and ineffective interface.

Step 3: Prepare for intubation and mechanical ventilation – limit to 3 health care providers in the room [1. Airway operator (SR/Consultant), 2. Airway assist (Consultant/SR), 3. Medication nurse] – avoid members >60 yrs. or with co-morbidities in the team – “**Follow Safe Intubation Protocol**” ***Mechanical ventilation:***

- Use only disposable ventilator circuit.
- Use autofill humidification chamber through close circuit, preferable by gravity. It can be done by hanging the sterile water bottle > 50 cm above the chamber. Never open the humidification Chamber.
- Keep ventilator circuit attached to the machine and ready.
- Put the ventilator in stand-by mode. Do not turn on the ventilator until the circuit is connected to the ETT after endotracheal intubation
- Use bacterial/viral filter at the expiratory limb end and inline closed suction with the circuit.
- Avoid disconnecting the circuit as far as possible
- If disconnection unavoidable for some reason, attach the bacterial/viral filter to the ETT
- Ventilation mode and settings as per protocol

Supportive Care and Medications

Apart from the routine management of any pneumonia, kindly take care of the following:

1. If bronchodilators required

- a. Do not use nebulizers.
 - b. If no alternative available, use MDI through spacer and face mask for spontaneously breathing infants.
 - c. Prefer giving intravenous bronchodilators.
2. Other viral pneumonias
- May watch for H1N1 and other viral markers as they can be close mimics.
3. Medications: Do not use steroid

DISINFECTION POLICY

Disinfection of surfaces in the childbirth/neonatal care areas for patients with suspected or confirmed COVID-19 are not different from those for usual labor room/OT/NICU/SNCU areas and include the following:

- Wear PPE before disinfecting. (*Donning & Doffing steps as per ZMC/SRHF guidelines*)
- If equipment or surface is visibly soiled first clean with soap and water solution or soaked cloth.
- 0.5% sodium hypochlorite can be used to disinfect large surfaces like floors and walls at least once per shift and for cleaning after a patient is transferred out of the area.
- 70% ethyl alcohol can be used to disinfect small areas and equipment between uses.
- Hydrogen peroxide can be used for surface cleaning of incubators, open care systems, infusion pumps, weighing scales, standby equipment-ventilators, monitors, phototherapy units, and shelves. Use H₂O₂ only when equipment is not being used for the patient. For ensuring the efficacy of disinfection with H₂O₂ use the contact period recommended by manufacturer. Usually a contact period of 1 hour is required.

Personal Protection:

BOX IV: Minimal composition of PPE for the management of suspected or confirmed cases of COVID-19	
Protection	Suggested PPE
Respiratory protection	Triple layered surgical mask N95 facemasks are needed when performing an aerosol-generating procedure or in an area where neonates are being provided respiratory support by CPAP device/ventilator
Eye protection	Goggles or face shield
Body protection	Full-sleeved water-resistant gown including head and complete shoe cover.
Hand protection	Well-fitting Gloves

- **Follow routine biomedical waste disposal handling, segregation, transport and final disposal guidelines as prescribed by the Government of India.**
- Families of suspected and confirmed COVID-19 mothers and neonates should receive informed healthcare.
- Visitors to routine childbirth/neonatal care areas should be screened for symptoms of COVID-19.
- Persons (including parents) with suspected or confirmed COVID-19 should not be allowed entry in the childbirth/neonatal care area.
- For neonates roomed-in with mother having suspect/confirmed COVID-19, one healthy family member following contact and droplet precautions should be allowed to stay with her to assist in baby care activities.
- COVID-19 mother may be allowed to visit her neonate admitted in NICU if she fulfills all of these:
 - Resolution of fever without the use of antipyretics for at least 72 hours AND
 - Improvement (but not full resolution) in respiratory symptoms AND
 - Negative results of a molecular assay for detection of SARS-CoV-2 in case of severe disease.

DISCHARGE POLICY:

Suspect neonates

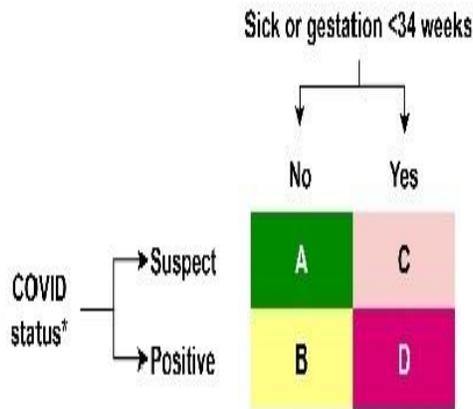
- Stable neonates exposed to COVID19 and being roomed-in with their mothers may be discharged together at the same time.
- Stable neonates in whom rooming-in is not possible because of the sickness in the mother and are being cared by a trained family member may be discharged from the facility by 24-48 hours of age.

COVID-19 positive neonates

- Asymptomatic neonates or those with mild to moderate clinical course whose symptoms and need of oxygen abate within 3 days can be discharged from the hospital after 10 days without repeating RT-PCR test.
- In severe cases, a single negative RT-PCR should be demonstrated after resolution of symptoms, prior to discharge.

- Follow routine immunization policy in healthy neonates born to mothers with suspected/confirmed COVID-19.
- In neonates with suspected/confirmed infection, vaccination should be completed before discharge from the hospital as per existing policy.

Operational flow chart

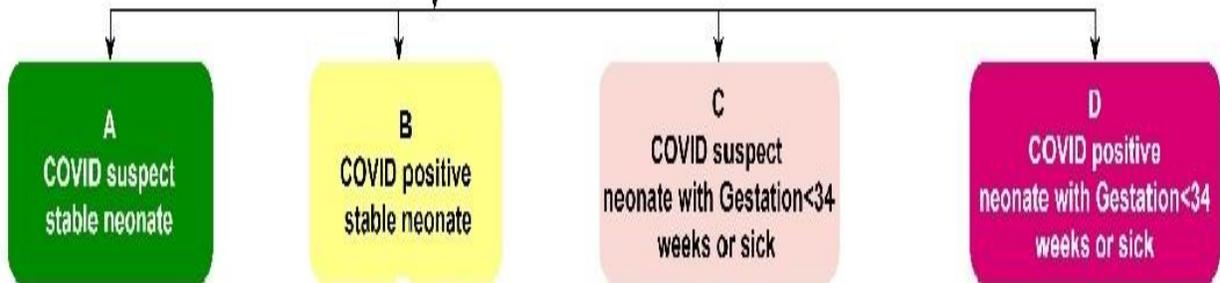


*Suspect include

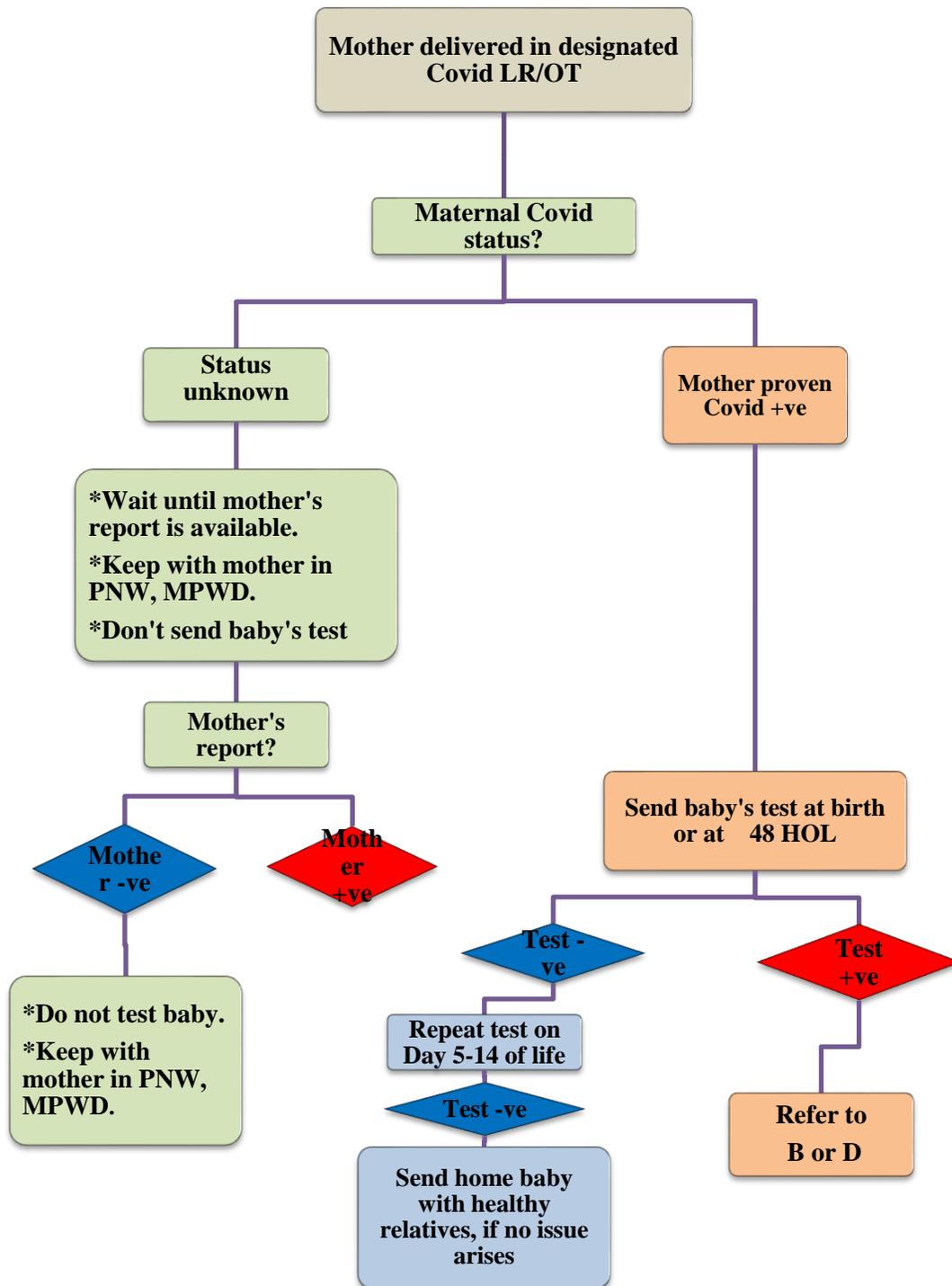
- Mother COVID-19 positive within 2 weeks prior to delivery
- Neonates born to a mother with suspected infection or to a mother from a containment area
- Postnatal exposure to infected mother or another person including a healthcare worker
- Presenting with respiratory distress with or without fever and cough, onset beyond 48-72 h of age and no other alternative explanation for the illness

Positive means RT-PCR is positive for COVID-19

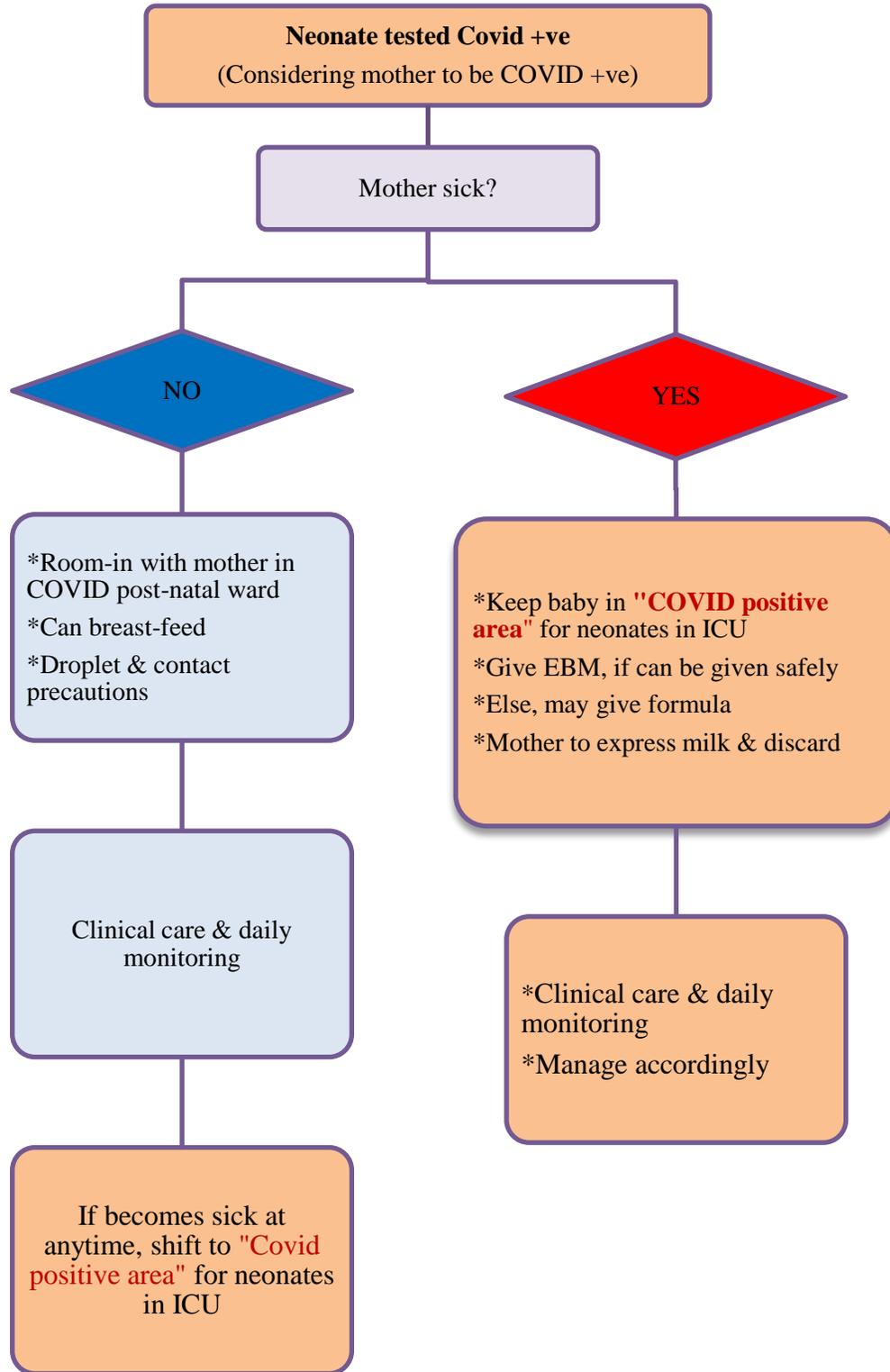
Classify at admission and periodic assessment during course of illness



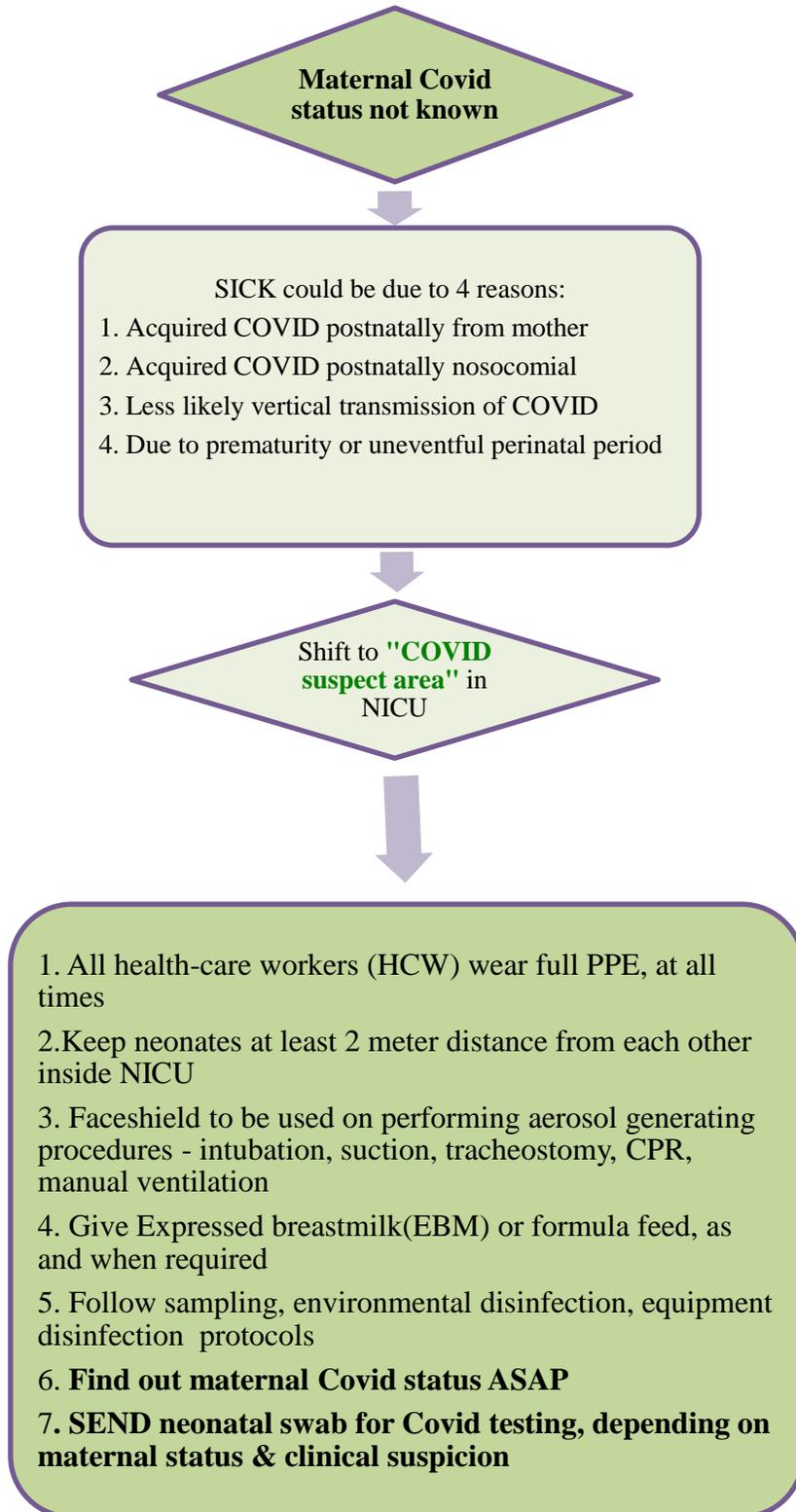
A. COVID SUSPECT, STABLE NEONATE



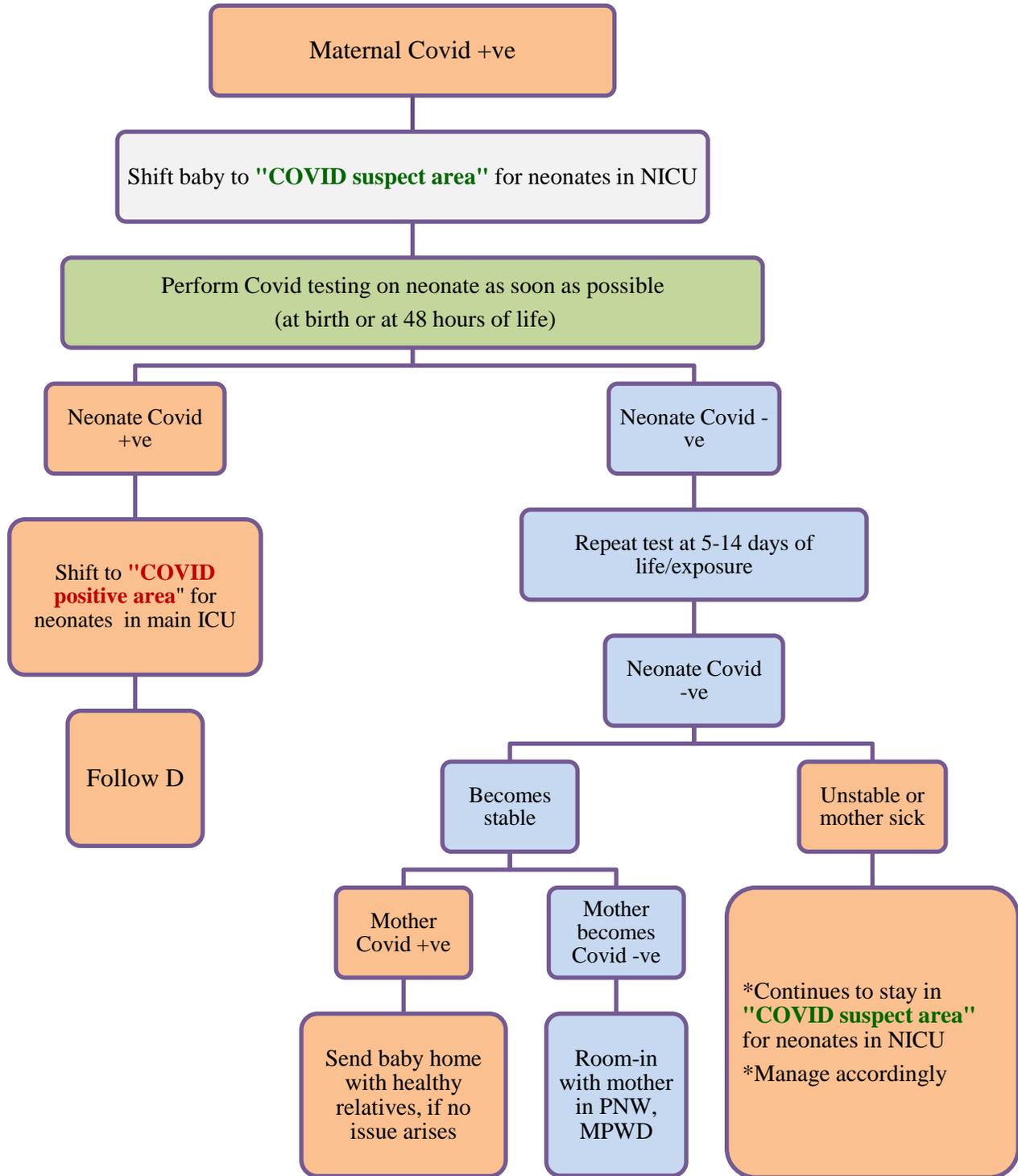
B. COVID POSITIVE, STABLE NEONATE



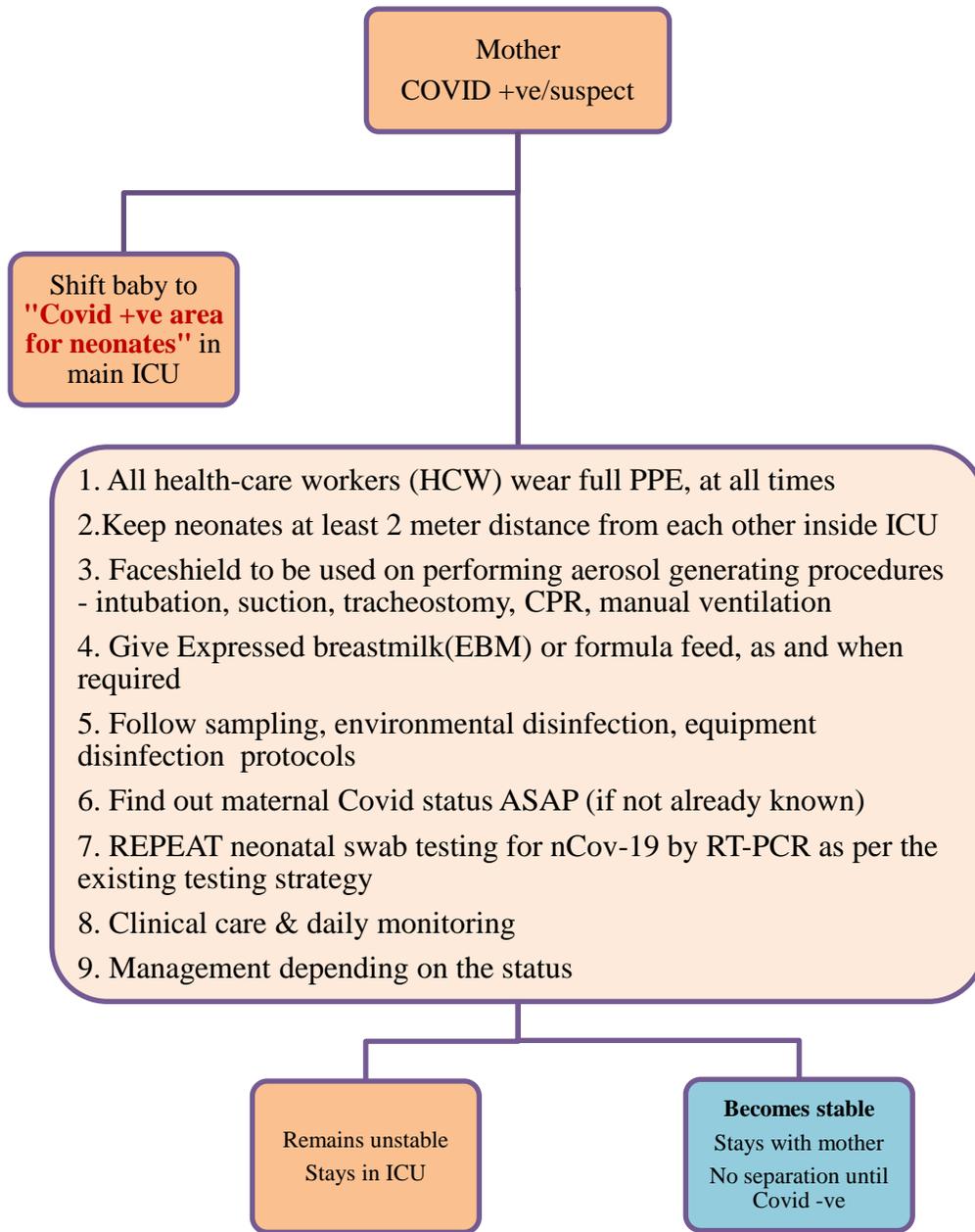
C (a) COVID SUSPECT GESTATION <34 WEEKS OR SICK



C(b) COVID SUSPECT GESTATION <34 WEEKS OR SICK



D. COVID POSITIVE NEONATE GESTATION <34 WEEKS OR SICK



❖ PROPHYLAXIS for COVID-19

1. Background

The Joint Monitoring Group under the Chairmanship of DGHS and including representatives from AIIMS, ICMR, NCDC, NDMA, WHO and experts drawn from Central Government hospitals reviewed the prophylactic use of Hydroxychloroquine (HCQ) in the context of expanding it to healthcare and other front line workers deployed in non-COVID and COVID areas, respectively.

The National Task force (NTF) for COVID-19 constituted by Indian Council of Medical Research also reviewed the use of HCQ for prophylaxis of SARS-CoV-2 infection for high risk population based on the emerging evidence on its safety and efficacy. The NTF reviewed the data on in-vitro testing of HCQ for antiviral efficacy against SARS-CoV-2, safety profile of HCQ reported to the pharmacovigilance program of India, and data on the use of HCQ for the prophylaxis of SARS-CoV-2 infection among health care workers (HCWs) and reported its findings as detailed below:

1.1 In-vitro study

At NIV, Pune, the report of the in-vitro testing of HCQ for antiviral efficacy showed reduction of infectivity /log reduction in viral RNA copy of SARS-CoV2.

1.2 Safety Profile of HCQ

The data on assessment of HCQ prophylaxis among 1323 HCWs indicated mild adverse effects such as nausea (8.9%), abdominal pain (7.3%), vomiting (1.5%), hypoglycemia (1.7%) and cardio-vascular effects (1.9%). However, as per the data from the Pharmacovigilance program of India, there have been 214 reported instances of adverse drug reactions associated with prophylactic HCQ use. Of these, 7 were serious individual case safety reports with prolongation of QT interval on ECG in 3 cases.

1.3 Studies on prophylaxis of SARS-CoV-2 infection

- A retrospective case-control analysis at ICMR has found that there is a significant dose-response relationship between the number of prophylactic doses taken and frequency of occurrence of SARS-CoV-2 infection in symptomatic healthcare workers who were tested for SARS-CoV-2 infection.
- Another investigation from 3 central government hospitals in New Delhi

indicates that amongst healthcare workers involved in COVID-19 care, those on HCQ prophylaxis were less likely to develop SARS-CoV-2 infection, compared to those who were not on it. The benefit was less pronounced in healthcare workers caring for a general patient population.

- An observational prospective study of 334 healthcare workers at AIIMS, out of which 248 took HCQ prophylaxis (median 6 weeks of follow up) in New Delhi also showed that those taking HCQ prophylaxis had lower incidence of SARS-CoV-2 infection than those not taking it.

2. Eligibility criteria for HCQ prophylaxis

The Advisory earlier issued (dated 23rd March, 2020; available at: <https://www.mohfw.gov.in/pdf/AdvisoryontheuseofHydroxychloroquinasprophylaxisforSARSCoV2infection.pdf>), provided placing the high risk population (asymptomatic Healthcare Workers involved in the care of suspected or confirmed cases of COVID-19 and asymptomatic household contacts of laboratory confirmed cases of COVID-19) under chemoprophylaxis with HCQ.

In light of all of the above, the Joint Monitoring Group and NTF have now recommended the prophylactic use of HCQ in the following categories:

1. All asymptomatic healthcare workers involved in containment and treatment of COVID19 and asymptomatic healthcare workers working in non-COVID hospitals/non -COVID areas of COVID hospitals/blocks
2. Asymptomatic frontline workers, such as surveillance workers deployed in containment zones and paramilitary/police personnel involved in COVID-19 related activities.
3. Asymptomatic household contacts of laboratory confirmed cases.

Exclusion/contraindications

- The drug is contraindicated in persons with known case of:
 1. Retinopathy,
 2. Hypersensitivity to HCQ or 4-aminoquinoline compounds
 3. G6PD deficiency
 4. Pre-existing cardiomyopathy and cardiac rhythm disorders
- The drug is not recommended for prophylaxis in children under 15 years of age and in pregnancy and lactation.

Rarely the drug causes cardiovascular side effects such as cardiomyopathy and

rhythm (heart rate) disorders. In that situation the drug needs to be discontinued. The drug can rarely cause visual disturbance including blurring of vision which is usually self- limiting and improves on discontinuation of the drug. For the above cited reasons the drug has to be given under strict medical supervision with an informed consent.

Table 8: Dosage

S. No.	Category of personnel	Dosage
1	<ul style="list-style-type: none"> Asymptomatic household contacts of laboratory confirmed cases 	400 mg twice a day on Day 1, followed by 400 mg once weekly for next 3 weeks; to be taken with meals
2	<ul style="list-style-type: none"> All asymptomatic healthcare workers involved in containment and treatment of COVID-19 and asymptomatic healthcare workers working in non- COVID hospitals/non-COVID areas of COVID hospitals/blocks Asymptomatic frontline workers, such as surveillance workers deployed in containment zones and paramilitary/police personnel involved in COVID-19 related activities 	400 mg twice a day on Day 1, followed by 400 mg once weekly for next 7 weeks; to be taken with meals

Use of HCQ prophylaxis beyond 8 weeks

In clinical practice HCQ is commonly prescribed in a daily dose of 200mg to 400mg for treatment of diseases such as Rheumatoid Arthritis and Systemic Lupus Erythematosus for prolonged treatment periods with good tolerance. With available evidence for its safety and beneficial effect as a prophylactic drug against SARS-COV-2 during the earlier recommended 8 weeks period, the experts further recommended for its use beyond 8 weeks on weekly dosage with strict monitoring of clinical and ECG parameters which would also ensure that the therapy is given under supervision.

Based on the available evidence, it has been opined that HCQ is relatively safe, when certain contraindications are avoided, and has some beneficial effect as a prophylactic option.

Monitoring

- An ECG (with estimation of QT interval) may be done before prescribing HCQ

prophylaxis.

- An ECG should be done in case any new cardiovascular symptoms occurs (e.g., palpitations, chest pain syncope) during the course of prophylaxis.
- An ECG (with estimation of QT interval) may be done in those who are already on HCQ prophylaxis before continuing it beyond 8 weeks.

One ECG should be done anytime during the course of prophylaxis

Key considerations

While following above recommendations, it should be noted that:

- 1) The drug has to be given under strict medical supervision with an informed consent.
- 2) The drug has to be given only on the prescription of a registered medical practitioner.
- 3) Advised to consult with a physician for any adverse event or potential drug interaction before initiation of medication. The contraindications mentioned in the recommendations should strictly be followed.
- 4) Health care workers and other frontline workers on HCQ should be advised to use PPE. Front line workers should use PPEs in accordance with the guidelines issued by MohFW or by their respective organization.
- 5) They should be advised to consult their physician (within their hospital/surveillance team/security organization) for any adverse event or potential drug interaction before initiation of medication. The prophylactic use of HCQ to be coupled with the pharmacovigilance for adverse drug reactions through self-reporting using the Pharmacovigilance Program of India (PvPI) helpline/app. (available at:
- 6) If anyone becomes symptomatic while on prophylaxis, he/she should immediately contact the health facility, get tested as per national guidelines and follow the standard treatment protocol. Apart from the symptoms of COVID-19 (fever, cough, breathing difficulty), if the person on chemoprophylaxis develops any other symptoms, he should immediately seek medical treatment from the prescribing medical practitioner.
- 7) All asymptomatic contacts of laboratory confirmed cases should remain in home quarantine as per the National guidelines, even if they are on prophylactic therapy.
- 8) Simultaneously, proof of concept and pharmacokinetics studies should be continued/ taken up expeditiously. Findings from these studies and other new evidence will guide any change further in the recommendation.

SOP for COVID-19

- 9) They should follow all prescribed public health measures such as frequent washing of hands, respiratory etiquettes, keeping a distance of minimum 1 meter and use of Personal protective gear (wherever applicable).

Note: It is reiterated that the intake of above medicine should not instil a sense of false security.

❖ PREVENTION OF COMPLICATIONS

Implement the following interventions 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 9:

Anticipated OUTCOME	Interventions
Reduce days of invasive mechanical Ventilation	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Oral intubation is preferable to nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30- 45) • 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 even 5-7 days
Reduce incidence of venous thromboembolism	<ul style="list-style-type: none"> • Use pharmacological prophylaxis (LMWH or heparin 5000 units sc BD) in adolescents and adults without complications. • Use mechanical prophylaxis for those with contraindications
Reduce incidence of catheter related bloodstream Infection	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Turn patient every two hours

<p>Reduce incidence of stress ulcers and gastrointestinal bleeding</p>	<ul style="list-style-type: none"> • Give early enteral nutrition (within 24- 48 hours of admission) • Administer H2-blockers/ 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.
<p>Reduce incidence of ICU-related weakness</p>	<ul style="list-style-type: none"> • Actively mobilize the patient early in the course of illness when safe to do so

Early self-proning in awake, non-intubated patients

6. Any COVID-19 patient with respiratory embarrassment severe enough to be admitted to the hospital may be considered for rotation and early self-proning.
7. Care must be taken to not disrupt the flow of oxygen during patient rotation.
8. Typical protocols include 30–120 minutes in prone position, followed by 30–120 minutes in left lateral decubitus, right lateral decubitus, and upright sitting position.
(Caputo ND, Strayer RJ, Levitan R. Academic Emergency Medicine 2020;27:375–378)

Requirements for safe prone positioning in ARDS

- a. Preoxygenate the patient with FiO2 1.0
- b. Secure the endotracheal tube and arterial and central venous catheters
- c. Adequate number of staff to assist in the turn and to monitor the turn
- d. Supplies to turn (pads for bed, sheet, protection for the patient)
- e. Knowledge of how to perform the turn as well as how to supine the patient in case of an emergency

Contraindications to prone ventilation

- f. Spinal instability requires special care
- g. Intra cranial pressure may increase on turning
- h. Rapidly return to supine in case of CPR or defibrillation

➤ When to start proning?

- i. P/F ratio <150 while being ventilated with FiO₂ >0.6 and PEEP >5 cm H₂O

When to stop proning?

- j. When P/F exceeds 150 on FiO₂ ≥ 0.6 and ≥ 6 PEEP

➤ What portion of the day should patients be kept prone?

- k. As much as possible (16-18 hours a day)

Adult patients with severe ARDS receive prone positioning for more than 12 hours per day (strong recommendation, moderate-high confidence in effect estimates)

When to intubate:

- PaO₂/FiO₂ < 200
- PaO₂/FiO₂ < 300 with hypotension requiring vasopressor support
- GCS < 8 with threatened airway

Decision to intubate should be taken on a case by case basis based on the clinician's discretion

How to intubate:

- Pre-oxygenation with 100% FiO₂
- Try to avoid bag and mask ventilation (due to aerosol generation) but can be used if required by connecting an HME
- The most skilled member of the team should be identified at the beginning of each shift for performing intubation
- *If difficult airway is anticipated (past history of difficult airway, mouth opening < 3cm, thyromental distance < 6cm, restricted head and neck mobility), critical care physician/anaesthesiologist to attempt intubation using videolaryngoscope*

- In unanticipated difficult airway, use laryngeal mask airway and simultaneously call ICU critical care team

- Rapid sequence intubation to be done using induction agents (propofol or etomidate) and muscle relaxant (Succinylcholine or Rocuronium)

- During induction, monitor for hemodynamic instability and use fluids and vasopressors if required

- Use end-tidal CO₂ and X-ray chest to confirm correct position of tube

- After intubation, appropriate cleaning/disinfection of equipment and environment should be done

Care of ventilated patient:

- Fresh ventilator circuit to be used for every new patient
- Tubings and HME to be changed every 48 hours or when visibly soiled
- Used closed suctioning technique and avoid routine suctioning
- Sedation and muscle relaxants may be used in difficult to ventilation patients
- ARDS management as per ARDS.net protocol (airway pressure release ventilation, ECMO, prone ventilation may be considered based on the expertise available)



NIH NHLBI ARDS Clinical Network
Mechanical Ventilation Protocol Summary

INCLUSION CRITERIA: Acute onset of

1. $PaO_2/FiO_2 \leq 300$ (corrected for altitude)
2. Bilateral (patchy, diffuse, or homogeneous) infiltrates consistent with pulmonary edema
3. No clinical evidence of left atrial hypertension

PART I: VENTILATOR SETUP AND ADJUSTMENT

1. Calculate predicted body weight (PBW)
Males = $50 + 2.3 [\text{height (inches)} - 60]$
Females = $45.5 + 2.3 [\text{height (inches)} - 60]$
2. Select any ventilator mode
3. Set ventilator settings to achieve initial $V_T = 8$ ml/kg PBW
4. Reduce V_T by 1 ml/kg at intervals ≤ 2 hours until $V_T = 6$ ml/kg PBW.
5. Set initial rate to approximate baseline minute ventilation (not > 35 bpm).
6. Adjust V_T and RR to achieve pH and plateau pressure goals below.

OXYGENATION GOAL: PaO_2 55-80 mmHg or SpO_2 88-95%
Use a minimum PEEP of 5 cm H₂O. Consider use of incremental FiO_2 /PEEP combinations such as shown below (not required) to achieve goal.

Lower PEEP/higher FiO_2

FiO_2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7
PEEP	5	5	8	8	10	10	10	12

FiO_2	0.7	0.8	0.9	0.9	0.9	1.0
PEEP	14	14	14	16	18	18-24

Higher PEEP/lower FiO_2

FiO_2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5
PEEP	5	8	10	12	14	14	16	16

FiO_2	0.5	0.5-0.8	0.8	0.9	1.0	1.0
PEEP	18	20	22	22	22	24

PLATEAU PRESSURE GOAL: ≤ 30 cm H₂O

Check Pplat (0.5 second inspiratory pause), at least q 4h and after each change in PEEP or V_T .

If Pplat > 30 cm H₂O: decrease V_T by 1ml/kg steps (minimum = 4 ml/kg).

If Pplat < 25 cm H₂O and $V_T < 6$ ml/kg, increase V_T by 1 ml/kg until Pplat > 25 cm H₂O or $V_T = 6$ ml/kg.

If Pplat < 30 and breath stacking or dys-synchrony occurs: may increase V_T in 1ml/kg increments to 7 or 8 ml/kg if Pplat remains ≤ 30 cm H₂O.

❖ GUIDELINES FOR DIALYSIS OF COVID-19 PATIENTS (MoHFW)

COVID-19, a disease caused by a novel corona virus (SARS CoV-2), is currently a pandemic, which produces high morbidity in the elderly and in patients with associated comorbidities. Chronic kidney disease stage-5 (CKD-5) patients on dialysis [maintenance hemodialysis (MHD) or continuous ambulatory peritoneal dialysis (CAPD)] are also vulnerable group because of their existing comorbidities, repeated unavoidable exposure to hospital environment and immunosuppressed state due to CKD-5. These patients are therefore not only more prone to acquire infection but also develop severe diseases as compared to general population.

Patients on regular dialysis should adhere to prescribed schedule and not miss their dialysis sessions to avoid any emergency dialysis.

There will be three situations of patients who require dialysis; patients already on maintenance dialysis, patients requiring dialysis due to acute kidney injury (AKI) and patients critically ill requiring continuous renal replacement therapy (CRRT).

General Guidelines for Administration

1. State/UT should identify and earmark at least one hemodialysis facility with adequate number of dialysis machines, trained staff, reverse osmosis (RO) water system and other support equipment as preparatory fixed-point dialysis unit in case of rise of Covid-19 epidemic.
2. Health departments may issue directives to the district administrations allowing easy movements of these patients (with one attendant) to dialysis facility. Patients who do not have private vehicles, government run transport system should be organized for facilitating transport of these patients. Patients should use their hospital papers as pass to commute to the dialysis unit.
3. District administration should ensure that service providers for the dialysis consumables, both for MHD and CAPD should be allowed to deliver the material to the hospital or home as the case may be.

General Guidance for Dialysis Unit

1. Adequate medical supplies such as dialysate, dialyzers and tubing, catheters, fistula needles, disinfectant and medicines etc. must be ensured in adequate quantity
2. A sign board should be posted prominently in the local understandable language as well as Hindi and English asking patients to report any fever, coughing or breathing problem in dialysis unit and waiting area. The information including images for education can be obtained on the International Society of Nephrology website <https://www.theisn.org/covid-19>
3. All hemodialysis units should educate their personnel in hemodialysis units; including nephrologists, nurses, technicians, other staff and all patients undergoing MHD along with their care givers about COVID 19.
4. All universal precautions must be strictly followed.
5. All staff should strictly follow hand hygiene (seven steps) with soap and water for 20 second before handling any patient and in between two patients. If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. If hands are visibly soiled or dirty, they should be first washed with soap and water and then an alcoholic hand rub used. Avoid touching your eyes, nose, and mouth with unwashed hands.
6. Medical and support staff treating infected patients should be monitored for COVID infection at the dialysis facility and should take necessary action if found infected.
7. Dialysis units should organize healthcare workers shift duties in a way that work of dialysis unit is not affected.
8. All hemodialysis units should be aware of the testing, triage and notification policy recommended by the Union Ministry of health and Family welfare and those by State/UT Health Departments as well as District health authorities.
9. Some of the dialysis unit staff should be trained for donning and doffing of Personal Protective Equipment (PPE) so that they can be used for treatment of COVID-19 positive patients.
10. All staff should be trained for cough etiquette, hand hygiene and proper use and disposal of mask, gown and eye glasses and need to protect themselves.
11. All patients with suspected COVID-19 be tested as per the local health authorities' guidelines.
12. Patients with suspected or positive COVID-19 should be referred to COVID-19 care team as per local guidelines.

GUIDELINES FOR HEMODIALYSIS

I. For Patients

a. Before Arrival to Dialysis Unit

1. All units should instruct their patients to recognize early symptoms of COVID-19 (recent onset fever, Sore throat, Cough, recent Shortness of breath/dyspnea, without major inter-dialytic weight gain, rhinorrhea, myalgia/bodyache, fatigue and Diarrhea) and contact dialysis staff before coming to dialysis center. The unit needs to make necessary arrangement for their arrival in the screening area.
2. Patients, who are stable on MHD may be encouraged to come to the unit alone without any attendant

b. Screening Area

1. We recommend that dialysis unit should have a designated screening area, where patients can be screened for COVID-19 before allowing them to enter inside dialysis area.
Where this is not possible, patients may wait away from the dialysis unit until they receive specific instructions from the unit staff.
2. The screening area should have adequate space to implement social distancing between patients and accompanying persons while waiting for dialysis staff. In screening area, every patient should be asked about:
 - Symptoms suspected of COVID-19 as above.
 - History of contact with a diagnosed case of COVID 19
 - History of contact with person who has had recent travel to foreign country or from high COVID-19 prevalence area within our country as notified by the Central and State/UT governments respectively.
3. Patients with symptoms of a respiratory infection should put on a facemask before entering screening area and keep it on until they leave the dialysis unit. Dialysis unit staff should make sure an adequate stock of masks is available in screening area to provide to the patients and accompanying person if necessary.
4. There should be display of adequate IEC material (posters etc.) about COVID – 19 in the screening area.

c. Inside Dialysis Unit

5. Suspected or positive COVID-19 patients should properly wear disposable three-layer surgical mask throughout dialysis duration.
6. Patients should wash hands with soap and water for at least 20 seconds, using proper method of hand washing. If soap and water are not readily available, a hand sanitizer containing at least 60% alcohol can be used.
7. Patients should follow cough etiquettes, like coughing or sneezing using the inside of the elbow or using tissue paper.
8. Patients should throw used tissues in the trash. The unit should ensure the availability of plastic lined trash cans appropriately labeled for disposing of used tissues. The trash cans should be foot operated ideally to prevent hand contact with infective material.
9. There should be display of adequate IEC material (posters etc.) about COVID-19 in the dialysis area.

II. For Dialysis Staff

a. Screening Area

1. The unit staff should make sure an adequate stock of masks and sanitizers are available in screening area to provide to the patients and accompanying persons, if necessary.

b. During Dialysis

1. It should be ensured that a patient or staff in a unit does not become the source of an outbreak.
2. Each dialysis chair/bed should have disposable tissues and waste disposal bins to ensure adherence to hand and respiratory hygiene, and cough etiquette and appropriate alcohol-based hand sanitizer within reach of patients and staff.
3. Dialysis personnel, attendants and caregivers should also wear a three-layer surgical facemask while they are inside dialysis unit.
1. Ideally all patients with suspected or positive COVID-19 be dialyzed in isolation. The isolation ideally be in a separate room with a closed door, but may not be possible in all units. The next most suitable option is the use of a separate shift, preferably the last of the day for dialyzing all such patients. This offers the advantage of avoiding long waiting periods or the need for extensive additional disinfection in between shifts. The next suitable option is to physically separate areas for proven positive and suspected cases. Where this is also not possible, we suggest that the positive or suspected patient may be dialyzed at a row end within the unit ensuring a separation from all other patients by at least 2 meters.

2. Staff caring for suspected or proved cases should not look after other patients during the same shift.
3. Dialysis staff should use of all personal protective equipment (PPE) for proven or strongly suspected patients of COVID-19. Isolation gowns should be worn over or instead of the cover gown (i.e., laboratory coat, gown, or apron with incorporate sleeves) that is normally worn by hemodialysis personnel. If there are shortages of gowns, they should be prioritized for initiating and terminating dialysis treatment, manipulating access needles or catheters, helping the patient into and out of the station, and cleaning and disinfection of patient care equipment and the dialysis station. Sleeved plastic aprons may be used in addition to and not in place of the PPE recommended above.
4. Separating equipments like stethoscopes, thermometers, Oxygen saturation probes and blood pressure cuffs between patients with appropriate cleaning and disinfection should be done in between shifts.
5. Stethoscope diaphragms and tubing should be cleaned with an alcohol-based disinfectant including hand rubs in between patients. As most NIBP sphygmomanometer cuffs are now made of rexine they should also be cleaned by alcohol or preferably hypochlorite- based (1% Sodium Hypochlorite) solutions however the individual manufacturer's manuals should be referred to.
6. Staff using PPE should be careful of the following issues:
 - While using PPE, they will not be able to use wash room so prepare accordingly
 - After wearing eye shield, moisture appears after some time and visibility may become an issue. Therefore, machine preparation can be done in non- infected area before shifting to near the patient
7. If dialysis is to be done bed-side in the hospital, portable RO should be properly disinfected with hypochlorite (1% Sodium Hypochlorite) solution between use of two patients.

DISINFECTION AND DISPOSAL PRACTICES IN DIALYSIS UNIT

- Bed linen should be changed between shifts and used linen and gowns be placed in a dedicated container for waste or linen before leaving the dialysis station. Disposable gowns should be discarded after use. Cloth gowns should be soaked in a 1% hypochlorite solution for 20 minutes before sluicing and then be transported for laundering after each use.
- Inside dialysis unit, clean and disinfect frequently touched surfaces at least thrice daily and after every shift. This includes bedside tables and lockers, dialysis machines, door knobs, light switches, counter tops, handles, desks, phones,

keyboards, toilets, faucets, and sinks etc.

- It is recommended that solutions for disinfection be composed either of hypochlorite, alcohol, formaldehyde or glutaraldehyde for disinfection of surfaces in accordance with the manufacturer's instructions. Almost all common disinfectant solutions are effective in killing the virus on surfaces, the key is effective and frequent cleaning.
- Wear disposable gloves when handling dirty laundry from an ill person and then discard after each use. Do not shake dirty laundry. This will minimize the possibility of dispersing virus through the air.
- Clean and disinfect clothes buckets or drums according to guidance above for surfaces. If possible, consider placing a bag liner that is either disposable (can be thrown away) or can be laundered.

DIALYSIS PATIENT WITH ACUTE KIDNEY INJURY (AKI)

A small proportion of patients (~5%) of COVID – 19 develops AKI. The disease is usually mild but a small number may require RRT (Renal Replacement Therapy). In addition, even smaller proportion of patients with secondary bacterial infection will have septic shock, drug nephrotoxicity or worsening of existing CKD severe enough to require RRT (Renal Replacement Therapy).

It is suggested that all modalities of RRT may be used for patients with AKI depending on their clinical status.

- Bleach solution
- Mix 1 litre of Medichlor with 9 litres of water. This solution can be used for upto 24 hours after which it should be discarded and a fresh solution prepared.
- As an alternative 10 Grams of household bleaching powder can be dissolved in a liter of water and used for a period of 24 hours.
- Alcohol based solutions
- Ensure solution has at least 60% alcohol. Appropriate commercially available solutions include Aerodesin, a mixture of isopropanol, glutaraldehyde and ethanol or lysoformin, a mixture of formaldehyde and glutaraldehyde can be used.
- Wear unsterile but clean disposable gloves when cleaning and disinfecting surfaces. Gloves should be discarded after each cleaning. If reusable gloves are used, those gloves should be dedicated for cleaning and disinfection of surfaces for

COVID-19 and should not be used for other purposes. Clean hands by above method immediately after gloves are removed.

- For soft (porous) surfaces such as carpeted floor, rugs, and drapes, remove visible contamination if present and clean with appropriate cleaners indicated for use on these surfaces. After cleaning, launder items as appropriate in accordance with the manufacturer's instructions. If possible, launder items using the warmest appropriate water setting for the items and dry items completely.
- Patient admitted in other ward of the hospital with AKI should be preferably given bed- side dialysis rather than shifting patient in main dialysis unit.
- In such situation portable reverse osmosis water in a tank will serve the purpose for the dialysis.
- If more dialysis is expected in selected area, dialysis machine may be left in the same area for future dialysis

CONTINUOUS RENAL REPLACEMENT THERAPY (CRRT)

- CRRT machines are free standing and can function anywhere in the hospital using sterile bagged replacement fluid and dialysate, but operating costs are high.

OTHER EXTRACORPOREAL THERAPY FOR COVID-19

- Use of cytokine removal therapies with Cytosorb, Oxiris and other similar devices is unproven and is not recommended except in the context of a clinical trial.
- Cytokine storm associated with elevated levels of IL-6, IL-18 and IFN gamma are associated with more severe disease and higher mortality. Extracorporeal therapies using high volume hemofiltration or adsorption to decrease cytokine levels may theoretically be expected to confer benefit and 1 study of HVHF at 6L/hr showed cytokine reduction and improvement in SOFA scores in septic patients.

PERITONEAL DIALYSIS

1. Patients already on CAPD

- Patients who are already receiving peritoneal dialysis (PD) treatment have the relative advantage over patients who are receiving hospital or satellite-based haemodialysis treatment as they will not be exposed to hospital environment. This will reduce their exposure to infection. However, they should

arrange their delivery of supply well in time to avoid missing dialysis exchanges.

- Used dialysis bags and tubing should be properly disposed using 1% hypochlorite solution first and disposed in a sealed bag. Used dialysis fluid should be drained in the flush

2. New patient planned for CAPD

- It will be difficult to maintain a service that can commence new patients on PD, mainly through a lack of healthcare worker to insert PD catheter and to provide the intensive training required. Therefore, initiation of new patient should be avoided.

3. Acute PD

- Use of acute peritoneal dialysis can be lifesaving and should be used as and when required and, in the setting, where hemodialysis facility is not available. Health care worker should use all precautions while initiating acute PD and discard used consumables properly.

PERSONAL PROTECTIVE EQUIPMENTS (PPE)

Personal protective equipment must be used while dialyzing COVID-19 positive patients. These include:

- Shoe covers
- Gown
- Surgical cap or hood
- Goggles or eye shields
- **Mask:** Ideally all masks should be N95 respirators with filters. However, as the life of such masks is approximately 6-8 hours and they can be uncomfortable over a long term and are also in short supply, they should be prioritized for aerosol generating procedures, namely intubation, open suction and bronchoscopy. Surgical triple layer masks and cloth masks can be used as alternatives for all other procedures.

- **Surgical gloves.**

The correct method of donning and doffing personal protective equipment's (PPE) can be viewed on YouTube at <https://youtu.be/NrKo2vWJ8m8>. However, it is always better to give hand on training of donning and doffing to staff who is going to handle suspected or positive patients.

❖ **AMBULANCE TRANSFER**

When a suspect case of Covid19 has to be transported, the following precautions should be taken by ambulance personnel accompanying the patient:

A. On arrival to the healthcare facility from where the patient is to be transferred

- Decontaminate hands/ wash hands (alcohol gel/rub)
- Don Personal Protective Equipment (PPE)
- Inform the hospital of the admission/transfer of a potentially infectious person

B. Before leaving the house/healthcare facility

- Request patient to wear a surgical mask (if tolerated) and advise on Respiratory Hygiene and Cough Etiquette
- A patient with suspected or confirmed CoV should not travel with other patients

C. In ambulance

- Remove gloves, decontaminate hands and put on new gloves before touching the patient and before a clean or aseptic procedure, if required. Wearing gloves does not replace hand hygiene.
- Use single use or single patient use medical equipment where possible
- Use disposable linen if available

D. Arrival to the referral hospital

- Before the patient leaves the ambulance ensure arrangements are in place for receipt of the patient
- Transfer patient to the care of hospital staff
- After transfer of patient remove PPE
- Perform hand hygiene

E. Before ambulance is used again

- **Cleaning and disinfecting** (PPE as outlined above should be worn while cleaning)

Surfaces (stretcher, chair, door handles etc) should be cleaned with a freshly prepared 1% hypochlorite solution or equivalent.

- **Laundry**

Place reusable blankets in a bag, then put into a laundry bag and send for laundering clearly labeling it so that person in the laundry wears appropriate PPE before handling or autoclaves it before opening.

- **Medical equipment**

Follow manufacturer's instructions for cleaning/disinfecting reusable equipment (see guidelines).

- **Management of waste**

All masks and any waste contaminated with blood or body fluid (including respiratory secretions) should be disposed of as infectious waste in yellow bag.

- **Management of sharps** – per Standard Precautions
- **Management of spillages of blood and body fluids** – per Standard Precautions

In the ambulance, if the driver's chamber is not separate, driver should also use PPE

❖ SOP FOR TRANSPORTING A SUSPECT/CONFIRMED COVID-19 CASE

1. About this SOP

This SOP is applicable to current phase of COVID-19 pandemic in India (local transmission and limited community transmission), wherein as per plan of action, all suspect cases are admitted to isolation facilities. These procedures are meant to guide and be used for training ambulance drivers and technicians in transporting COVID-19 patients. These also aim to support programme officers in monitoring functionality and infection prevention protocols of the ambulances.

2. Transportation of patients

Ideally, there should be ambulances identified specifically for transporting COVID suspect patients or those who have developed complications, to the health facilities. Currently, there are two types of ambulances – ALS (with ventilators) and BLS (without ventilators). States may empanel other ambulances having basic equipment like that of BLS and use it for COVID patients. However, this must be ensured that strict adherence to cleaning and decontamination protocols given here in the guidance note need to be followed. The fleet in - charge or person designated by CMO, will supervise its adherence.

Call centres after receiving the call will try to triage the condition of the patient and accordingly dispatch either ALS, BLS or other registered ambulances. However, please ensure that 102 ambulances should not be used for corona patients and should only be used for transporting pregnant women and sick infants. Ambulance staff (technicians as well as drivers) should be trained and oriented about common signs and symptoms of COVID-19 (fever, cough and difficulty in breathing). A sample questionnaire to identify COVID-19 cases is placed at **Annexure I**. They should also be aware about common infection, prevention and control practices including use of Personal Protective Equipment (PPE). Both the EMT and driver of ambulance will wear PPE while handling, managing and transporting the COVID identified/ suspect patients. Similar use of PPE is to be ensured by the health personnel at receiving health facility. Patient and attendant should be provided with triple layer mask and gloves. Simple public health measures like hand hygiene, respiratory etiquettes, etc. need to be adhered by all

Call Centre: On receiving the call, the call centre needs to enquire following details:

- a) Demographic details of the patient i.e. name, age, gender etc.
- b) To ascertain whether the patient is suspect case of COVID-19

- i. Symptoms of patient: Ask whether the patient is suffering from fever, cough and difficulty in breathing
 - ii. Whether patient has recently returned from a foreign country
 - iii. Whether the patient was under home quarantine as directed by local health administration
- c) Clinical condition of patient to be transported: whether stable or critical

Augmenting the capacity of ambulances in districts

Local authorities should prepare a line list of all private ambulance service providers in their respective areas. These ambulances should be linked with centralized call centre so as to ensure adequate number of ambulances based on population and time to care approach (Avg. response time of 20 minutes). Orientation on Infection Prevention Protocols and protocols for transporting COVID patients should also be ensured for staff of these ambulances. To ensure response time of 20 minutes, ambulances should be strategically located at hospitals, police stations.

Only identified and designated ambulances should be used for transportation. People, health functionaries, nursing homes, private clinics, hospitals should be made aware to use ambulance services for COVID patients being provided through toll free numbers. Otherwise it might increase the chances of transmission of infection. Every district should facilitate empaneling of ambulances other than those in the public health system even if the present situation may not require using them. To minimize the risk of transmission, it is strongly recommended that if other than empaneled ambulances are bringing COVID or suspect patients, such vehicles need to be quarantined for thorough cleaning and disinfection and should only be released after certification by district administration/ district health official

- In case of an inter-facility transfer, the casualty medical officer of the referring hospital has to ensure that beds are available in the referral hospital with supporting equipment and needs to convey the same while making the call.
- Assign the job to the nearest ambulance with a dedicated facility at strategic locations as mentioned in the box above.
 - Check for the state of preparedness of ambulance: **Annexure II**
 - Ensure PPE for ambulance staff: **Annexure III**
- Both call centre and ambulances should always keep the updated list of available hospitals and beds.
- On receiving the call, from the call centre and prior to shifting the patient, EMT will perform the following:
 - The EMT will seek the above-mentioned details again to ensure whether the patient is a suspect case of COVID-19.
 - The EMT will wear the appropriate PPE.
 - The EMT shall assess the condition of the patient.
 - If the patient is ambulatory and stable, he/she may be asked to board the ambulance; otherwise, the EMT (while using the prescribed PPE) may assist with the loading of the patient.
 - Only one caregiver should be allowed to accompany the patient (while using the prescribed PPE).
 - EMT should also ensure the availability and provision of an adequate triple-layered mask and gloves for the patient and/or attendant.
 - The patient and the caregiver will be provided with a triple-layer medical mask.
 - EMT will contact the identified health facility for facility preparedness and readiness.

Management on board

- Measure vitals of patient and ensure patient is stable.
- If required, give supplementary O₂ therapy at 5 L/min and titrate flow rates to reach target SpO₂ ≥ 90%.
- If patient is being transported on ventilator to a higher center, follow ventilator management protocols, provided the EMT is either trained or assisted by a doctor well-versed in ventilator management.

Handing over the patient

- On reaching the receiving hospital, the EMT will hand over the patient and details of medical interventions if any during transport. After handing over the patient, the

PPEs will be taken off as per protocol followed by hand washing. Use Alcohol based rub /soap water for hand hygiene.

- The biomedical waste generated (including PPE) to be disposed off in a bio-hazard bag (yellow bag). Inside would be sprayed with Sodium Hypochlorite (1%) and after tying the exterior will also be sprayed with the same. It would be disposed off at their destination hospital. This shall again be followed by hand washing.

Disinfection of ambulance

All surfaces that may have come in contact with the patient or materials contaminated during patient care (e.g., stretcher, rails, control panels, floors, walls and work surfaces) should be thoroughly cleaned and disinfected using 1% Sodium Hypochlorite solution. (see **Annexure – IV** for preparation of 1% Sodium hypochlorite solution)

- Clean and disinfect reusable patient-care equipment before use on another patient with alcohol based rub.
- Cleaning of all surfaces and equipment should be done morning, evening and after every use with soap/detergent and water.

Capacity building

District Authorities to ensure capacity building of EMT and driver on following areas:

- Donning and doffing of PPE
- Infection prevention protocols given in this guideline (**Annexure V**)
- Triaging and identifying COVID-19 suspects based on their signs and symptoms.
- Similarly, emergency staff of health facility should also be trained in segregation, isolation and management of COVID-19 patients. They should not be mixed with other patients.

Monitoring

A checklist for weekly monitoring by District Surgeon/ Anesthetist is at Annexure VI

Annexure I:

<u>Question</u>	<u>Response</u>
Has someone in your close family returned from a foreign country	Yes/No
Is the patient under home quarantine as advised by local health authority?	Yes/No
Have you or someone in your family come in close contact with a confirmed COVID-19 patient in the last 14 days?	Yes/No
Do you have fever?	Yes/No
Do you have cough?	Yes/No
Do you have sore throat?	Yes/No
Do you feel shortness of breath?	Yes/No

Annexure II Checklist for list of consumables, equipment:

S. No.	Item	Available (Yes/No)	If yes, whether functional	Remarks: quantity, expiry, last inspection date etc.
1	Stretcher trolley (foldable)			
2	Vital sign monitor			
2.1	✓ NIBP			
2.2	✓ SPO ₂			
2.3	✓ ECG			
3	Ventilator with O ₂ Source			
4	Defibrillator with battery			
5	Syringe infusion pump			
6	Ventimask with O ₂ flowmeter			
7	Ambu bag with face mask			
8	Laryngoscope with batteries			
9	ETT with oro-pharyngeal airway			
10	Suction apparatus with suction and catheter			
11	Emergency drug tray			
12	IV Fluids			
13	Nebulizer			
14	Any other items:			
14.1	✓ Foleys catheter			
14.2	✓ ECG Electrode			
14.3	✓ IV Cannula			

Annexure III

Rational use of PPE by ambulance staff*

Activity	Risk	Recommended PPE	Remarks
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	

* The training of EMTs on COVID-19 will strictly adhere to the above mentioned rational use of PPE (the above recommendation is by an expert group (including WHO) and recommended by Joint Monitoring Group under DGHS available at www.mohfw.gov.in)

Annexure IV

Guidelines for Preparation of 1% sodium hypochlorite solution

Product	Available chlorine	1percent
Sodium hypochlorite – liquid bleach	3.5%	1 part bleach to 2.5 parts water
Sodium hypochlorite – liquid	5%	1 part bleach to 4 parts water
NaDCC (sodium dichloro-isocyanurate) powder	60%	17 grams to 1 litre water
NaDCC (1.5 g/ tablet) – tablets	60%	11 tablets to 1 litre water
Chloramine – powder	25%	80 g to 1 litre water
Bleaching powder	70%	7g g to 1 litre water
Any other	As per manufacturer's Instructions	

Annexure V

Infection Prevention for Pre-hospital Care

1.1.General

Ambulance or emergency health care workers are exposed to many infectious agents during their work. Transmission of infectious disease can occur while providing emergency care, rescue and body recovery/removal. 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. Implementation of good infection control practices help to minimize the risk of spread of infection to patients and staff.

Pre-hospital care need to have an infection prevention program to monitor for HAIs (Healthcare Associated Infections) and prevent the spread of diseases/infection.

1.2. Standard Precautions

Standard precautions are based on the principle that all blood, body fluids, secretions, excretions (except sweat), non-intact skin, and mucous membranes may contain transmissible infectious agents. These set of measures are intended to be applied to the care of all patients in all health care settings, regardless of the suspected or confirmed presence of an infectious agent. Standard precautions include: Hand hygiene, use of barrier precautions or PPE and safe injection practices.

1.2.1. Hand Hygiene

Hand hygiene is the single most important practice to reduce the transmission of

Infectious in health care settings. The term "hand hygiene" includes both hand washing with either soap and water, and use of alcohol-based products (gels, rinses, foams) that do not require the use of water. It is important to ensure the availability of hand rub products at all times in the ambulance to ensure hand hygiene compliance.



1.1.1. Use of barrier precautions or Personal Protective Equipment (PPE)

COVID-19 is primarily a droplet transmitted infection, with indirect transmission through fomites/contaminated surfaces/objects. The standard precautions on use of personal protective equipment, as per the risk profile are given in annexure III.

The Healthcare Worker must possess knowledge and skill regarding use and removal of the PPE after its use.

1.3. Equipment disinfection:

Equipment and surfaces are contaminated if they have come in contact with patient's skin, blood or body fluids. These can spread infection. Therefore, it is mandatory that these are cleaned and disinfected using 1% sodium hypochlorite or alcohol based disinfectants at least once daily and after every patient contact.

Patient care items and surfaces that can contribute to the spread of infection include:

- Stethoscopes
- Blood pressure cuffs

- Monitors
- Stretchers, backboards, and immobilization devices
- Laryngoscope blades
- Radios/mobiles
- Shelves
- Door handles
- Other items and surfaces in ambulance or transport vehicle

1.4. Decontamination of ambulance:

- Decontamination of ambulance needs to be performed every time a suspect/confirmed case is transported in the ambulance. The following procedure must be followed while decontaminating the ambulance:
- Gloves and N-95 masks are recommended for sanitation staff cleaning the ambulance.
- Disinfect (damp wipe) all horizontal, vertical and contact surfaces with a cotton cloth saturated (or microfiber) with a 1% sodium hypochlorite solution. These surfaces include, but are not limited to: stretcher, Bed rails, Infusion pumps, IV poles/Hanging IV poles, Monitor cables, telephone, Countertops, sharps container. Spot clean walls (when visually soiled) with disinfectant- detergent and windows with glass cleaner. Allow contact time of 30 minutes and allow air dry.
- Damp mop floor with 1% sodium hypochlorite disinfectant.
- Discard disposable items and Infectious waste in a Bio/Hazard bag. The interior is sprayed with 1% sodium hypochlorite. The bag is tied and exterior is also decontaminated with 1% sodium hypochlorite and should be given to the hospitals to dispose of according to their policy.
- Change cotton mop water containing disinfectant after each cleaning cycle.
- Do not place cleaning cloth back into the disinfectant solution after using it to wipe a surface.
- Remove gloves and wash hands.

❖ GUIDELINES ON DEDICATED FACILITIES FOR COVID19 PANDEMIC

All the selected facilities must be dedicated for COVID management. Three types of COVID dedicated facilities are proposed in this document. All 3 types of COVID Dedicated facilities will have separate ear marked areas for suspect and confirmed cases. Suspect and confirmed cases should not be allowed to mix under any circumstances.

All suspect cases (irrespective of severity of their disease) will be tested for COVID-19. Further management of these cases will depend on their (i) clinical status and (ii) result of COVID-19 testing.

All three types of facilities will be linked to the Surveillance team (IDSP)

All these facilities will follow strict infection prevention and control practices

1. Types of COVID Dedicated Facilities: There are three types of COVID Dedicated Facilities –

(1) **COVID Care Center (CCC):**

- 1.1. The COVID Care Centers shall offer care only for cases that have been clinically assigned as mild or very mild cases or COVID suspect cases.
- 1.2. The COVID Care Centers are makeshift facilities. These may be set up in hostels, hotels, schools, stadiums, lodges etc., both public and private. If need be, existing quarantine facilities could also be converted into COVID Care Centers. Functional hospitals like CHCs, etc, which may be handling regular, non-COVID cases should be designated as COVID Care Centers as a last resort. This is important as essential non COVID Medical services like those for pregnant women, newborns etc, are to be maintained.
- 1.3. Wherever a COVID Care Center is designated for admitting both the confirmed and the suspected cases, these facilities must have separate areas for suspected and confirmed cases with preferably separate entry and exit. Suspect and confirmed cases must not be allowed to mix under any circumstances.
- 1.4. As far as possible, wherever suspect cases are admitted in the COVID Care Center, preferably individual rooms should be assigned for such cases.

Every Dedicated COVID Care Centre must necessarily be mapped to one or more Dedicated COVID Health Centres and at least one Dedicated COVID Hospital for referral purpose (details given below).

- 1.5. Every Dedicated COVID Care Centre must also have a dedicated Basic Life Support Ambulance (BLSA) equipped with sufficient oxygen support on 24x7 basis, for ensuring safe transport of a case to Dedicated higher facilities if the symptoms progress from mild to moderate or severe.
- 1.6. The human resource to man these Care Centre facilities may also be drawn from AYUSH doctors. Training protocols developed by AIIMS is uploaded on MoHFW website. Ministry of AYUSH has also carried out training sessions. The State AYUSH Secretary/ Director should be involved in this deployment. State wise details of trained AYUSH doctors has been shared with the States. Their work can be guided by an Allopathic doctor.

(2) Dedicated COVID Health Centre (DCHC) :

- 2.1. The Dedicated COVID Health Centre are hospitals that shall offer care for all cases that have been clinically assigned as moderate.
- 2.2. These should either be a full hospital or a separate block in a hospital with preferably separate entry\exit/zoning.
- 2.3. Private hospitals may also be designated as COVID Dedicated Health Centres.
- 2.4. Wherever a Dedicated COVID Health Center is designated for admitting both the confirmed and the suspect cases with moderate symptoms, these hospitals must have separate areas for suspect and confirmed cases. Suspect and confirmed cases must not be allowed to mix under any circumstances.
- 2.5. These hospitals would have beds with assured Oxygen support.
- 2.6. Every Dedicated COVID Health Centre must necessarily be mapped to one or more Dedicated COVID Hospitals.
- 2.7. Every DCHC must also have a dedicated Basic Life Support Ambulance (BLSA) equipped with sufficient oxygen support for ensuring safe transport of a case to a Dedicated COVID Hospital if the symptoms progress from moderate to severe.

(3) Dedicated COVID Hospital (DCH) :

- 3.1. The Dedicated COVID Hospitals are hospitals that shall offer comprehensive care primarily for those who have been clinically assigned as severe.

The Dedicated COVID Hospitals should either be a full hospital or a separate block in a hospital with preferably separate entry\exit.

- 3.2. Private hospitals may also be designated as COVID Dedicated Hospitals.
- 3.3. These hospitals would have fully equipped ICUs, Ventilators and beds with

assured Oxygen support.

3.4. These hospitals will have separate areas for suspect and confirmed cases. Suspect and confirmed cases should not be allowed to mix under any circumstances.

3.5. The Dedicated COVID Hospitals would also be referral centers for the Dedicated COVID Health Centers and the COVID Care Centers.

All these facilities will follow strict infection prevention and control practices.

2. Management of COVID cases

○ Assessment of patients:

In addition to patients arriving directly through helpline/ referral to above categories of COVID dedicated facilities, in field settings during containment operations, the supervisory medical officer to assess for severity of the case detected and refer to appropriate facility.

States\UTs may identify hospitals with dedicated and separate space and set up Fever Clinics in such hospitals. The Fever Clinics may also be set up in CHCs, in rural areas subject to availability of sufficient space to minimize the risk of cross infections. In urban areas, the civil\general hospitals, Urban CHCs and Municipal Hospitals may also be designated as Fever Clinics. These could be set up preferably near the main entrance for triage and referral to appropriate COVID Dedicated Facility. Wherever space allows, a temporary make shift arrangement outside the facility may be arranged for this triaging.

The medical officer at the fever clinics could identify suspect cases and refer to COVID Care Centre, Dedicated COVID Health Centre or Dedicated COVID Hospital, depending on the clinical severity.

○ Categorization of patients

Patients may be categorized into three groups and managed in the respective COVID hospitals

– Dedicated COVID Care Centre, dedicated COVID Health Centre and dedicated COVID Hospital.

Group 1: Suspect and confirmed cases clinically assigned as mild and very mild

Group 2: Suspect and confirmed cases clinically assigned as moderate

Group 3: Suspect and confirmed cases clinically assigned as severe

Group 1: Suspect and confirmed cases clinically assigned as mild and very mild (COVID Care Centres)

- **Clinical criteria:** Cases presenting with fever and/or upper respiratory tract illness (Influenza Like Illness, ILI).
- These patients will be accommodated in COVID Care Centers.
- The patients would be tested for COVID-19 and till such time their results are available they will remain in the “suspect cases” section of the COVID Care Center preferably in an individual room.
- Those who tested positive will be moved into the “confirmed cases” section of the COVID Care Center.
- If test results are negative, patient will be given symptomatic treatment and be discharged with advice to follow prescribed medications and preventive health measures as per prescribed protocols.
- If any patient admitted to the COVID Care Center qualifies the clinical criteria for moderate or severe case, such patient will be shifted to a Dedicated COVID Health Centre or a Dedicated COVID Hospital.
- Apart from medical care the other essential services like food, sanitation, counseling etc. at the COVID Care Centers will be provided by local administration. Guidelines for quarantine facilities (available on MoHFW website) may be used for this purpose.

Group 2: Suspect and confirmed cases clinically assigned as moderate (Dedicated COVID Health Centres)

- **Clinical criteria:** Pneumonia with no signs of severe disease (Respiratory Rate 15 to 30/minute, SpO₂ 90%-94%).
- Such cases will not be referred to COVID Care Centers but instead will be admitted to Dedicated COVID Health centres.
- It will be manned by allopathic doctors and cases will be monitored on above mentioned clinical parameters for assessing severity as per treatment protocol (available on MoHFW website).
- They will be kept in “suspect cases” section of Dedicated COVID Health Centres, till

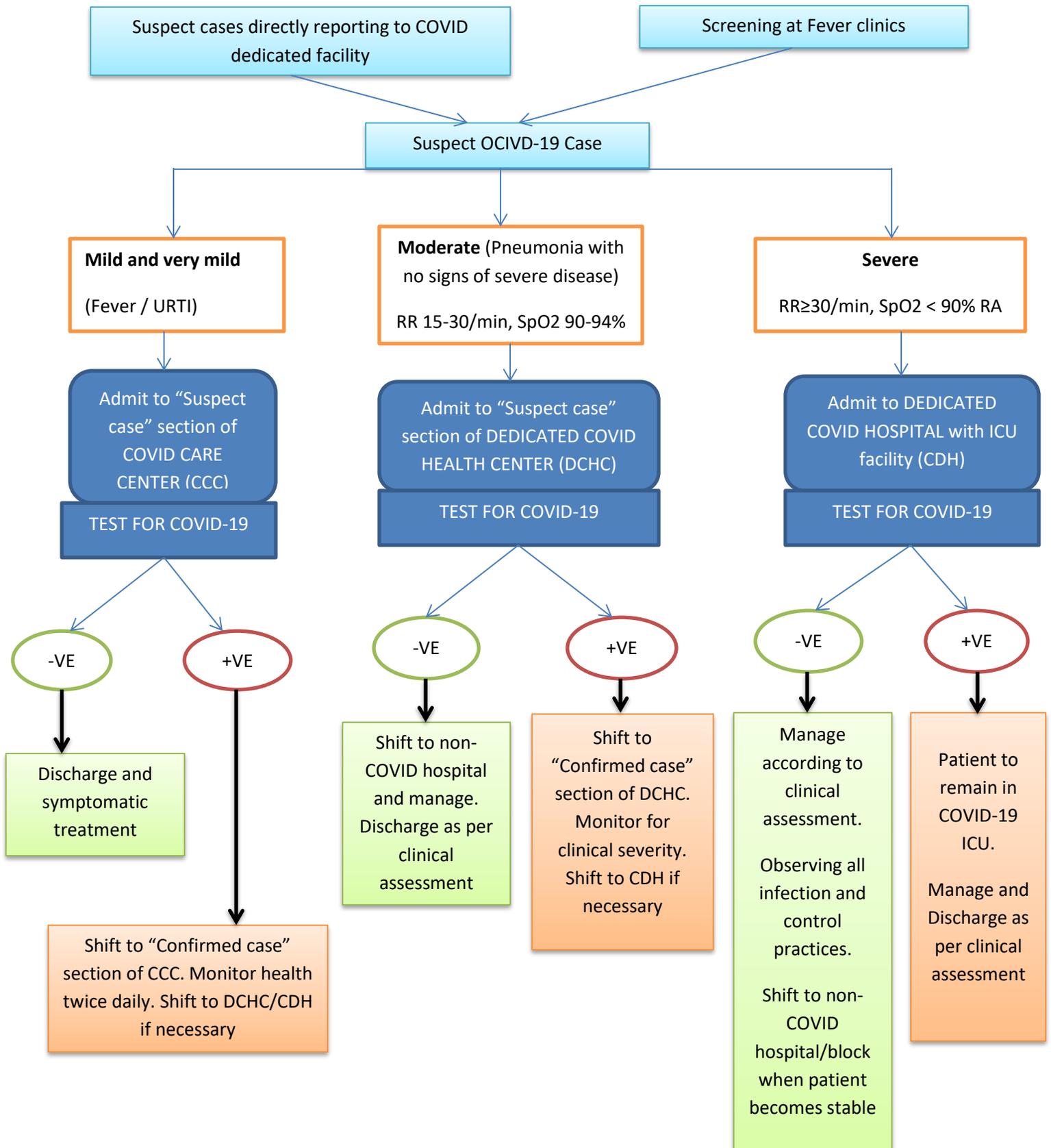
such time as their results are not available preferably in an individual room.

- Those testing positive shall be shifted to “confirmed cases” section of Dedicated COVID Health Centre.
- Any patient, for whom the test results are negative, will be shifted to a non-COVID hospital and will be managed according to clinical assessment. Discharge as per clinical assessment.
- If any patient admitted to the Dedicated COVID Health Center qualifies the clinical criteria for severe case, such patient will be shifted to a Dedicated COVID Hospital.

Group 3: Suspect and confirmed cases clinically assigned as severe (Dedicated COVID Hospital)

- **Clinical criteria:** Severe Pneumonia (with respiratory rate ≥ 30 /minute and/or SpO₂ < 90% in room air) or ARDS or Septic shock
- Such cases will be directly admitted to a Dedicated COVID Hospital’s ICU till such time as test results are obtained.
- If test results are positive, such patient will remain in COVID-19 ICU and receive treatment as per standard treatment protocol. Patients testing negative will be managed with adequate infection prevention and control practices.

Algorithm for Isolation of suspect/confirmed cases of COVID-19



❖ **HOME QUARANTINE** guidelines for suspected or confirmed COVID-19 cases (MoHFW & WHO)

Scope-

Detection of a travel related / unrelated suspect case of novel Coronavirus Disease (COVID-19) will be followed by rapid isolation of such cases in designated health facilities and listing of all contacts of such cases. Home quarantine is applicable to all such contacts of a suspect or confirmed case of COVID-19.

This intervention will be limited to the initial phase of India reporting only (i) travel related cases and (ii) focal clusters arising from a travel related/unrelated case where cluster containment strategy is adopted (iii) Persons coming from COVID-19 affected areas where local and community transmission is evident.

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

▪ **Quarantine of persons**

The quarantine of persons is the restriction of activities of or the separation of persons who are not ill but who may have been exposed to an infectious agent or disease, with the objective of monitoring their symptoms and ensuring the early detection of cases. **Quarantine is different from isolation, which is the separation of ill or infected persons from others to prevent the spread of infection or contamination.**

Quarantine is included within the legal framework of the International Health Regulations (2005), specifically:

Article 30 – Travellers under public health observation;

Article 31 – Health measures relating to entry of travellers;

Article 32 – Treatment of travellers.

Member States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to legislate and to implement legislation, in pursuit of their health policies, even if this involves the restriction of movement of individuals.

Before implementing quarantine, countries should properly communicate such measures to reduce panic and improve compliance.

- Authorities must provide people with clear, up-to-date, transparent and consistent guidelines, and with reliable information about quarantine measures.
- Constructive engagement with communities is essential if quarantine measures are to be accepted.
 - Persons who are quarantined need to be provided with health care; financial, social and psychosocial support; and basic needs, including food, water, and other essentials. The needs of vulnerable populations should be prioritized.
 - Cultural, geographic and economic factors affect the effectiveness of quarantine. Rapid assessment of the local context should evaluate both the drivers of success and the potential barriers to quarantine, and they should be used to inform plans for the most appropriate and culturally accepted measures.

Definition:

Contact: A contact is defined as a healthy person that has been in such association with an infected person or a contaminated environment as to have exposed and is therefore at a higher risk of developing disease.

A contact in the context of COVID-19 is:

- ✓ A person living in the same household as a COVID-19 case;
- ✓ A person having had direct physical contact with a COVID-19 case or his/her infectious secretions without recommended personal protective equipment (PPE) or with a possible breach of PPE
- ✓ A person who was in a closed environment or had face to face contact with a COVID-19 case at a distance of within 1 metre including air travel;

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

Instructions for contacts being home quarantined

The home quarantined person should:

- Stay in a well-ventilated single-room preferably with an attached/separate toilet. If another family member needs to stay in the same room, it's advisable to maintain a distance of at least 1 meter between the two.
- Needs to stay away from elderly people, pregnant women, children and persons with co-morbidities within the household.
- Restrict his/her movement within the house.

- Under no circumstances attend any social/religious gathering e.g. wedding, condolences, etc

He should also follow the under mentioned public health measures at all times:

- ✓ Wash hand as often thoroughly with soap and water or with alcohol-based hand sanitizer
- ✓ Avoid sharing household items e.g. dishes, drinking glasses, cups, eating utensils, towels, bedding, or other items with other people at home.
- ✓ Wear a surgical mask at all the time. The mask should be changed every 6-8 hours and disposed off. Disposable masks are never to be reused.
- ✓ Masks used by patients / care givers/ close contacts during home care should be disinfected using ordinary bleach solution (5%) or sodium hypochlorite solution (1%) and then disposed of either by burning or deep burial.
- ✓ Used mask should be considered as potentially infected.
- ✓ If symptoms appear (cough/fever/difficulty in breathing), he/she should immediately inform the nearest health center or call **toll free helpline no. 102, 0389-2323336 / 2318336 / 2322336.**

Instructions for the family members of persons being home quarantined

- Only an assigned family member should be tasked with taking care of the such person
- Avoid shaking the soiled linen or direct contact with skin
- Use disposable gloves when cleaning the surfaces or handling soiled linen
- Wash hands after removing gloves
- Visitors should not be allowed
- In case the person being quarantined becomes symptomatic, all his close contacts will be home quarantined (for 14 days) and followed up for an additional 14days or till the report of such case turns out negative on lab testing

Environmental sanitation

- a) Clean and disinfect frequently touched surfaces in the quarantined person's room (e.g. bed frames, tables etc.) daily with 1% Sodium Hypochlorite Solution.
- b) Clean and disinfect toilet surfaces daily with regular household bleach solution/phenolic disinfectants

c) Clean the clothes and other linen used by the person separately using common household detergent and dry.

✓ Whom to Quarantine : Any contact as defined above

OR

Any person who has history of travel to affected areas in the last 14 days and is asymptomatic

✓ Duration of quarantine:

A person who is advised for Home quarantine shall remain at home for 14 days from contact with a confirmed case or earlier if a suspect case (of whom the index person is a contact) turns out negative on laboratory testing.

During home quarantine he/she should abide by the Home quarantine Guidelines issued by Ministry of Health and Family welfare, Government of India meticulously. Actions might be taken against persons who do not observe Home Quarantine Guidelines.

✓ Ensuring an appropriate setting and adequate provisions.

The implementation of quarantine implies the use or creation of appropriate facilities in which a person or persons are physically separated from the community while being cared for.

Appropriate quarantine arrangements include the following measures.

- Those who are in quarantine must be placed in adequately ventilated, spacious single rooms with en suite facilities (that is, hand hygiene and toilet facilities). If single rooms are not available, beds should be placed at least 1 metre apart.
- Suitable environmental infection controls must be used, such as ensuring adequate air ventilation, air filtration systems, and waste-management protocols.
- Social distance must be maintained (that is, distance of at least 1 metre) between all persons who are quarantined.
- Accommodation must provide an appropriate level of comfort, including:
 - Provision of food, water, and hygiene facilities;
 - Protection for baggage and other possessions;
 - appropriate medical treatment for existing conditions;

- communication in a language that those who are quarantined can understand, with an explanation of their rights, services that will be made available, how long they will need to stay and what will happen if they get sick; additionally, contact information for their local embassy or consular support should be provided.
- Medical assistance must be provided for quarantined travellers who are isolated or subject to medical examinations or other procedures for public health purposes.
- Those who are in quarantine must be able to communicate with family members who are outside the quarantine facility.
- If possible, access to the internet, news, and entertainment should be provided.
- Psychosocial support must be available.
- Older persons and those with comorbid conditions require special attention because of their increased risk for severe COVID-19.
- ✓ Possible settings for quarantine include hotels, dormitories, other facilities catering to groups, or the contact's home. Regardless of the setting, an assessment must ensure that the appropriate conditions for safe and effective quarantine are being met.
- ✓ When home quarantine is chosen, the person should occupy a well-ventilated single room, or if a single room is not available, maintain a distance of at least 1 metre from other household members, minimize the use of shared spaces and cutlery, and ensure that shared spaces (such as the kitchen and bathroom) are well ventilated.

- ✓ **Minimum requirements for monitoring the health of quarantined persons.**

- ✓ Daily follow up of persons who are quarantined should be conducted within the facility for the duration of the quarantine period and should include screening for body temperature and symptoms. Groups of persons at higher risk of infection and severe disease may require additional surveillance owing to chronic conditions or they may require specific medical treatments.

- ✓ Consideration should be given to the resources and personnel needed and rest periods for staff at quarantine facilities. This is particularly important in the context of an ongoing outbreak, during which limited public health resources may be better prioritized for health care facilities and case-detection activities.
 - ✓ Respiratory samples from quarantined persons, irrespective of whether they have symptoms, should be sent for laboratory testing at the end of the quarantine period.

❖ Home Isolation of very mild/pre-symptomatic COVID-19 cases

During the containment phase the patients should be clinically assigned as very mild/mild, moderate or severe and accordingly admitted to (i) COVID Care Center, (ii) Dedicated COVID Health Center or (iii) Dedicated COVID Hospital respectively.

1. Eligibility for home isolation

- i. The person should be clinically assigned as a very mild case/ pre-symptomatic case by the treating medical officer.
- ii. Such cases should have the requisite facility at their residence for self-isolation and also for quarantining the family contacts.
- iii. A care giver should be available to provide care on 24 x7 basis. A communication link between the caregiver and hospital is a prerequisite for the entire duration of home isolation.
- iv. The care giver and all close contacts of such cases should take Hydroxychloroquine prophylaxis as per protocol and as prescribed by the treating medical officer.
- v. Download Arogya Setu App on mobile (available at: <https://www.mygov.in/aarogya-setu-app/>) and it should remain active at all times (through Bluetooth and Wi-Fi)
- vi. The patient shall agree to monitor his health and regularly inform his health status to the District Surveillance Officer for further follow up by the surveillance teams.
- vii. The patient will fill in an undertaking on self-isolation and shall follow home quarantine guidelines. Such individual shall be eligible for home isolation.
- viii. In addition to the guidelines on home-quarantine available at: <https://www.mohfw.gov.in/pdf/Guidelinesforhomequarantine.pdf>, the required instructions for the care giver and the patient shall be also followed.

2. When to seek medical attention

Patient / Care giver will keep monitoring their health. Immediate medical attention must be sought if serious signs or symptoms develop. These could include

- i. Difficulty in breathing,
- ii. Persistent pain /pressure in the chest,
- iii. Mental confusion or inability to arouse,
- iv. Developing bluish discolorations of lips/face and
- v. As advised by treating medical officer

3. When to discontinue home isolation

Patient under home isolation will end home isolation after 17 days of onset of symptoms (or date of sampling, for pre-symptomatic cases) and no fever for 10 days. **There is no need for testing after the home isolation period is over.**

Instructions for care-givers

- **Mask:** The caregiver should wear a triple layer medical mask appropriately when in the same room with the ill person. Front portion of the mask should not be touched or handled during use. If the mask gets wet or dirty with secretions, it must be changed immediately. Discard the mask after use and perform hand hygiene after disposal of the mask.
- He/she should avoid touching own face, nose or mouth.
- **Hand hygiene** must be ensured following contact with ill person or his immediate environment.
- Hand hygiene should also be practiced before and after preparing food, before eating, after using the toilet, and whenever hands look dirty. Use soap and water for hand washing at least for 40 seconds. Alcohol-based hand rub can be used, if hands are not visibly soiled.
- After using soap and water, use of disposable paper towels to dry hands is desirable. If not available, use dedicated clean cloth towels and replace them when they become wet.
- **Exposure to patient:** Avoid direct contact with body fluids of the patient, particularly oral or respiratory secretions. Use disposable gloves while handling the patient. Perform hand hygiene before and after removing gloves.
- Avoid exposure to potentially contaminated items in his immediate environment (e.g. avoid sharing cigarettes, eating utensils, dishes, drinks, used towels or bed linen).
- Food must be provided to the patient in his room
- Utensils and dishes used by the patient should be cleaned with soap/detergent and water wearing gloves. The utensils and dishes may be re-used. Clean hands after taking off gloves or handling used items.
- **Use triple layer medical mask and disposable gloves** while cleaning or handling surfaces, clothing or linen used by the patient. Perform hand hygiene before and after removing gloves.
- The care giver will make sure that the patient follows the prescribed treatment.
- The care giver and all close contact will self-monitor their health with daily temperature monitoring and report promptly if they develop any symptom suggestive of COVID-19 (fever/cough/difficulty in breathing)

Instructions for the patient

- Patient should at all times use triple layer medical mask. Discard mask after 8 hours of use or earlier if they become wet or visibly soiled.
- Mask should be discarded only after disinfecting it with 1% Sodium Hypo-chlorite.
- Patient must stay in the identified room and away from other people in home, especially elderlies and those with co-morbid conditions like hypertension, cardiovascular disease, renal disease etc.

- Patient must take rest and drink lot of fluids to maintain adequate hydration
- Follow respiratory etiquettes all the time.
- Hands must be washed often with soap and water for at least 40 seconds or clean with alcohol based sanitizer.
- Don't share personal items with other people.
- Clean surfaces in the room that are touched often (tabletops, door knobs, handles, etc) with 1% hypochlorite solution.
- The patient must strictly follow the physician's instructions and medication advice.
- The patient will self-monitor his/her health with daily temperature monitoring and report promptly if develops any deterioration of symptom .

❖ **HOME CARE for patients with COVID-19 presenting with mild symptoms and management of their contacts**

Q. Where to manage COVID-19 patients?

- ✓ WHO recommends that all laboratory confirmed cases be isolated and cared for in a health care facility.
- ✓ WHO recommends that all persons with suspected COVID-19 who have severe acute respiratory infection be triaged at the first point of contact with the health care system and that emergency treatment should be started based on disease severity
- ✓ In situations where isolation in a health care facility of all cases is not possible, WHO emphasizes the prioritization of those with highest probability of poor outcomes: patients with severe and critical illness and those with mild disease and risk for poor outcome (age >60 years, cases with underlying comorbidities, e.g., chronic cardiovascular disease, chronic respiratory disease, diabetes, cancer).
- ✓ If all mild cases cannot be isolated in health facilities, then those with mild illness and no risk factors may need to be isolated in non-traditional facilities, such as *repurposed hotels, stadiums or gymnasiums* where they can remain until their symptoms resolve and laboratory tests for COVID-19 virus are negative.
- ✓ Alternatively, patients with mild disease and no risk factors can be managed **at home**.

- **HOME CARE for patients with suspected covid-19 who present with mild symptoms**

- For those presenting with mild illness, hospitalization may not be possible because of the burden on the health care system, or required unless there is concern about rapid deterioration.
- If there are patients with only mild illness, providing care at home may be considered, as long as they can be followed up and cared for by family members or when inpatient care is unavailable or unsafe (e.g. capacity is limited, and resources are unable to meet the demand for health care services).

In any of these situations, patients with mild symptoms and without underlying chronic conditions—such as lung or heart disease, renal failure, or immune compromising conditions that place the patient at increased risk of developing complications—may be cared for at home. This decision requires careful clinical judgment and should be informed by an assessment of the safety of the patient's home environment.

- At home care, if and where feasible, a trained HCW should conduct an assessment to verify whether the residential setting is suitable for providing care; the HCW must assess whether the patient and the family are capable of adhering to the precautions that will be recommended as part of home care isolation (e.g., hand hygiene, respiratory hygiene, environmental cleaning, limitations on movement around or from the house) and can address safety concerns (e.g., accidental ingestion of and fire hazards associated with using alcohol-based hand rubs).
- If and where feasible, a communication link with health care provider or public health personnel, or both, should be established for the duration of the home care period—that is, until the patient's symptoms have completely resolved.
- Patients and household members should be educated about personal hygiene, basic IPC measures, and how to care as safely as possible for the person suspected of having COVID-19 to prevent the infection from spreading to household contacts. The patient and household members should be provided with ongoing support and education, and monitoring should continue for the duration of home care.

Household members should adhere to the following recommendations:

- Place the patient in a well-ventilated single room (i.e. with open windows and an open door).
- Limit the movement of the patient in the house and minimize shared space. Ensure that shared spaces (e.g. kitchen, bathroom) are well ventilated (keep windows open).
- Household members should stay in a different room or, if that is not possible, maintain a distance of at least 1 metre from the ill person (e.g. sleep in a separate bed).
- Limit the number of caregivers. Ideally, assign one person who is in good health and has no underlying chronic or immunocompromising conditions.³ Visitors should not be allowed until the patient has completely recovered and has no signs or symptoms of COVID-19.
- Perform hand hygiene after any type of contact with patients or their immediate environment. Hand hygiene should also be performed before and after preparing food, before eating, after using the toilet, and whenever hands look dirty. If hands are not visibly dirty, an alcohol-based hand rub can be used. For visibly dirty hands, use soap and water.
- When washing hands with soap and water, it is preferable to use disposable paper towels to dry hands. If these are not available, use clean cloth towels and replace them frequently.
- To contain respiratory secretions, a medical mask should be provided to the patient and worn as much as possible, and changed daily. Individuals who cannot tolerate a medical mask should use rigorous respiratory hygiene; that is, the mouth and nose should be covered with a disposable paper tissue when coughing or sneezing. Materials used to cover the mouth and nose should be discarded or cleaned appropriately after use (e.g. wash handkerchiefs using regular soap or detergent and water).
- Caregivers should wear a medical mask that covers their mouth and nose when in the same room as the patient. Masks should not be touched or handled during use. If the mask gets wet or dirty from secretions, it must be replaced immediately with a new clean, dry mask. Remove the mask using the appropriate technique – that is, do not touch the front, but instead untie it. Discard the mask immediately after use and perform hand hygiene.

- Avoid direct contact with body fluids, particularly oral or respiratory secretions, and stool. Use disposable gloves and a mask when providing oral or respiratory care and when handling stool, urine, and other waste. Perform hand hygiene before and after removing gloves and the mask.
- Do not reuse masks or gloves.
- Use dedicated linen and eating utensils for the patient; these items should be cleaned with soap and water after use and may be re-used instead of being discarded.
- Daily clean and disinfect surfaces that are frequently touched in the room where the patient is being cared for, such as bedside tables, bedframes, and other bedroom furniture. Regular household soap or detergent should be used first for cleaning, and then, after rinsing, regular household disinfectant containing 0.1% sodium hypochlorite (i.e. equivalent to 1000 ppm) should be applied.
- Clean and disinfect bathroom and toilet surfaces at least once daily. Regular household soap or detergent should be used first for cleaning, and then, after rinsing, regular household disinfectant containing 0.1% sodium hypochlorite should be applied.
- Clean the patient's clothes, bed linen, and bath and hand towels using regular laundry soap and water or machine wash at 60–90 °C (140–194 °F) with common household detergent, and dry thoroughly. Place contaminated linen into a laundry bag. Do not shake soiled laundry and avoid contaminated materials coming into contact with skin and clothes.
- Gloves and protective clothing (e.g. plastic aprons) should be used when cleaning surfaces or handling clothing or linen soiled with body fluids. Depending on the context, either utility or single-use gloves can be used. After use, utility gloves should be cleaned with soap and water and decontaminated with 0.1% sodium hypochlorite solution. Single-use gloves (e.g. nitrile or latex) should be discarded after each use. Perform hand hygiene before putting on and after removing gloves.
- Gloves, masks, and other waste generated during home care should be placed into a waste bin with a lid in the patient's room before disposing of it as infectious waste. The onus of disposal of infectious waste resides with the local sanitary authority.
- Avoid other types of exposure to contaminated items from the patient's immediate environment (e.g. do not share toothbrushes, cigarettes, eating utensils, dishes, drinks, towels, washcloths, or bed linen).
- When HCWs provide home care, they should perform a risk assessment to

select the appropriate personal protective equipment and follow the recommendations for droplet and contact precautions.

- For mild laboratory confirmed patients who are cared for at home, to be released from home isolation, cases must test negative using PCR testing twice from samples collected at least 24 hours apart. Where testing is not possible, WHO recommends that confirmed patients remain isolated for an additional two weeks after symptoms resolve.

❖ Management of Contacts

Persons (including caregivers and HCWs) who have been exposed to individuals with suspected COVID-19 are considered contacts and should be advised to monitor their health for 14 days from the last day of possible contact.

A contact is a person who is involved in any of the following from 2 days before and up to 14 days after the onset of symptoms in the patient:

- Having face-to-face contact with a COVID-19 patient within 1 meter and for >15 minutes;
- Providing direct care for patients with COVID-19 disease without using proper personal protective equipment;
- Staying in the same close environment as a COVID-19 patient (including sharing a workplace, classroom or household or being at the same gathering) for any amount of time;
- Travelling in close proximity with (that is, within 1 m separation from) a COVID-19 patient in any kind of conveyance;
- and other situations, as indicated by local risk assessments.

A way for caregivers to communicate with a health care provider should be established for the duration of the observation period. Also, health care personnel should review the health of contacts regularly by phone but, ideally and if feasible, through daily in-person visits, so specific diagnostic tests can be performed as necessary.

The health care provider should give instructions to contacts in advance about when and where to seek care if they become ill, the most appropriate mode of transportation to use, when and where to enter the designated health care facility, and which IPC precautions should be followed.

If a contact develops symptoms, the following steps should be taken.

- Notify the receiving medical facility that a symptomatic contact will be arriving.
- While traveling to seek care, the contact should wear a medical mask.
- The contact should avoid taking public transportation to the facility if possible; an ambulance can be called, or the ill contact can be transported in a private vehicle with all windows open, if possible.

The symptomatic contact should be advised to perform respiratory hygiene and hand hygiene and to stand or sit as far away from others as possible (at least 1 metre) when in transit and when in the healthcare facility.

- Any surfaces that become soiled with respiratory secretions or other body fluids during transport should be cleaned with soap or detergent and then disinfected with a regular household product containing a 0.5% diluted bleach solution.

❖ Guidelines on DEAD BODY management (MoHFW)

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.

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.

1. Standard Precautions to be followed by health care workers while handling dead bodies of COVID-19 patients.

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 sharp object.
4. Disinfect bag housing dead body; instruments and devices used on the patient.
5. Disinfect linen. Clean and disinfect environmental surfaces.

2. 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.

3. *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 bag can 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.

4. *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.

5. *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.

6. *Embalming*

- Embalming of dead body should not be allowed.

7. *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, N95 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.

8. *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.

9. *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.

NOTE: THE MIZO VERSION OF DEAD BODY MANAGEMENT OF COVID-19 PATIENTS IS ON ANNEXURE 13

❖ ENVIRONMENTAL CLEANING, DISINFECTION AND BIO-MEDICAL WASTE MANAGEMENT

A. Environmental Cleaning and Decontamination

A.1.1. General Principles

- Healthcare environment contains a diverse population of microorganisms and microbiologically contaminated surfaces can serve as reservoirs of potential pathogens.
- Transfer of microorganisms from environmental surfaces to patients is mostly via hand contact with the surface, therefore, hand hygiene is important to minimize the impact of this transfer .
- If the Health care facility has not put in place adequate measures to prevent and control infections, it may amplify an epidemic by spreading the infection to patients, staff and visitors. On leaving the hospital these infected individuals may boost transmission in the community.
- The use of Standard precautions is the primary strategy for minimizing the risk of transmission of microorganisms in healthcare facilities.
- Cleaning and disinfecting environmental surfaces is fundamental in reducing healthcare-associated infections
- COVID-19 virus can potentially survive in the environment for several hours/days
- Hospital disinfectants:
 - 70% ethyl alcohol for small areas – reusable dedicated equipment (e.g. thermometers)
 - Sodium hypochlorite at 1% for surface disinfection

A.1.2. Housekeeping surfaces can be divided into two groups

- i. Those with minimal hand contact (e.g. floors and ceilings) and
 - ii. “High touch surfaces” – those with frequent hand-contact
- High touch housekeeping surfaces in patient-care areas should be cleaned and/or disinfected more frequently, like, Doorknobs, Bedrails, Light switches, Wall areas around the toilet in the patient’s room and Edges of privacy curtains

A.1.3. Cleaning/disinfection of medical equipment

- Wear gloves when handling and transporting used patient care equipment
- Before removing equipment from patients room, medical equipment must be disinfected

- Non-critical medical equipment:
 - E.g., stethoscopes, blood pressure cuffs, dialysis machines and equipment knobs and controls
 - Usually only require cleansing followed by low- to intermediate level disinfection, depending on the nature and degree of contamination
- In absence of manufacturer instructions regarding cleaning/disinfection of equipment
 - Ethyl alcohol or isopropyl alcohol (60%–90%, v/v) often used to disinfect small surfaces (rubber stoppers of multiple-dose medication vials, and thermometers) and occasionally external surfaces of equipment (stethoscopes and ventilators)
 - Cover mattresses for easier disinfection
- Barrier protection of difficult to clean surfaces and equipment is useful, especially if these surfaces are
 - Touched frequently by gloved hands during the delivery of patient care
 - Likely to become contaminated with body substances
- Impervious-backed paper, plastic or fluid-resistant covers are suitable for use as barrier protection
- Remove and discard coverings with gloved hands
- Perform hand hygiene after ungloning
- Cover these surfaces with clean materials before the next patient encounter

Cleaning/disinfection of medical equipment

Area/ Items	Inputs	Process	Method/ procedure
Stethoscope	Alcohol-based rub/Spirit swab	Cleaning	<ul style="list-style-type: none"> • Should be cleaned with detergent and water • Should be wiped with alcohol based rub/spirit swab before each patient contact
BP cuffs & covers	Detergent Hot water	Washing	<ul style="list-style-type: none"> • Cuffs should be wiped with alcohol-based disinfectant and regular laundering is recommended for the cover
Thermometer	Detergent and water Alcohol rub Individual thermometer holder	Cleaning	<ul style="list-style-type: none"> • 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	Detergent and water Duster	Cleaning	<ul style="list-style-type: none"> • To be cleaned daily with detergent and water

trolley	Disinfectant (70% alcohol)		<ul style="list-style-type: none"> • After each use should be wiped with disinfectant
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A.1.4. Cleaning soiled bedding, towels and clothes from patients with COVID-19

- Clean the laundry and surfaces in all environments in which COVID-19 cases receive care – at least once a day and when a patient is discharged
- Individuals/staff dealing with soiled bedding, towels and clothes from patients with COVID-19 should:
 - Wear appropriate PPE – heavy duty gloves, mask, eye protection (goggles/face shield), long-sleeved gown, apron (if gown is not fluid resistant), and boots or closed shoes
 - Never carry soiled linen against body; place soiled linen in a leak-proof bag or bucket
 - Perform hand hygiene after blood/body fluid exposure and after PPE removal
- Soiled linen should be placed in clearly labeled, leak-proof bags or containers, carefully removing any solid excrement and putting in covered bucket to dispose of in the toilet or latrine
- Washing machine
 - Wash at 60-90°C with laundry detergent followed by soaking in 0.1% chlorine for approximately 30 minutes and dried
- No machine washing
 - Soaked in hot water with soap/detergent in a large drum
 - Use a stick to stir and avoid splashing
 - Empty the drum and soak linen in 0.1% chlorine for approx. 30 minutes
 - Rinse with clean water and let linens dry fully in the sunlight

A.1.5. Cleaning and disinfection of occupied patient rooms

- Designate specific well-trained staff for cleaning environmental surfaces
- Cleaning personnel should wear PPE and must be trained on proper use of PPE and hand hygiene
- Define the scope of cleaning to be done each day • Use a checklist to promote accountability for cleaning responsibilities
- Keep cleaning supplies outside the patient room

A.1.6. Cleaning of Housekeeping surfaces and eating utensils

- Housekeeping surfaces:

- Require regular cleaning and removal of soil and dust
- Personal protective equipment (PPE) used during cleaning and housekeeping procedures
- Need to be cleaned only with soap and water or a detergent/disinfectant, depending on the nature of the surface and the degree of contamination
- Dishes and eating utensils used by a patient with known or suspected infection
- No special precautions other than standard precautions
- Wear gloves when handling patient trays, dishes and utensils

A.1.7. Spill management

- Worker assigned to clean the spill should wear gloves and other personal protective equipment
- Most of the organic matter of the spill to be removed with absorbent material
- Surface to be cleaned to remove residual organic matter
- Use disinfectant: 1% hypochlorite – for small spills and large spills

A.1.8. Cleaning and disinfection after patient discharge or transfer

- Clean and disinfect all surfaces that were in contact with patient or may have become contaminated during patient care
- Do not spray or fog occupied or unoccupied rooms with disinfectant – potentially dangerous practice that has no proven benefits

A.1.9 Prevent environment contamination: contain respiratory secretions

- Ensure early recognition and prevention of transmission of the respiratory virus at the initial encounter with a healthcare setting
- Post visual alerts (in appropriate languages) at the entrance to outpatient facilities (e.g., emergency departments, physicians' offices, outpatient clinics) instructing patient and the persons who accompany them to:
 - Inform healthcare personnel of symptoms of a respiratory infection when they first register for care, and
 - Practice respiratory hygiene/cough etiquette

A.1.9 (a) Respiratory hygiene/cough etiquette

- All persons with signs and symptoms of a respiratory infection (regardless of presumed cause) must follow respiratory hygiene/cough etiquette
- Cover the nose/mouth when coughing or sneezing
- Use tissues to contain respiratory secretions
- Dispose of tissues in the nearest waste receptacle after use

- Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials
- Ensure availability of materials for adhering to respiratory hygiene/cough etiquette in waiting areas for patients and visitors:
- Provide tissues and no-touch receptacles (i.e. waste container with foot-operated lid or uncovered waste container) for used tissue disposal
- Provide conveniently located dispensers of alcohol-based hand rub
- Provide soap and disposable towels for hand washing where sinks are available

A.1.9 (b) Masking and separation of persons with symptoms of respiratory infection

- During periods of increased respiratory infection in the community, offer triple-layer masks to persons who are coughing
- Encourage coughing persons to sit at least 3 feet (1 metre) away from others in common waiting areas

A.1.9 (c) Droplet precautions

- Healthcare workers should practice droplet precautions, in addition to standard precautions, when examining a patient with symptoms of a respiratory infection
- Droplet precautions should be maintained until it is determined that they are no longer needed

B. Biomedical Waste Management

Bio-Medical Waste Management Rules 2016, amended 2018 & 2019

- Apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle any bio-medical waste
- "Occupier" means a person having administrative control over the institution and the premises generating biomedical waste
- Responsibility of every occupier – safe and proper identification, handling, storage and disposal of biomedical waste from laboratories and related facilities

B.1.1 Segregation, packaging, transportation and storage

- Untreated bio-medical waste should not be mixed with other wastes

- Bio-medical waste shall be segregated into containers or bags at point of generation (as per BMWM Rules 2016)
- Bio-medical waste containers or bags should be prominently labelled with biohazard symbol (and other details as per Rules)
- Untreated bio-medical waste must not be stored >48 hrs
- Ensure no spillage occurs during handling and transit of biomedical waste

B.1.2. Disposal of BMW

Category	Type of bag/container	Type of waste	Treatment disposal options
Yellow	Non chlorinated colour coded bags in coloured bins Separate collection system leading to ETP	<ul style="list-style-type: none"> • Human anatomical waste • Animal anatomical waste • Soiled waste • Expired or discarded medicines • Chemical waste • Micro, biotech & clinical lab waste • Chemical liquid waste 	Incineration / deep burial
Red	Non chlorinated plastic bags in coloured bins/containers	Contaminated waste (recyclable) tubing, bottles, urine bags, syringes (without needles) and gloves	Auto/micro/hydro and then sent to recycling
White	Translucent, puncture, leak & tamper proof	Waste sharps including metals	Auto/dry heat sterilization followed by shredding /mutilation/encapsulation
Blue	Water proof cardboard boxes/containers	Glassware waste	Disinfection or auto/micro/hydro then sent to recycling

B.1.3. Labeling of BMW bags

Waste category Number Waste quantity..... Sender's Name and Address: Phone Number Fax Number Contact Person In case of emergency please contact : Name and Address : Phone No.	Day Month Year Date of generation Receiver's Name and Address: Phone Number:..... Fax Number..... Contact Person
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COVID-19: Guidelines on disinfection of common public places including offices

The virus survives on environmental surfaces for varied period of time, it gets easily inactivated by chemical disinfectants.

In view of the above, the following guidelines are to be followed, especially in areas reporting COVID-19. For ease of implementation the guideline divided these areas into (i) indoor areas, (ii) outdoor areas and (iii) public toilets.

1. Indoor areas including office spaces

Office spaces, including conference rooms should be cleaned every evening after office hours or early in the morning before the rooms are occupied. If contact surface is visibly dirty, it should be cleaned with soap and water prior to disinfection. Prior to cleaning, the worker should wear disposable rubber boots, gloves (heavy duty), and a triple layer mask.

- Start cleaning from cleaner areas and proceed towards dirtier areas.
- All indoor areas such as entrance lobbies, corridors and staircases, escalators, elevators, security guard booths, office rooms, meeting rooms, cafeteria should be mopped with a disinfectant with 1% sodium hypochlorite or phenolic disinfectants. The guidelines for preparing fresh 1% sodium hypochlorite solution is at Annexure I
- High contact surfaces such elevator buttons, handrails / handles and call buttons, escalator handrails, public counters, intercom systems, equipment like telephone,

printers/scanners, and other office machines should be cleaned twice daily by mopping with a linen/absorbable cloth soaked in 1% sodium hypochlorite.

Frequently touched areas like table tops, chair handles, pens, diary files, keyboards, mouse, mouse pad, tea/coffee dispensing machines etc. should specially be cleaned.

- For metallic surfaces like door handles, security locks, keys etc. 70% alcohol can be used to wipe down surfaces where the use of bleach is not suitable.
- Hand sanitizing stations should be installed in office premises (especially at the entry) and near high contact surfaces.
- In a meeting/conference/office room, if someone is coughing, without following respiratory etiquettes or mask, the areas around his/her seat should be vacated and cleaned with 1% sodium hypochlorite.
- Carefully clean the equipment used in cleaning at the end of the cleaning process.
- Remove PPE, discard in a disposable PPE in yellow disposable bag and wash hands with soap and water.

In addition, all employees should consider cleaning the work area in front of them with a disinfecting wipe prior to use and sit one seat further away from others, if possible

2. Outdoor areas

Outdoor areas have less risk than indoor areas due to air currents and exposure to sunlight. These include bus stops, railway platforms, parks, roads, etc. Cleaning and disinfection efforts should be targeted to frequently touched/contaminated surfaces as already detailed above.

3. Public toilets

Sanitary workers must use separate set of cleaning equipment for toilets (mops, nylon scrubber) and separate set for sink and commode). They should always wear disposable protective gloves while cleaning a toilet.

- 70% Alcohol can be used to wipe down surfaces where the use of bleach is not suitable, e.g. metal. (Chloroxyleneol (4.5-5.5%)/ Benzalkonium Chloride or any other disinfectants found to be effective against coronavirus may be used as per manufacturer's instructions)
- Always use freshly prepared 1% sodium hypochlorite.

SOP for COVID-19

- Do not use disinfectants spray on potentially highly contaminated areas (such as toilet bowl or surrounding surfaces) as it may create splashes which can further spread the virus.
- To prevent cross contamination, discard cleaning material made of cloth (mop and wiping cloth) in appropriate bags after cleaning and disinfecting. Wear new pair of gloves and fasten the bag.
- Disinfect all cleaning equipment after use and before using in other area
- Disinfect buckets by soaking in bleach solution or rinse in hot water

Areas	Agents / Toilet cleaner	Procedure
Toilet pot/ commode	Sodium hypochlorite 1%/ detergent Soap powder / long handle angular brush	<ul style="list-style-type: none"> • Inside of toilet pot/commode: • Scrub with the recommended agents and the long handle angular brush. • Outside: clean with recommended agents; use a scrubber.
Lid/ commode	Nylon scrubber and soap powder/detergent 1% Sodium Hypochlorite	<ul style="list-style-type: none"> • Wet and scrub with soap powder and the nylon scrubber inside and outside. • Wipe with 1% Sodium Hypochlorite
Toilet floor	Soap powder /detergent and scrubbing brush/ nylon broom 1% Sodium Hypochlorite	<ul style="list-style-type: none"> • Scrub floor with soap powder and the scrubbing brush • Wash with water • Use sodium hypochlorite 1% dilution
Sink	Soap powder / detergent and nylon scrubber 1% Sodium Hypochlorite	<ul style="list-style-type: none"> • Scrub with the nylon scrubber. • Wipe with 1% sodium hypochlorite
Showers area / Taps and fittings	Warm water Detergent powder Nylon Scrubber 1% Sodium Hypochlorite/ 70% alcohol	<ul style="list-style-type: none"> • 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. • Wipe with 1% sodium hypochlorite/ 70% alcohol
Soap dispensers	Detergent and water	<ul style="list-style-type: none"> • Should be cleaned daily with detergent and water and dried.

4. Personal Protective Equipment (PPE):

- Wear appropriate PPE which would include the following while carrying out cleaning and disinfection work.
- Wear disposable rubber boots, gloves (heavy duty), and a triple layer mask
- Gloves should be removed and discarded damaged, and a new pair worn.
- All disposable PPE should be removed and discarded after cleaning activities are completed.
- Hands should be washed with soap and water immediately after each piece of PPE is removed, following completion of cleaning. (Refer to Annexure II: Steps of Hand Hygiene)
- Masks are effective if worn according to instructions and properly fitted. Masks should be discarded and changed if they become physically damaged or soaked. (Annexure-III: Guidelines for use of mask)

Annexure-I

Guidelines for Preparation of 1% sodium hypochlorite solution

Product	Available chlorine	1percent
Sodium hypochlorite – liquid bleach	3.5%	1 part bleach to 2.5 parts water
Sodium hypochlorite – liquid	5%	1 part bleach to 4 parts water
NaDCC (sodium dichloro-isocyanurate) powder	60%	17 grams to 1 litre water
NaDCC (1.5 g/ tablet) – tablets	60%	11 tablets to 1 litre water
Chloramine – powder	25%	80 g to 1 litre water
Bleaching powder	70%	7g g to 1 litre water
Any other	As per manufacturer's Instructions	

Steps of Hand Hygiene



Guidelines for use of mask

The correct procedure of wearing triple layer surgical mask -

1. Perform hand hygiene
2. Unfold the pleats; make sure that they are facing down.
3. Place over nose, mouth and chin.
4. Fit flexible nose piece over nose bridge.
5. Secure with tie strings (upper string to be tied on top of head above the ears –lower string at the back of the neck.)
6. Ensure there are no gaps on either side of the mask, adjust to fit.
7. Do not let the mask hanging from the neck.
8. Change the mask after six hours or as soon as they become wet.
9. Disposable masks are never to be reused and should be disposed off.
10. While removing the mask great care must be taken not to touch the potentially infected outer surface of the mask
11. To remove mask first untie the string below and then the string above and handle the mask using the upper strings.
12. Disposal of used masks: Used mask should be considered as potentially infected medical waste. Discard the mask in a closed bin immediately after use.

Note: This document is dynamic and may be modified as per progression of the disease in India and when more data are available regarding epidemiology, transmission, and treatment.



Helpline Numbers:



102 (toll free)



**(0389)- 2323336,
2318336, 2322336**

Appendix 1:

ADMISSION CRITERIA FOR COVID-19 AT ZORAM MEDICAL COLLEGE

Name of the patient:Age/Sex:/.....

Address: Contact:

Name of Dr on duty: Date:

Category 1: CONFIRMED COVID-19 CASE with or without one of the following-

Fever Yes / No (If yes, specify duration)	
Cough Yes / No (If yes, specify duration)	
Shortness of breath Yes / No (If yes, specify duration)	

- ✓ Category 1 patients should be admitted in ISOLATION WARD 1 or MAIN ICU depending on the clinical status of the patient.
- ✓ May be shifted to Isolation ward 2/ CCC if the patient remains asymptomatic after 48hrs of observation at Isolation Ward 1.

Category 2: QUARANTINED person with at least one of the following symptoms-

Fever Yes / No (If yes, specify duration)	
Cough Yes / No (If yes, specify duration)	
Shortness of breath Yes / No (If yes, specify duration)	

- ✓ Category 2 patients should be admitted in Risk Ward 1/2/3 or Pretest-Makeshift ICU depending on the clinical status of the patient.

Category 3: CONTACT WITH A CONFIRMED OR SUSPECT CASE with at least one of the following symptoms-

Fever Yes / No (If yes, specify duration)	
Cough Yes / No (If yes, specify duration)	
Shortness of breath Yes / No (If yes, specify duration)	

✓ *Category 3 patients should be admitted in Risk Ward1/2/3 or Pretest-Makeshift ICU depending on the clinical status of the patient*

Category 4: HEALTH CARE WORKER who is either CONFIRMED COVID-19 or presenting anytime with at least one of the following symptoms-

Fever Yes / No (If yes, specify duration)	
Cough Yes / No (If yes, specify duration)	
Shortness of breath Yes / No (If yes, specify duration)	

✓ *Category 4 patients should be admitted in Specially Identified facility for HCW or Pretest Makeshift ICU or Main ICU depending on the clinical status of the patient*

Category 5: Any patient qualified as a SARI CASE (As per WHO guidelines)-

***SARI is defined as Fever and Cough and/or Shortness of breath requiring hospitalization (see below)**

Fever ($\geq 38^{\circ}\text{C}$ or 100.4°F) Yes / No (If yes, specify duration)	
Cough (within the last 10 days) Yes / No (If yes, specify duration)	
Shortness of breath Yes / No (If yes, specify duration)	
*CURB-65 score ≥ 2	Yes / No
If present – 1 point If absent – 0 point	1) Confusion of new onset
	2) Blood Urea nitrogen greater than 19 mg/dL
	3) Respiratory rate ≥ 30 breaths per minute
	4) Blood pressure ≤ 90 systolic or ≤ 60 diastolic
	5) Age ≥ 65 years
TOTAL SCORE	

0 -1 : Treat as an outpatient

2 and above : Admit in RISK ward or Pretest Makeshift ICU depending on the clinical status of the patient

**The CURB-65 score is recommended by the British Thoracic Society for the assessment of the severity of Pneumonia. It is used as a means of deciding the action that is needed to be taken for that patient. The score is an acronym for each of the risk factors measured. Each risk factor scores one point, for a maximum score of 5*

Category 6: Person who develops at least one of the following symptoms after completing his/her Quarantine period-

Fever Yes / No (If yes, specify duration)	
Cough Yes / No (If yes, specify duration)	
Shortness of breath Yes / No (If yes, specify duration)	

✓ *Category 6 patients should be admitted in Risk Ward 1/2/3 or Pretest Makeshift ICU depending on the clinical status of the patient*

Category 7: Patients UNDER QUARANTINE / with interstate travel history in the last 14 days with at least one of the following -

Requiring emergency surgical procedures/ medical attention	Yes / No (<i>If yes, admit in General Holding Ward</i>)
Requiring Intensive and/or Critical care	Yes / No (<i>If yes, admit in Makeshift ICU</i>)
Pregnant requiring hospitalization (on the advice of Gynecologist)	Yes / No (<i>If yes, admit in Maternity Holding Ward</i>)

- ✓ *Category 7 patients who are unstable and already tested negative for 2019-nCoV may be sent directly to the assigned ward to avoid delay in treatment*

Category 8: A covid-19 suspect under police custody with or without symptoms

- ✓ Final decision regarding admission will be made by the ZMC/SRHF covid-19 team after discussion with the medical officer from the police department
- ✓ Admission will be made only after an arrangement is made for at least one police personnel to secure the patient at all times
- ✓ The accompanying police personnel will be required to carry out the duties expected of a family in normal circumstances
- ✓ After the detainee is discharged from the hospital, the accompanying police personnel may be advised to undergo quarantine which he will be expected to observe with full cooperation
- ✓ The hospital will not be responsible in case of any deterioration of health of the detainee or if the detainee absconded from the campus of the hospital

Category 9: Any case considered to have a reasonable level of suspicion by the ZMC/SRHF Covid-19 Clinical team

With respect to the above criteria, the patient is admitted in
 _____ Ward /ICU

Appendix 2 :

WARD ALLOCATION IN ZMC/SRHF FOR COVID-19

WARDS	ALLOCATED FOR	TOTAL NO. OF BEDS
Gynaecology ward	Isolation I	28
Male medicine ward	Isolation II	18
Female medicine ward	Isolation III	18
Orthopaedic ward	Risk Ward I	14
Female surgery ward	Risk Ward II	14
Male surgery ward	Risk Ward III	14
Main ICU	Confirmed Severe Case	7
Surgery ICU	Confirmed Severe Case	7
Paediatric ward (right wing)	Suspect Severe Case	6
Neonatal ICU	Paediatric suspect case	4
Maternity ward	Maternity holding	10
Paediatric ward (left wing)	General holding	16
TOTAL		156

Appendix 3 :

ZORAM MEDICAL COLLEGE – STATE REFERRAL HOSPITAL, FALKAWN

CONSENT FORM FOR ADMISSION IN ISOLATION WARD

I,..... husband/wife/son/daughter
of,town/village
have been informed that I have to be admitted at ZMC-SHRF as a
Confirmed Case / Suspect case of COVID-19.

I have given my permission for the same; and as it is not physically feasible for me to give my signature at the moment, I have given my consent to the doctor- on-duty to sign it on my behalf.

During my stay in this hospital, I promise to abide by the rules set by the hospital staff .

Name of patient : _____ **Age/ Sex :** ____/____

Address : _____ **Contact:** _____

Name of doctor-on-duty : _____

Signature : _____

Witness-1 with signature :

Witness-2 with signature :

Date :

Appendix 4: ZORAM MEDICAL COLLEGE – SRH, FALKAWN

COVID-19 SUSPECT / CONFIRMED REFERRAL FORM

Name: **Address:** **Age/Sex:**

Phone no.: **Aadhaar Card No:**

Date of Referral: ; No. of days quarantined so far:.....

Refer from.....Quarantine Facility Centre/ LLTF

Travel from **Date of arrival at QF**.....

- **Reason(s) for referral** (with clinical status at the time of referral):

- **OBSTETRIC SCORE:** Gravida..... Parity.....Abortion.....Living issue.....
Obstetric History: LMP: Period of gestation (in weeks)..... EDD:
..... Any obstetric complication: HTN (), GDM (), TWINS (), Others:.....
Previous delivery details: Normal delivery () Instrumental delivery () Cesarean Section ()
- **Date of confirmation of Covid-19 with RT-PCR for 2019-ncov with Sample/Patient ID number:**

- **Rapid Antibody Test:** DateReactive/ Non-reactive(IgM/IgG) Other Investigations done (any):
- Ongoing treatment :

- **ZMC COVID-19 TEAM informed:** YES / NO (ZMC Casualty Ph. No. - +91 9383212171, 9436743459)
Driver's Name & Phone No:...../.....
- **Patient will be shifted back to**..... **Quarantine facility center** if tested negative for RT-PCR and/or does not need further hospitalization in ZMC-SRHF. Transportation will be provided by the concerned authority.

Name & Signature of referring doctor:

Contact number:

Signature:

Appendix 5: ZORAM MEDICAL COLLEGE-SRH, FALKAWN
HISTORY SHEET FOR ADMISSION IN ZORAM MEDICAL COLLEGE (DCH)

Name: Age / Sex: /

Permanent address:Contact:

C/o :Ward:..... Bed no.:.....

Occupation: Workplace:.....

SENT FROM (specify Govt. QF or Community QF or LLTF or SELF) :.....

❖ COMPLAINTS – YES / NO (If yes, please mention details below)

❖ TRAVEL HISTORY :

✓ Returned from _____ to _____

✓ Date of arrival in Mizoram _____

✓ Details of mode of transport –

Flight : No. _____ Seat no. _____ : Fromto

Train : Compartment No. _____ : Fromto.....

Bus : No. _____ . Seat no. _____ : Fromto.....

Address outside Mizoram :

Number of persons staying in the same household with you _____

❖ RT-PCR test for 2019 - nCoV done : (YES / NO) , If yes POSITIVE / NEGATIVE, Date _____

❖ RAPID ANTIBODY TEST : Done____, Not Done____, Unknown____

If done, Date _____, Reactive (IgG / IgM), Non-reactive

❖ CONTACT HISTORY :

H/o contact with a confirmed (anytime) case? YES / NO

If yes, mention in detail below the Identity of the contact with time and place of contact

H/o contact with a suspected case (for any reason)? YES / NO

If yes, mention in detail below the Identity of the contact with time and place of contact

SOP for COVID-19

❖ PERSONAL HISTORY (mention positive history below): [Allergy , B&B habits, sleep, marital status, Habits–Tobacco smoking/chewing, Alcohol consumption, Drug abuse]

❖ OBSTETRIC HISTORY including LMP:

❖ MEDICAL HISTORY with ongoing medication details :

- HTN Yes/No
- Diabetes Yes/No
- Asthma/COPD Yes/No
- TB Yes/No
- Renal disease Yes/No
- Heart Disease Yes/No
- Cancer Yes/No
- Psychiatric illness Yes/No
- Others

❖ STATUS AT ADMISSION : Conscious & Alert/ Uncooperative/Irritable/

Drowsy/Stuporous/Irrelevant talk General Appearance (mention any finding on inspection)

BP : SpO₂ : Temp^r : PR: RR:

❖ INVESTIGATION ADVISED (tick):RT-PCR for 2019-nCoV, CBC , RFT , LFT, SE, CXR, ECG, CECT thorax, Viral serology, Urine RE/ME, CRP. ABO/Rh typing , Others (mention below)-

Name of the
Examiner:

Signature :

Date and Time:

Appendix 6: ZORAM MEDICAL COLLEGE-SRH, FALKAWN

INTIAMKAMNA

(Home Quarantine tur te tan)

.....*husba*
nd/wife/son/daughter of.....,
..... veng/ khua hi COVID- 19 *natna hrik kai palh*
thei a ngaih ka nih avangin keimahni chenna in/ Local Task Force te hmun ruat bik a in
khung hrang tur ka ni tih chiang takin ZMC/SRHF hospital-a thawkte'n min hrilh a, keima
remtihna ngeiin he Hmunah hian dah luh ka ni e. *Home quarantine*-a ka awm chhung hian thu
tha takin ka zawm ang tih ka intiam tlat e.

Damlo Signature

Guardian hming pum (in case of minor):

Guardian's signature (in case of minor):

Contact number(s):

Signature of Doctor/Nurse:

Hriatpuitu 1-na hming leh signature:

Hriatpuitu 2-na hming leh signature:

Date:

Appendix 7 : ZORAM MEDICAL COLLEGE-SRH, FALKAWN

Ruang lak chungchanga Intiamkamna

(COVID-19 kaihnawiha thi tan)

Keihusband/wife/son/daughter of
.....,venghiZMC/SRHF-a
thawktute'n a hnuai mitthi ruang sawngbawl dan turhi min hrilhfiha a, tih tur leh tih loh turte Chiang
taka min hrilh hnuah kan veng/khuaah phum turin ka la a, *Hospital-a* thawktute'n min hrilh anga dik
taka ti turin mawhphurhna ka la e.

- Mitthi hming:.....
- Pa/Nu Hming:.....
- Khua/Veng:
- Thihni:..... Thihhun: Dar AM/PM

Ruang la tu Hming pum :.....

leh signature :.....

Contact number :.....

Inlaichinna:

Signature of Doctor/Nurse:

Hriatpuitu1-na Hming:.....

Signature :

Hriatpuitu 2-naHming:.....

Signature :

Date:

Appendix 8: **ZORAM MEDICAL COLLEGE-SRH, FALKAWN**

Discharge Note (Damdawi in atanga chhuakte tan)

..... son/ daughter/ husband/ wife
of.....,

veng/ khua hi COVID-19 veiin /vei ni a rinhlelh avangin ZMC/SRH Falkawn ah enkawl a ni a, a
dam tih finfiah a nih hnuah chhuah tir a ni. Damdawi in atanga a chhuah ni

..... atangin anmahni inah ni 14 (sawm leh pali) chhung
inkhung hrang (*home quarantined*) hrih tura tih a ni e.

Damlo Signature:

Contact number:

Signature of Doctor/Nurse:

Hriatpuitu 1-na hming:

Signature:

Hriatpuitu 2-na hming:

Signature:

Date:

Appendix 9 : ZORAM MEDICAL COLLEGE – SRH, FALKAWN

(RISK WARD)

TO WHOM IT MAY CONCERN

_____ son/daughter/husband/wife of
_____, _____ town/village was
admitted in ZMC-SRHF from _____ - _____ - _____ till _____ - _____ - _____ due to (refer
below)

- 1) Quarantined person with symptom(s)
- 2) Contact with confirmed or suspect case of Covid-19
- 3) SARI
- 4) Symptomatic Health Care Worker
- 5) Person who develops symptoms after completing quarantine
- 6) Quarantined person requiring emergency medical/surgical intervention
- 7) Others (specify) _____

- He/she **has been quarantined** in _____ quarantine centre
from _____ - _____ - _____ / **has not been quarantined.**
- RT-PCR for 2019-nCoV (nasopharyngeal/oropharyngeal swab) test for the same has
been tested **NEGATIVE**. (Sample ID- _____ Date- _____)

❖ He/she is advised to **continue and complete quarantine** in Designated
Quarantine Facility/Home Quarantine till _____

OR

❖ He/she is being discharged after adequate management and completing
quarantine period in ZMC-SHRF and **no longer needs quarantine** at
home or facility.

Name of doctor:

Signature:

Date:

Appendix 10 : ZORAM MEDICAL COLLEGE – SRH, FALKAWN

(Isolation Ward)

TO WHOM IT MAY CONCERN

_____son/daughter/husband/wife of
_____, _____town/village was
admitted in ZMC-SRHF from _____ - _____ - _____ till _____ - _____ - _____ due to
(refer below)

1. Referred RT-PCR positive case of Covid-19
 2. Suspected Case of Covid-19, later tested positive by RT-PCR
 3. Others (specify) _____
- The patient has been declared **CURED** of Covid-19. However, he/she is advised to strictly follow the instructions given in the discharge card.
 - He/she is advised to **continue and complete quarantine** till _____ - _____ - _____ in :-
 1. Home Quarantine
 2. _____ Quarantine Facility
 3. _____ Covid Care Centre

Name of doctor :

Signature :

Date :

Appendix 11 : ZORAM MEDICAL COLLEGE-SRH, FALKAWN
(SCREENING AREA)

TO WHOM IT MAY CONCERN

1.....son/daughter/wife/husband
of.....hi **ZMC-SRHF ah Screening**
(as per

MoHFW, Govt. of India guidelines)-a uluk tak a en a nih hnu in Covid-19
natna vei anga rinhlelh a ni rih loa, chumi avang chuan admit a ngai rih loa, Test pawh a
ngai rih lo ani.

2. Covid 19 natna lo lanchhuah dan te hrilh a ni a, heng ang a lo langchhuak anih chuan
ZMC-SRHF ah rang thei anga lokal leh tura hrilh ani.
3. **Ni 14 chung Home Quarantine** (in kharkhip) turin advise a **ni/ a nilo**.
4. Hemi chung hian an chungkua a *strict* taka *home quarantine* vek tura
thupek **a ni /a nilo**.
5. Hospital dangah in enkawl zui tura Refer **a ni / a ni lo**.
6. *Quarantine intiamkamna (*consent*) sign tir a ni a. A zawm loh chuan a tul ang
a action lak ani ang.
(* Quarantine ngai te tan chauh)

Patient signature:

Veng:

Doctor Hming:

Doctor Signature:.....

Date:

SOP for COVID-19

Appendix 12 : ICMR Specimen Referral Form for COVID-19 (SARS-CoV2)

INTRODUCTION

This form is for collection centres/ labs to enter details of the samples being tested for Covid-19. It is mandatory to fill this form for each and every sample being tested. It is essential that the collection centres/ labs exercise caution to ensure that correct information is captured in the form.

INSTRUCTIONS:

- Inform the local / district / state health authorities, especially surveillance officer for further guidance
- Seek guidance on requirements for the clinical specimen collection and transport from nodal officer
- This form may be filled in and shared with the IDSP and forwarded to a lab where testing is planned
- Fields marked with asterisk (*) are mandatory to be filled

SECTION A – PATIENT DETAILS

A.1 TEST INITIATION DETAILS

*Doctor Prescription: **Yes** **No** *Repeat Sample: **Yes** **No**
 (If yes, attach prescription; If No, test cannot be conducted)
 If Yes, Patient ID:

A.2 PERSONAL DETAILS

*Patient Name: *Age: Years/Months (If age <1 yr, pls. tick months checkbox)
 *Present Village or Town: *Gender: **Male** **Female** **Others**
 *District of Present Residence:..... *Mobile Number:
 *State of Present Residence:..... *Mobile Number belongs to: **Self** **Family**
 *Present patient address: *Nationality:
 *Downloaded Aarogya Setu App: **Yes** **No**
 *Pincode: (These fields to be filled for all patients including foreigners)

Email: Passport No. (For Foreign Nationals):
 Aadhar No. (For Indians):

*A.3 SPECIMEN INFORMATION FROM REFERRING AGENCY

*Specimen type TS/NPS/NS BAL/ETA Blood in EDTA Acute sera Coalescent sera Other
 *Collection date

*Sample ID (Label)

*A.4 PATIENT CATEGORY (PLEASE SELECT ONLY ONE)

Cat 1: Symptomatic international traveller in last 14 days.....
 Cat 2: Symptomatic contact of lab confirmed case.....
 Cat 3: Symptomatic healthcare worker.....
 Cat 4: Hospitalized SARI (Severe Acute Respiratory Illness) patient.....
 Cat 5a: Asymptomatic direct and high risk contact of lab confirmed case
 Cat 5b: Asymptomatic healthcare worker in contact with confirmed case without adequate protection...
 Cat 6: Symptomatic Influenza Like Illness (ILI) patient in hospital/ MoHFW identified clusters.....
 Other:.....

(Please select "other" only if the patient doesn't fall in any other category)

*A.5 STATUS OF CURRENT RESPIRATORY INFECTION

*Respiratory infection: Severe Acute Respiratory Illness (SARI): Yes No , Influenza Like Illness (ILI): Yes No

SOP for COVID-19

SECTION B- MEDICAL INFORMATION										
B.1 EXPOSURE HISTORY(2 WEEKS BEFORE THE ONSET OF SYMPTOMS)										
1. Did you travel to foreign country in last 14 days: <input type="checkbox"/> Yes No <input type="checkbox"/>										
If yes, place(s) of travel, <input type="checkbox"/> <input type="checkbox"/>										
2. Have you been in contact with lab confirmed COVID-19 patient: Yes <input type="checkbox"/> No <input type="checkbox"/>										
If yes, name of confirmed patient:										
3. *Were you Quarantined?: Yes No *If yes, where were you quarantined: Home Facility										
4. Are you a health care worker working in hospital involved in managing patients: Yes No										
B.2 CLINICAL SYMPTOMS AND SIGNS										
Date of onset of symptoms: <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> (dd/mm/yy) First Symptom: <input type="checkbox"/>										
Symptoms <input type="checkbox"/> Yes Symptoms <input type="checkbox"/> Yes Symptoms <input type="checkbox"/> Yes Symptoms <input type="checkbox"/> Yes Symptoms Yes										
Cough		Diarrhoea		Vomiting		Fever at evaluation		Abdominal pain		
Breathlessness		Nausea		Haemoptysis		Body ache				
Sore throat		Chest pain		Nasal discharge		Sputum				
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		
B.3 PRE-EXISTING MEDICAL CONDITIONS										
Condition Yes Condition <input type="checkbox"/> Yes Condition Yes Condition Yes										
Chronic lung disease			Malignancy			Heart disease		Chronic liver disease		
Chronic renal disease			Diabetes			Hypertension				
Immunocompromised condition: YES NO					Other underlying conditions:					
B.4 HOSPITALIZATION DETAILS										
Hospitalized: Yes <input type="checkbox"/> No <input type="checkbox"/> Hospital State:										
Hospitalization Date: <input type="checkbox"/> / <input type="checkbox"/> / <input type="checkbox"/> (dd/mm/yy) Hospital District:										
Hospital Name:										
B.5 REFERRING DOCTOR DETAILS										
*Name of Doctor: Doctor Mobile No.:										
Doctor Email ID:										

* Fields marked with asterisk are mandatory to be filled

TEST RESULT (To be filled by Covid-19 testing lab facility)

Date of sample receipt(dd/mm/yy)	Sample accepted/ Rejected	Date of Testing (dd/mm/yy)	Test result (Positive / Negative)	Repeat Sample required (Yes / No)	Sign of Authority (Lab incharge)

Appendix 13:

COVID-19 VANGA MITTHI RUANG SÂWNGBÂWL DÂN KAIHHRUAINA

1 A thil tum:

- a) Tunah hian India ram pumah Novel Coronavirus natna COVID-19 vei, laboratory-a finfiah tawh 492 chuang awm tawhin mi 10 an thi tawh a. COVID-19 hi natna tharlam a nih avangin COVID-19 vei emaw rinhlelh mitthi ruang sawngbawl dan hi inzirtîr a pawimawh hle a ni.
- b) He kaihhruaina hi tun thlenga COVID-19 natna chungchang hriat theih chin atanga buatsaih a ni a, India rama COVID-19 vei tam ber chu zinna atanga kai niin ram chhunga kai chu an tlem zawk a. Tun dinhmunah chuan hri vei finfiah tawh leh rinhlelhkai zawng zawng chu damdawi lama enkawl na hnuaiah ihe lo va dahhran ngei ngei tur an ni. Chuvangin heta Mitthi ruang sawngbawl chungchang pawh hi Damdawi ina thil awmdan zulzuia duan a ni.

2 Hriattur pawimawhte:

- a) COVID-19 semdarhtu bulpui ber chu taksa atanga thil chhak/khuh chhuah(droplets) a nih avangin kan invawnfai uluk chuan mitthi ruang atang chuan damdawi lama thawktute leh chhungte ten COVID-19 kai a hlauhawm lo a ni.
- b) COVID-19 vanga ruang chu enchian duhin zai lo ngai ta se a Chuap chu a hlauhawm lai ber a ni ang.

3. COVID-19 vei ruang buaipui huna invawn thianghlim dan tur:

- i. Kut silfai.
- ii. Takxaa bel/vuah chi invenhimna te: Huh thei lo apron, kutkawr, hmui/hnar tamna(mask), tarmit
- iii. Hmanraw hriam khawih fîmkhur tur.
- iv. Ruang tuamna ip te, damlo enkawl nana hman hmanrua chi hrang hrangte tihthianghlim (disinfect) tur.
- v. Damlo mutbu leh a awmna chhehvel te tihthianghlim(disinfect) tur.

4. **Thianghlimna kawng inzirtîr uluk hle tur:**

Damlo dah hranna hmun te, Mitthi dahna in te, Ambulance leh Thlanmual lama chetla zawngzawngte chu thianghlimna kawngah uluktakin zirtîrna pekvektur an ni.

5. **Damlo dah hranna hmun atanga ruang dahsawn dan tur:**

- a) Damdawi lama thawktute chu huh thei lo apron, kutkawr, hmui/hnar tuamna(mask), tarmit nen an inthuam tur a ni
- b) Mitthi taksa atangin zun siakna ang chi thil vuah zawng zawng paih vek tur
- c) Mitthi taksaah chuan pem/kak ilo a awm chuan hnam chhauk thei lo turin bel hnan vek tur a ni.
- d) Thil hriam - hriau leh chemte lam chi reng reng chu uluk takin a paihna hmun tur bîkah paih bo tur a ni.
- e) Mitthi ruang atangin engmah a hnam chhuah lohna turin mitthi ruang ka leh hnar chu lapuain hnawh tur a ni.
- f) Mitthi ruang chu dah hranna hmun atanga lak chhuah laiin a chhungte'n hmuh an duh chuan thianghlimna dan zawm chungin en phalsak tur an ni.
- g) Mitthi ruang chu sarang ip phui tak chhungah dahin a pawnlam chu 1% hypochlorite hmangin tihthianghlim tur a ni a, chu chu a chhungte puan kenin tuamchhawn theih a ni.
- h) Mitthi ruang chu a chhungte hnena pek emaw Ruang dahna inah dah emaw theih a ni.
- i) Mitthi kaihnawih mutbu ilo zawng zawng chu ahranin hlauhawh bîk dahna ipah dahin ip pawnlam chu 1% hypochlorite hmangin tihthianghlim tur a ni.
- j) Hmanrua hman hnu reng reng chu chhum thianghlim (autoclaved) emaw damdawi hmanga uluk taka tihthianghlim tur a ni.
- k) Bawlhhlawh dang awm thei zawng zawng pawh uluk taka senghawia paih bo vek tur a ni.
- l) Damdawi lama thawktu ruang sawngbawltute'n an thil hman hnu apron, kutkawr, hmui/hnar tamna(mask), tarmit te hlîpin kut an silfai tur a ni.
- m) Mitthi chhungte hnenah thil awmdan chiang taka hrihlin an tawrhna te zah thiama hriat thiampui tur a ni.

6. **Chhehvel vawn fai leh tihthianghlim:**

Damlo enkawlina hmun - chhuat, khum, vawnchhan, dawhkan te, IV khaina te chu 1% SodiumHypochloritetuiahruinminit30talchiahturania,chumihnuahamaharotirtura ni.

7. Ruang dahna ina ruang buaipui dan tur:

- i. Ruang dahna ina ruang buaipuitu apiangin thianghlimna dan an zawm ngei ngei tur a ni.
- ii. Ruang chu pindan vawt(cold chamber) dikri 4° C-a vawtah dah tur a ni.
- iii. Ruang dahna in chhung, hmanrua chi hrang hrang leh a chhehvel chu 1% Hypochlorite tui hmangin tihthianghlim tur a ni.
- iv. Ruang dahsawn hnuah pawh Ruang dahna in chhung zawng zawng chu 1% Hypochlorite tui hmangin tihthianghlim tur a ni.

8. Ruang tawih thei lohnaa tuam:

Ruang chu tawih thei lohnaa tuam(embalming) phal a ni lo.

9. COVID-19 vanga thi ruang zai(autopsy) chungchang:

Mitthi ruang zai hi pumpelh tur a ni a, chhan eng emaw vanga zai loh theih loh a nih erawh chuan ahnuai thianghlimna dan hi zawm ngei tur a ni:

- a) Ruang zaitu turte chu thianghlimna kawng uluk taka zirtir tur an ni.
- b) Ruang zai thiam(Forensic expert) leh athawhpui pawh a tlem thei ang ber chauh an awm tur a ni.
- c) Zaitute chu huh thei lo apron, kutkawr, hmui/hnar tuamna(mask), tarmit bakah lukhum leh pheikhawk tuamna nen an inthiam tur a ni.
- d) Sakawrbakchew pawh a hmawr bil chi chauh hman tur a ni.
- e) Mahni taksa chhun pem palh pumpelh nan PM40 emaw chemte hmawr bil chauh hman tura ni.
- f) Tum khatah pum chungga taksa bung hrang pakhat zel chauh zai hawn tur a ni.
- g) Taksa bung hrang vawn ngheh harsa chi chu dawhkanah nembetin zai chauh tur a ni a, kut zai palh loh nan fimkhur hle tur a ni.

- h) Hriau chu hman zawhah a bawma khung lovin hmanrua hriam dahnaah dah tur a ni.
- i) Taksa bung hrang vawn ngheh harsa chi chu dawhkanah nembetin zai chauh tur a ni a, kut zai palh loh nan fimkhur hle tur a ni.
- j) Hriau chu hman zawhah a bawma khung lovin hmanrua hriam dahnaah dah tur a ni.
- k) Mitthi Chuap khawih laiin a chhunga boruak chambang ti chhuak lo tur zawngin khawih tur a ni.
- l) Tih tur tih zawh veleh ruang chu 1% Sodium Hypochlorite tuiin buala ruang tuamna ipah khungin ip pawn lam pawh 1% Sodium Hypochlorite tuiin tih thi anghlim tur a ni.
- m) He mi hnu hian ruang chu a chhungte kutah a hlan theih tawh a ni.
- n) Ruang zaina dawhkan chu tih fai tur a ni.

10. Ruang laksawn dan tur:

- i. Ruang chu achunga sawi anga ruang ruamna ipa thun hnuah chuan laksawn a hlauhawm lo a ni.
- ii. Ruang buaipuitute erawh chuan thi anghlimna dan kha an zawm ngei tur a ni.
- iii. Ruang phurhna lîrthei chu hman zawh hnuah 1% Sodium Hypochlorite hmangin bualfai tur a ni.

11. Thlanmualah:

- i. Thlanmuala chet late hnenah he COVID 19 vanga thi ruang hi a hlauhawm lo tih hrih tur a ni.
- ii. An vaiin thi anghlimna dan kha an zawm ngei tur a ni.
- iii. A chhungte tan mitthi ruang khawih chu engti kawng mahin phalsak chi a ni lo.
- iv. Mitthi vuitute zawng zawngin an kut an silfai ngei tur a ni.
- v. Mitthi vuitu punkhawm tam hi pumpelh tur a ni.

Appendix 14:

Use Personal Protective Equipment (PPE) When Caring for Patients with Confirmed or Suspected COVID-19

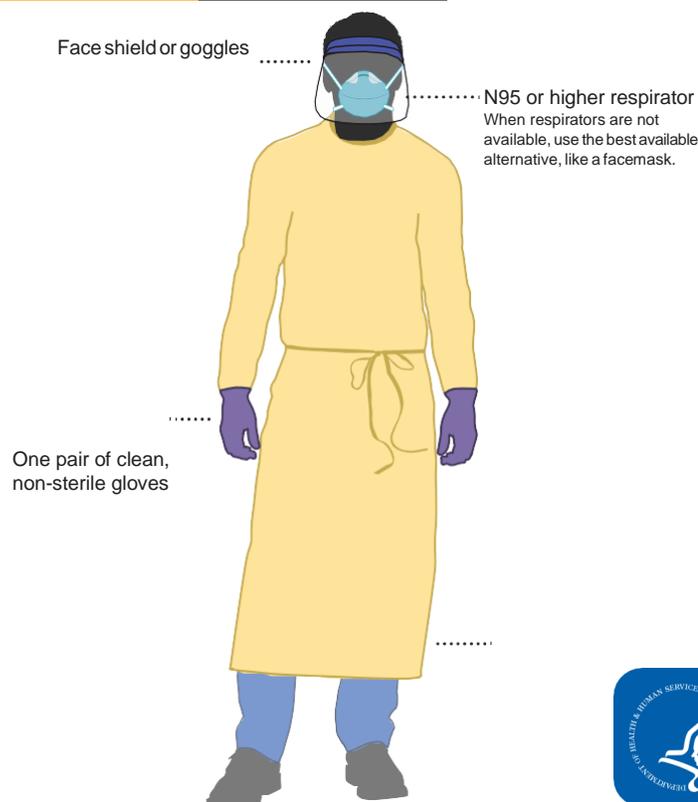
Before caring for patients with confirmed or suspected COVID-19, healthcare personnel (HCP) must:

- **Receive comprehensive training** on when and what PPE is necessary, how to don (put on) and doff (take off) PPE, limitations of PPE, and proper care, maintenance, and disposal of PPE.
- **Demonstrate competency** in performing appropriate infection control practices and procedures.

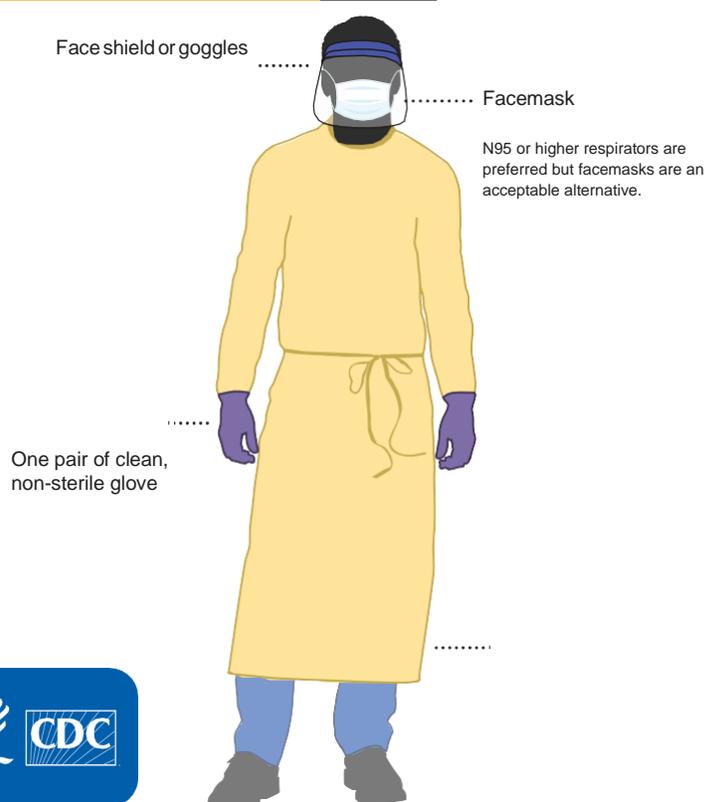
Remember:

- PPE must be donned correctly before entering the patient area (e.g., isolation room, unit if cohorting).
- PPE must remain in place and be worn correctly for the duration of work in potentially contaminated areas. PPE should not be adjusted (e.g., retying gown, adjusting respirator/facemask) during patient care.
- PPE must be removed slowly and deliberately in a sequence that prevents self-contamination. A step-by-step process should be developed and used during training and patient care.

Preferred PPE – Use N95 or Higher Respirator



Acceptable Alternative PPE – Use Facemask



Donning (putting on the gear):

More than one donning method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of donning.

- 1. Identify and gather the proper PPE to don.** Ensure choice of gown size is correct (based on training).
- 2. Perform hand hygiene using hand sanitizer.**
- 3. Put on isolation gown.** Tie all of the ties on the gown. Assistance may be needed by another HCP.
- 4. Put on NIOSH-approved N95 filtering facepiece respirator or higher (use a facemask if a respirator is not available).** If the respirator has a nosepiece, it should be fitted to the nose with both hands, not bent or tented. Do not pinch the nosepiece with one hand. Respirator/facemask should be extended under chin. Both your mouth and nose should be protected. Do not wear respirator/facemask under your chin or store in scrubs pocket between patients.*
 - » **Respirator:** Respirator straps should be placed on crown of head (top strap) and base of neck (bottom strap). Perform a user seal check each time you put on the respirator.
 - » **Facemask:** Mask ties should be secured on crown of head (top tie) and base of neck (bottom tie). If mask has loops, hook them appropriately around your ears.
- 5. Put on face shield or goggles.** Face shields provide full face coverage. Goggles also provide excellent protection for eyes, but fogging is common.
- 6. Perform hand hygiene before putting on gloves.** Gloves should cover the cuff (wrist) of gown.
- 7. HCP may now enter patient room.**

Doffing (taking off the gear):

More than one doffing method may be acceptable. Training and practice using your healthcare facility's procedure is critical. Below is one example of doffing.

- 1. Remove gloves.** Ensure glove removal does not cause additional contamination of hands. Gloves can be removed using more than one technique (e.g., glove-in-glove or bird beak).
- 2. Remove gown.** Untie all ties (or unsnap all buttons). Some gown ties can be broken rather than untied. Do so in gentle manner, avoiding a forceful movement. Reach up to the shoulders and carefully pull gown down and away from the body. Rolling the gown down is an acceptable approach. Dispose in trash receptacle.*
- 3. HCP may now exit patient room.**
- 4. Perform hand hygiene.**
- 5. Remove face shield or goggles.** Carefully remove face shield or goggles by grabbing the strap and pulling upwards and away from head. Do not touch the front of face shield or goggles.
- 6. Remove and discard respirator (or facemask if used instead of respirator).*** Do not touch the front of the respirator or facemask.
 - » **Respirator:** Remove the bottom strap by touching only the strap and bring it carefully over the head. Grasp the top strap and bring it carefully over the head, and then pull the respirator away from the face without touching the front of the respirator.
 - » **Facemask:** Carefully untie (or unhook from the ears) and pull away from face without touching the front.
- 7. Perform hand hygiene after removing the respirator/facemask and before putting it on again if your workplace is practicing reuse.** www.cdc.gov/coronavirus

Appendix 15:

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

❖ **Advisory against spraying of disinfectant on people for COVID-19 management**

Ministry of Health & Family Welfare has received many queries regarding the efficacy (if any) of use disinfectants such as Sodium hypochlorite spray used over the individuals to disinfect them. The strategy seems to have gained a lot of media attention and is also being reportedly used at local levels in certain districts/local bodies.

Purpose of the document

To examine the merit of using disinfectants as spray over human body to disinfect them from COVID-19 and to provide appropriate advisory

Disinfectants are chemicals that destroy disease causing pathogens or other harmful microorganisms. It refers to substances applied on inanimate objects owing to their strong chemical properties.

Chemical disinfectants are recommended for cleaning and disinfection only of frequently touched areas/surfaces by those who are suspected or confirmed to have COVID-19. Precautionary measures are to be adopted while using disinfectants for cleaning – like wearing gloves during disinfection.

In view of the above, the following advisory is issued:

- Spraying of individuals or groups is **NOT recommended** under any circumstances. Spraying an individual or group with chemical disinfectants is physically and psychologically harmful.
- Even if a person is potentially exposed with the COVID-19 virus, spraying the external part of the body does not kill the virus that has entered your body. Also there is no scientific evidence to suggest that they are effective even in disinfecting the outer clothing/body in an effective manner.
- Spraying of chlorine on individuals can lead to irritation of eyes and skin and potentially gastrointestinal effects such as nausea and vomiting. Inhalation of sodium hypochlorite can lead to irritation of mucous membranes to the nose, throat, respiratory tract and may also cause bronchospasm.
- Additionally use of such measures may in fact lead to a false sense of disinfection & safety and actually hamper public observance to hand washing and social distancing measures.

Appendix 16: (MoHFW 27/05/20)

❖ Advisory on re-processing and re-use of eye-protection - Goggles

Background:

Goggles are crucial components of Personal Protective Equipment (PPE) Kits. After use of PPE Kit all its components are discarded, as bio-medical waste. However, the goggles conforming to prescribed EN/BIS specifications can be reused after proper disinfection

Purpose of the documents

The purpose of this document is to enable individuals to reuse goggles used by them thus allowing an extended use without risk of contracting infection.

Standard Operating Procedure Reuse

1. The kitting of the PPEs with goggles will be done away with.
2. All goggles that conform to prescribed EN/BIS specifications will be re-used after disinfection.
3. Reprocessing and reuse of goggles must be done only when it is dedicated to each individual (write name over the band)
4. Reprocessing must be done after every use before using it again.
5. Adhere to manufacturer's instructions for cleaning and disinfection of goggles, wherever available. 6. If such instruction are not available, clean and disinfect the goggles as follows:

While wearing gloves, clean goggles with soap/detergent and water and then immerse in 1% freshly prepared sodium hypochlorite for 10 minutes. Wash/wipe the inside and outside of goggles with clean water to remove residue.

- o Air dry completely on a clean flat surface or by hanging in clean place, or use clean tissue papers to gauge to dry it.
- o Store it in a paper bag/in a clean area to avoid recontamination.
- o Remove gloves and perform hand hygiene.

7. Eye protection must be discarded if damaged/rendered optically non-clear on repeated usage. Ratio: Goggles may be issued to each health care worker, who will decontaminate them after every use. Goggles to be disinfected by users and re-used at least five times each, whereby one pair of goggles will suffice for 6 days. They may use them rationally till their transparency decreases or they get damaged. The ratio of issue of goggles to coverall is recommended at 1:6.

Appendix 17: (MoHFW 01/04/20)

MIKHUAL INHLAWHFATE CHUNGCHÂNGA HRIAT TÛRTE

Mahni in leh lo kalsana ram danga ei zawng Mikhual Inhlawhfate hian an chênna thar hmunhma leh a mi chêngte mizia an hriat chian loh ðhin avângin an va awmna hmuna mite'n ei leh bar leh himna kawngah te an ngaihsak tâwk loh hlauvin harsatna leh thlaphâna nasa tak an tâwk thei a, chutih rualin anmahni in lama an chhungte awmdân tûr an veina pawhin nasa takin an rilru a kapin a tibuai thei a ni. Hêng mite hian an ram, an in leh lo leh chhungkuate an kalsanna chhan chu eizawna a nih ber avângin an sum thawhchhuah chu an in lama mite inngahna ber a ni ðhin a ni.

Hetianga Covid-19 hri a rawn lêna khawsak phung te buaia hnâ an thawh theih tak loh avâng hian heng mite hian an rama anmahni in leh lova hân an lo duh ta a, chumi tihlawhtling tur chuan an theih ang angin an bei mêk a; chutih laiin an zînga mi tam tak chuan ramri-ah harsatna tâwkin an in leh lo an thleng mai thei lo va. Ni tina an sum thawhchhuaha inngat mai an nih avângin hetiang hun khirh takah hian ngaihsak leh lainat an mamawh hle a ni.

Hêng mite'n an mamawh hmasa ber chu ei leh in tûr leh zâna riahna tûr bâkah an hrisêlna vênhim te a ni a, chubâkah chuan hrilêng kai hlauhna leh sum leh pai hlawhchhuah tûr neih theih lohvin an chhungkaw khawsakna a tihbuaï avânga rilru lungkham leh hlauhna laka thlamuan te a ni. Chutih laiin khawtual mite lakah harsatna eng emaw an tâwk thei baw k a. Hêng harsatnate lakah hian chhanhim an mamawh hle a ni.

Anmahni enkawl nana thil pawimawh hmasa chu chênna tûr hmun siamsak a, ei rawng bâwlna hmun buatsaihsak leh an mamawh dang ngaihtuhsak te hi a ni a; chutianga thil chu hrilêng laka himna atâna kaihhruaina - khawlaiah mi pahnih inkâr hlat taka awm tûr te, natna kai ni-a rinhlelh zawn chhuah leh kaihhruaina dang te - uluk taka zâwm chungin tih tûr a ni a; anmahni taksa himna bâkah in lama an chhungte an biak pawhna remchâng pawh siamsak ngei baw k tûr a ni.

Achunga thil sawi tâkte hrereng chungin Mikhual Inhlawhfate chu anmahni in leh lova an kîr theih hmaa lo dah lailâwkna hmunahte an hlauhna leh thil veite laka an him theih nân hetiang hian enkawl tûr a ni:

1. Mikhual Inhlawhfate chu dimdawi leh lainat chungin enkawl tûr an ni.
2. An mamawhte ngaihthlâksakin an harsatna te hriatthiampui tûr a ni.
3. A nâwlpui piah lamah mimal harsatna te pawh hriatsak ngei tûr a ni.
4. He hun khirh tak hi thil pangngai piah lam, thunun mai theih loh a ni tih hrilhin hun rei lo tê hnuah a reh leh mai dawn a ni tiin fuih tûr an ni.
5. Sawrkar laipui te, State sawrkar leh Tlâwmngaipâwl hrang hrangte hnen aţanga

ṭanpuina awm theih dân te hrilh ang che.

6. Thuneitute remtihna leh kaihhruaina tel lo va mahni thu thua awmhmun lo sawn chu hri vei mai theihna kawngah an tân a him lo a ni tih hrilh ang che.

7. Mipui vântlâng tâna an pawimawhna leh hlutna te sawipui ṭhin ang che.

8. Anmahni tâna an beihna leh hnathawka anmahni ruai ṭhintute'n an chungarinna an nghah dân te leh chu'ng avânga mi zah an kai ṭhin thu te pawh hrilh ṭhin ang che.

9. Anmahni ruiatute'n an puih theih loh pawhin sawrkarin theih tâwpin a ṭanpui dawn tih pawh hrilh ang che.

10. Dinhmun khirhkhân taka an din mêk avânga lo tâlbuai deuh an awm pawhin dawhthei leh dimdawi takin enkawl ang che.

11. He hrî pumpelh theih dân leh he natna hi enkawl dam theih a ni tih hrilh ang che.

12. In lama an nupui fanaute laka an awm hran hi an chungkaw tân a him zâwk a ni tih

hrilh ṭhin ang che.

13. Anmahni i ṭanpui rualkhan anmahni pawhin anpuihlêtt theih dân tûr zawng baw kang che.

Appendix 18 : (MoHFW 31/05/20)

COVID - 19 HRIPUI LÊNLAIA KAN RILRUPUTHMANG TÛR CHU

Khawvêl pumpuia COVID-19 hripui a lên chungchâng thu televizawn te, chanchinbute, thiantelehchhungkhat lainate hnen aṅanga kan hriat hian rilru hah riau châng a awm thei ṅhin a. Chutiang thuin keimania thil ṅha lo a thlen theih hmasak ber chu Hlahna hi a ni. Chu hlahna chuan philna leh awm hlê hlê theih lohna te siamin boruak panggaia kan sawi leh tih duh ngai lohte min sawitirin min tihir thei hial ṅhin a ni.

Inkhârkhip(Lockdown) pawimawhna hriatthiam a ngai

Inkhârkhipin a tum ber chu natna inkaichhâwng lo tûra keimahni leh mi dangte venhim a ni a, chu chuan thil mamawh lei tûra chhuah bâk mahni in chhuahsan loh te, zin khawthawn loh te a huam a. In chhungah damlo an awm pawhin damdawi in hnai ber chauh pan tûr a ni.

khârkhip laia khawsak dân tûr

Hetia inkhârkhip tlat hi a tîrah nuam angin lang mah se a reih hnuah chuan a ninawm thei hle ṅhin a ni. Inkhârkhip hman nawm dân tûr chu hetiang hi a ni:

- ✓ Awm mai mai lo la, in chung khurah tih tûr eng emaw nei reng rawh.
- ✓ Rilru hahdam nân rimawi te ngaithlain ennawm te en ṅhin ang che. I tui ṅhinna - lemziak, chuktuah huan enkawl, puanthui, adt - ang te kha thawk rawh.
- ✓ Chaw ei ṅhain tui leh thil tuiril dang in tam ang che.
- ✓ I taksa chêtṅhîr tam la, in chhunga insawizawi hian taksa a tichakin awm a tinuam ṅhin a ni.
 - ✓ Mi dangte puhi hi hlimna a ni a, mi dangte tân inhawng ang che. I kiangah tu emawin thurâwn emaw, ei leh in leh thil ṅhul dangah a mamawh che chuan ṅanpui ṅhin ang che.
 - ✓ Kum upate ngaihsak la, an hlimna te, an damdawi ei ṅhin leh an mamawh dangte ngaihtuahsak ṅhin ang che. In in chhungah naupang an awm chuan an chêt tamna tûr thil siamsak la, an mawhphurhna te kaithovin thil thar zirtîr ang che.

Thu dik ngaihvenin thuthang leh ngaihdân hnâwl la

- Hriatna hi chakna a ni a, thu dik i hriat chuan i huaisenphah thei bawk. Mahni

inven nân thu dik tak chauh hriat tum ang che.

- Rilrutibuailehthintihawngtheithuchungaihvenlola, chutiang chu mi dang pawh hrilhchhâwng suh ang che.
- Damlo chanchin leh an damloh dân chauh sawi sawi lovindamloan lodam lehthusawiñthinzâwkang che.
- Kaihhruaina dinglai - kut silfai pawimawhna te, mi dang hlattakaawmñûnaang chite-tekhauluktakinzâwmñthin ang che.
- Hritlang hi Covid - 19 a ni lo tih hria la. Hahchhiau leh khuh zawnga kê leh hnâr hup te chîngin khawlaia chil leh khâk chhak chîng suh ang che.
- Mi tam berah chuan Corona hrik thawh dan hi a nep a, hri kai chu mi dang hlata a awmhran chuan chawlhkar hnih hnuah emaw a hri kai chu a lo ral mai thin a ni. Insawiselna a neih loh chuan damdawi ina dah a ngai lo tihna a ni a, thawk lama harsatna neite chauh damdawi inah enkawl an ngai thin. Hri kai tam zawk chu an fihlim leh thuai thin a ni.

Rilru chi-aina hmachhawn dan tur

1. I rilru a chi-ai chuan minit rei lote chung muangchangin thawk han la la, nangmah tichi-aitu chu theihngihl dan zawngin thil dang ngaihtuah tum la, thil hlimawm lam ngaihtuah tlat hi a pawimawh a ni.
2. Thinrimna i neih chuan i thinrimna tidai turin numbar 10 atangin a letzawngin 1 thlengin chhiar ang che.
3. Hlahna i neih chuan heng zawhnate nen hian hmachhawn ang che:
 - a. Eng thil hi nge ka thuhnuaiah awm reng reng le?
 - b. Thil chhe ber lo thleng thei hi ka hlau uchuak a ni mai lo maw?
 - c. Hetiang thil lo thleng tawh kha engtin nge ka lo hmachhawn thin le?
 - d. Mahni intanpuia thil chingfel turin eng thilte nge ka tihtheih le?
4. Mal leh khawhar ngawih ngawiha inhriatna a awm thin avangin mi dang bulah awm tam la, chungkua leh thiante hnaih la, i mi biak khatte kha an beisei loh deuhvin be kual thin la, titipui thin ang che.
5. Rilru hahna leh chi-aina te chu a reh mai lo a nih chuan tu emaw sawipui la. He thil hi a zual zel chuan tanpuitu tlachham nia inhriatna, beisei bona leh nun

thlakhlelh lohna hial a thlen thei a. Chutiang thlenga i kal a nih chuan beidawng mai lovin daktawr leh mithiam dang i rawn dawn nia.

Tih loh tur atana thate :

1. Vaihlo, Zu leh Ruihhlo chite pumpelh ang che. Rilru hah leh chi-ai laia Vaihlo leh zu hmanga intihlim tum hian rilru hahna nasa zawk a thlen thei a, taksa, rilru leh natna do theihna a tihnam thei a ni. Hetiang ti nasa miin rilru hahna a neih chuan enkawl dam a harsa bik thin a ni.
2. Covid - 19 Hripui vei/kai damchhuak leh te hi ensan tur an ni lo. Anmahni nen inkar neia khawsak ho a pawimawh lain tanpui leh chhawmdawl an mamawh tho tih hria la. Tu emaw, he hri kai hlauhthawnawma awm i hmuh chuan fimkhur dan tur hrilh ang che.
3. Corona hrik i lo kai hlauh a nih chuan chi-ai lo la, he hri kai zinga mi tam tak an dam chhuak a ni tih hriain mahni inkhung hrangin a tul danin damdawi lam ngaihtuah ang che.

Hri vei dam hnua rilru chi-aina awmzui theite

1. Covid hri atanga i lo damchhuaha mipui zinga tel i duh hunah harsatna eng emaw i tawk thei a, i chungte ngei pawhin hri an kai ve i hlauthawng ngei ang.
2. He natna lanchhuah dan hre fumfe lote'n an pawngpaw tih deuh ngawt dan che avangin i rilru a hrehawmin i inthlahrung thin ang.
3. Mi dangte i tanpui theih loh avangin thiamloh i inchantir ang a, chu chuan beidawna a thlen thei che a ni.
4. Heng hunah tak hian hmalak dan tur kan sawi tak kha zawm tlat la, hri atanga i dam tak dan chu mi dangte i hrilh dawn nia.

I chungkhat lainate zingah rilru natna vei an awm em ngaihven la

Nangmahin hrileng avanga rilru natna i neih thin ang kha i chungkhat lainate zingah hri kai/vei ve an awm em tiin ahnuai mi ang hian han zir chhin teh:

1. Zana mut hun bi inthlak
2. Muthilh leh ngaihtuah ding harsatna
3. Hriselna tlahniam
4. Zu, vaihlo leh ruihhlo hman uar sauhna

Hetiang mite hi puibawm tha la, harsatna a awm chuan 'phone no. 080-46110007-ah hian daktawr leh mithiam dang i rawn dawn nia.

Rilru buai natna neite chungchang

Rilru buai natna nei zingah inkhunghan ngai emaw hri kai emaw an lo awm chuan uluk taka buaipui tur a ni.

1. Mi panggaite ang bawkin rilru hahna leh chi-ainain a tlakbuak vein an hriselnain a tuar thei a ni.
2. Mi dang anga khunghrannain anmahni a tibuai hle thei a ni.
3. Damdawia enkawlina pawh an ngaihsak vak lo thei bawka a ni.

An mamawh ber chu an chhungte leh puitu dangte a\anga duatna leh ngaihsakna a ni.

Hun khirh leh harsa tak kara rilru hrisel tak neih hi awlsam zawka harsatna hnehtir theitu che a ni tih hrereng ang che.

Appendix 19:

- **COVID - 19 CHUNGCHANGA MAHNI IN LAMA KHUNG HRANTE(Quarantined) KAIHHRUAINA**
 - a. Inchhunga chênpuite leh ran vulh te lakah a hrangin pindan thawveng takah awmtir tûr a ni
 - b. Inthiarna hrang neih theih ngei a ÷ha ber
 - c. In chhunga chêt vêl khuahkhirh tûr a ni
 - d. Mi dang chênpuie chu loh theih loh a nih chuan metre 1 - 2 inkar danah awm se, mi dang biak dâwnah hnâr leh ka tuam zel tûr a ni
 - e. Kum upa te, naupai te, naupang leh damsam lo te lakah fimkhur zual hle tûr a ni
 - f. Vântlâng leh sakhua thila puipunna rêng rêng - inneih, mitthi vuina, adt - ah tel miah loh tûr a ni.
 - g. Sahbon leh tui nêh uluk takin, kaihhruaina ang thlapin sekhen 40 chung tal hun hmangin kut sil fai ngun hle tûr a ni a, a bîk takin khuh leh hahchhiau zawhah te, thil ei leh in hma leh hnuah leh inthiar zawhah te kut sil ngei ngei tûr a ni.
 - h. Inchhung mamawh thil - bungbêl te, tui inna no leh thingpui no te, thlêng leh fian ang chi leh inhrupuan leh mutbu ang te - mi dang tumah, mahni chung zinga mi pawh ni se hman ÷awm miah loh tûr a ni.
 - i. Surgical mask thuah thum nei chi hman tawh hnu chu bawlhhlawh leh tenawmah ngaih tûr a ni
 - j. Chutianga dahhran chuan khuh/khawsik/thâwk lama harsatna a neih chuan a rang thei ang berin Health Centre hnai ber emaw Free Helpline no. 102, 0389-2323336/2318336/2322336-ah ripâwt thuai tûr a ni.

- **COVID - 19 CHUNGCHANGA MAHNI IN LAMA KHUNGHRANTE(Quarantined) CHHUNGKUA TE KAIHHRUAINA**
 - a. Mi dah hran chu pindan pakhatah khungin chhungkuaa chênpuì dangte'n a theih chen chen chu hnaih loh tûr a ni
 - b. Chhungkaw zînga amah buaipui tûra ruat bîk chauhvin buaipui tûr a ni
 - c. Mut puan leh hrûkpuan ilo bawlhhlawh chu thin pharh leh taksa lawnga khawih pumpelh tûr a ni
 - d. A kiangah ran vulh an awm tûr a ni lo
 - e. Bawlhhlawh ilo rêng rêng khawih nân hman zawha paih mai theih chi kutkawr hman tûr a ni
 - f. Khuh nei tawh phawt chu metre 1 talin hlat zêl tûr
 - g. Kutkawr phelh hnuah te, thil ei/in dawn leh ei/in zawhah te sahbon leh tuiin sekhen 30 tal kut sil ngei ngei tûr a ni.
 - h. Inlêng chu hnar zêl tûr a ni
 - i. Chutianga mi dahhran chuan inlamrêlna a lo neih chuan a chênpuì zawng zawngte chu ni 14 chung dahhran nghâl hmiah tûr niin chumi zawhah Covid-19 test-tir a, chu chu a 'Negative' chauhvin an fihlim dawn a ni
 - j. Thawmhnaw leh mutbu ilovah bawlhhlawh - thisen, hnai, êk adt - kai chu paih vat tûr a ni
 - k. Khunghranna hmuna khum, dawhkân leh thil khawih zin deuh zawng zawng chu silfaina damdawi hmangin tih fai fo tûr a ni
 - l. Êk in pawh damdawi hmangin silfai fo tûr a ni
 - m. Bawlhhlawh chu fimkhur takin paih zêl tûr a ni

Appendix 20:

❖ Precautions for Residents posted for working In Corona Unit

- To stay alone in separate room still 14 days after their duties in corona unit are over
- To avoid meeting friends, colleagues, working staff in hostel. In case of unavoidable circumstances use facemask while meeting them
- Do not travel outside or within country unless absolutely indicated (till 31st March)
- Food should be ordered from canteen to their room (Can order over phone)
- Hand sanitizer should be kept in room and as well as every wing in case of common bathroom
- Common bathroom to be cleaned twice daily
- Residents using common toilets can wipe seats after coming in body contact after each use
- Daily Clothes used by the residents to be washed themselves and not to be given to Laundry

Precautions for general residents

- To avoid crowded places (like Malls), cinema hall, CME, Conferences
- To avoid meeting with residents who are taking care of corona infected patients
- To defer any plans of travel especially home particularly areas from where COVID-19 cases have been reported
- Practice regular hand washing and hygiene measures with sanitizer, soap and water
- To report to hospital authority if any of their friends, hostel staff develop fever or other respiratory symptoms

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 as considered 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 critically ill.