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## **The updated case definitions and contact-categorisation**

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

### **Suspect Case:**

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

**OR**

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

**OR**

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

**OR**

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

### **Laboratory Confirmed case:**

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

### **Updated definition of contact:**

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

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

### **High Risk Contact:**

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

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

**Low Risk Contact:**

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

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

Coronaviruses are respiratory viruses and broadly distributed in humans and other mammals. Some causing illness in people and others that circulate among animals, including camels, cats and bats. Rarely, animal corona viruses can evolve and infect people and then spread between people such as has been seen with MERS and SARS. Although most human coronavirus infections are mild, the epidemics of the severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV), have caused more than 10000 cumulative cases in the past two decades, with mortality rates of 10% for SARS-CoV and 37% for MERS-CoV. The current outbreak was initially noticed in a seafood market in Wuhan city in Hubei Province of China on 12th December, 2019 and has spread across China and many countries.

### **Purpose and scope of document**

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

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

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

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

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

<b>SARI</b>	An ARI with history of fever or measured temperature $\geq 38^{\circ}\text{C}$ and cough; onset within the last ~10 days; and requiring hospitalization. However, the absence of fever does NOT exclude viral infection.
<b>Surveillance case definitions for nCoV*</b>	<ol style="list-style-type: none"><li>1. Severe acute respiratory infection (SARI) in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation<sup>1</sup> (clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised);  AND any of the following:<ol style="list-style-type: none"><li>a) A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset; or</li><li><b>b) the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel; or</b></li><li>c) the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation</li></ol></li><li>2. A person with acute respiratory illness of any degree of severity who,</li></ol>

	<p>within 14 days before onset of illness, had any of the following exposures:</p> <ul style="list-style-type: none"> <li>a) close physical contact<sup>2</sup> with a confirmed case of nCoV infection, while that patient was symptomatic; or</li> <li>b) a healthcare facility in a country where hospital-associated nCoV infections have been reported;</li> </ul>
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\* see <https://mohfw.gov.in/media/disease-alerts> for latest case definition

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

## 2- Close contact is defined as:

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

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

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

Table 2: Clinical syndromes associated with nCoV infection

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

	<p><b>Origin of oedema:</b> respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present.</p> <p><b>Oxygenation (adults):</b></p> <ul style="list-style-type: none"> <li>• Mild ARDS: <math>200 \text{ mmHg} &lt; \text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}</math> (with PEEP or CPAP <math>\geq 5 \text{ cm H}_2\text{O}</math>, or non-ventilated)</li> <li>• Moderate ARDS: <math>100 \text{ mmHg} &lt; \text{PaO}_2/\text{FiO}_2 \leq 200 \text{ mmHg}</math> with PEEP <math>\geq 5 \text{ cm H}_2\text{O}</math>, or non-ventilated)</li> <li>• Severe ARDS: <math>\text{PaO}_2/\text{FiO}_2 \leq 100 \text{ mmHg}</math> with PEEP <math>\geq 5 \text{ cmH}_2\text{O}</math>, or non-ventilated)</li> <li>• When <math>\text{PaO}_2</math> is not available, <math>\text{SpO}_2/\text{FiO}_2 \leq 315</math> suggests ARDS (including in non-ventilated patients)</li> </ul> <p>Oxygenation (children; note OI = Oxygenation Index and OSI = Oxygenation Index using <math>\text{SpO}_2</math>)</p> <ul style="list-style-type: none"> <li>• Bilevel NIV or CPAP <math>\geq 5 \text{ cmH}_2\text{O}</math> via full face mask: <math>\text{PaO}_2/\text{FiO}_2 \leq 300 \text{ mmHg}</math> or <math>\text{SpO}_2/\text{FiO}_2 \leq 264</math></li> <li>• Mild ARDS (invasively ventilated): <math>4 \leq \text{OI} &lt; 8</math> or <math>5 \leq \text{OSI} &lt; 7.5</math></li> <li>• Moderate ARDS (invasively ventilated): <math>8 \leq \text{OI} &lt; 16</math> or <math>7.5 \leq \text{OSI} &lt; 12.3</math></li> <li>• Severe ARDS (invasively ventilated): <math>\text{OI} \geq 16</math> or <math>\text{OSI} \geq 12.3</math></li> </ul>
Sepsis	<p><b>Adults:</b> life-threatening organ dysfunction caused by a dysregulated host response to suspected or proven infection, with organ dysfunction. Signs of organ dysfunction include: altered mental status, difficult or fast breathing, low oxygen saturation, reduced urine output, fast heart rate, weak pulse, cold extremities or low blood pressure, skin mottling, or laboratory evidence of coagulopathy, thrombocytopenia, acidosis, high lactate or hyperbilirubinemia.</p> <p><b>Children:</b> suspected or proven infection and <math>\geq 2</math> SIRS criteria, of which one must be abnormal temperature or white blood cell count</p>
Septic shock	<p><b>Adults:</b> persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP <math>\geq 65 \text{ mmHg}</math> and serum lactate level <math>&gt; 2 \text{ mmol/L}</math></p> <p><b>Children:</b> any hypotension (SBP <math>&lt; 5^{\text{th}}</math> centile or <math>&gt; 2 \text{ SD}</math> below normal for age) or 2-3 of the following: altered mental state; tachycardia or bradycardia (HR <math>&lt; 90 \text{ bpm}</math> or <math>&gt; 160 \text{ bpm}</math> in infants and HR <math>&lt; 70 \text{ bpm}</math> or <math>&gt; 150 \text{ bpm}</math> in children); prolonged capillary refill (<math>&gt; 2 \text{ sec}</math>) or warm vasodilation with bounding pulses; tachypnea; mottled skin or petechial or purpuric rash; increased lactate; oliguria; hyperthermia or hypothermia</p>

## B. Immediate implementation of appropriate IPC measures

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

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

At triage	<ul style="list-style-type: none"> <li>• Give suspect patient a medical 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</li> </ul>
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	hand hygiene after contact with respiratory secretions
Apply droplet precautions	<ul style="list-style-type: none"> <li>• Droplet precautions prevent large droplet transmission of respiratory viruses. Use a medical mask if working within 1-2 metres of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms</li> </ul>
Apply contact precautions	<ul style="list-style-type: none"> <li>• Droplet and contact precautions prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces). Use PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use. Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene</li> </ul>
Apply airborne precautions when performing an aerosol generating procedure	<ul style="list-style-type: none"> <li>• Ensure that healthcare workers performing aerosol-generating procedures (i.e. open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation) use PPE, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95 or equivalent, or higher level of protection). (The scheduled fit test should not be confused with user seal check before each use.) Whenever possible, use adequately ventilated single rooms when performing aerosol-generating procedures, meaning negative pressure rooms with minimum of 12 air changes per hour or at least 160 litres/second/patient in facilities with natural ventilation. Avoid the presence of unnecessary individuals in the room. Care for the patient in the same type of room after mechanical ventilation commences</li> </ul>

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

### C. Early supportive therapy and monitoring

- a. Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia, or shock: Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target  $\text{SpO}_2 \geq 90\%$  in non-pregnant adults and  $\text{SpO}_2 \geq 92-95\%$  in pregnant patients. Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive oxygen therapy during resuscitation to target  $\text{SpO}_2 \geq 94\%$ ; otherwise, the target  $\text{SpO}_2$  is  $\geq 90\%$ . All areas where patients with SARI are cared for should be equipped with pulse oximeters, functioning oxygen systems and disposable, single-use, oxygen-delivering interfaces (nasal cannula, simple face mask, and mask with reservoir bag). Use contact precautions when handling contaminated oxygen interfaces of patients with nCoV infection
- b. Use conservative fluid management in patients with SARI when there is no evidence of shock: Patients with SARI should be treated cautiously with intravenous fluids, because aggressive fluid

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

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

#### **D. Collection of specimens for laboratory diagnosis**

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

##### **Points to remember**

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



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

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

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

## **E. Management of hypoxemic respiratory failure and ARDS**

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

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

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

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

Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions. Patients with ARDS, especially young children or those who are obese or pregnant, may desaturate quickly during intubation. Pre-oxygenate with 100% FiO<sub>2</sub> for 5 minutes, via a face mask with reservoir bag, bag-valve mask, HFNO, or NIV. Rapid sequence intubation is appropriate after an airway assessment that identifies no signs of difficult intubation.

Implement mechanical ventilation using lower tidal volumes (4–8 ml/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH<sub>2</sub>O). This is a strong recommendation from a clinical guideline for patients with ARDS, and is suggested for patients with sepsis-induced respiratory failure who do not meet ARDS criteria. The initial tidal volume is 6 ml/kg PBW; tidal volume up to 8 ml/kg PBW is allowed if undesirable side effects occur (e.g. dyssynchrony, pH <7.15). Hypercapnia is permitted if meeting the pH goal of 7.30-7.45. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets. Although high driving pressure (plateau pressure–PEEP) may more accurately predict increased mortality in ARDS compared to high tidal volume or plateau pressure, RCTs of ventilation strategies that target driving pressure are not currently available.

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

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

In patients with moderate or severe ARDS, higher PEEP instead of lower PEEP is suggested. PEEP titration requires consideration of benefits (reducing atelectrauma and improving alveolar recruitment) vs. risks (end-inspiratory overdistension leading to lung injury and higher pulmonary vascular resistance). Tables are available to guide PEEP titration based on the FiO<sub>2</sub> required to maintain SpO<sub>2</sub>. A related intervention of recruitment manoeuvres (RMs) is delivered as episodic periods of high continuous positive airway pressure [30–40 cm H<sub>2</sub>O], progressive incremental increases in PEEP with constant driving pressure, or high driving pressure; considerations of benefits vs. risks are similar. Higher PEEP and RMs were both conditionally recommended in a clinical practice guideline. For PEEP, the guideline considered an individual patient data meta-analysis of 3 RCTs. However, a subsequent RCT of high PEEP and prolonged high-pressure RMs showed harm, suggesting that the protocol in this RCT should be avoided. Monitoring of patients to identify those who respond to the

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

In patients with moderate-severe ARDS ( $\text{PaO}_2/\text{FiO}_2 < 150$ ), neuromuscular blockade by continuous infusion should not be routinely used. One trial found that this strategy improved survival in patients with severe ARDS ( $\text{PaO}_2/\text{FiO}_2 < 150$ ) without causing significant weakness, but results of a recent larger trial found that use of neuromuscular blockage with high PEEP strategy was not associated with survival when compared to a light sedation strategy without neuromuscular blockade. Continuous neuromuscular blockade may still be considered in patients with ARDS in certain situations: ventilator dyssynchrony despite sedation, such that tidal volume limitation cannot be reliably achieved; or refractory hypoxemia or hypercapnia.

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

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

#### **F. Management of septic shock**

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

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

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

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

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

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

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

**Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP  $\geq 65$  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

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

## G. Prevention of complications

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

Table 4: Prevention of complications

Anticipated Outcome	Interventions
Reduce days of invasive mechanical ventilation	<ul style="list-style-type: none"><li>• Use weaning protocols that include daily assessment for readiness to breathe spontaneously</li><li>• Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions</li></ul>
Reduce incidence of ventilator associated pneumonia	<ul style="list-style-type: none"><li>• Oral intubation is preferable to nasal intubation in adolescents and adults</li><li>• Keep patient in semi-recumbent position (head of bed elevation 30-45°)</li><li>• Use a closed suctioning system; periodically drain and discard condensate in tubing</li><li>• Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely</li><li>• Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days</li></ul>
Reduce incidence of venous thromboembolism	<ul style="list-style-type: none"><li>• Use pharmacological prophylaxis (low molecular-weight heparin [preferred if available] or heparin 5000 units subcutaneously twice daily) in adolescents and adults without contraindications. For those with contraindications, use mechanical prophylaxis (intermittent pneumatic compression devices).</li></ul>
Reduce incidence of catheter related bloodstream infection	<ul style="list-style-type: none"><li>• 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</li></ul>
Reduce incidence of pressure ulcers	<ul style="list-style-type: none"><li>• Turn patient every two hours</li></ul>
Reduce incidence of stress ulcers and gastrointestinal bleeding	<ul style="list-style-type: none"><li>• Give early enteral nutrition (within 24–48 hours of admission)</li><li>• Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for <math>\geq 48</math> hours, coagulopathy, renal replacement therapy, liver disease, multiple comorbidities, and higher organ failure score</li></ul>
Reduce incidence of ICU-related weakness	<ul style="list-style-type: none"><li>• Actively mobilize the patient early in the course of illness when safe to do so</li></ul>

## H. Specific anti-Noel-CoV treatments and clinical research

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

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

## **I. Special considerations for pregnant patients**

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

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

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

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



# Specimen Collection, Packaging and Transport Guidelines for 2019 nCoV - Acute Respiratory Disease

## Title: Specimen Collection, Packaging and Transport Guidelines for 2019 nCoV - Acute Respiratory Disease

**Scope:** To be used by the treating physicians, public health experts and laboratory personnel from Government health authorities/ hospitals/ planning to collect appropriate clinical samples as indicated for diagnosis of 2019 nCoV - Acute Respiratory Disease.

**Purpose:** Specimen collection, packaging and transport of clinical specimens to Influenza Lab in Division of Microbiology at National Centre for Disease control for diagnosis of 2019 nCoV - Acute Respiratory Disease.

### Roles and Responsibilities:

- The clinicians with updated interim guidance on timely, effective, and safe supportive management of patients with 2019 nCoV - Acute Respiratory Disease should be well versed with suspected case definition from MOHFW  
<https://mohfw.gov.in/sites/default/files/Guidelines%20on%20Clinical%20management%20of%20severe%20acute%20respiratory%20illness.pdf>
- The suspected case definition as given by the health authorities, Government of India must be followed.
- The appropriate clinical sample needs to be collected by health care worker trained in specimen collection in presence of a clinician.
- Samples should be collected with all biosafety precautions and should be accompanied with detailed history of patient on the proforma which can be obtained from the testing laboratory in standard triple packaging.
- Personal protective equipment (apron, hand gloves, face shield, N95 Masks etc.) need to be used and all biosafety precautions should be followed while carrying out sample collection and packaging.

### Specimen collection, storage and transport details:

(Adapted from WHO guidelines 2019 nCoV - Acute Respiratory Disease)

Specimen type	Collection materials	Transport to laboratory (48 -72 hrs)	Storage till testing
Nasopharyngeal and oropharyngeal swab (Both swabs should be placed in the same tube to increase the viral load)	Dacron or polyester flocked swabs*	4 °C	≤72 hrs: 4 °C >72 hrs: -70 °C
Bronchoalveolar lavage	Sterile container*	4 °C	≤48 hours: 4 °C >48 hours: -70 °C
Tracheal aspirate, nasopharyngeal aspirate or nasal wash	Sterile container*	4 °C	≤48 hours: 4 °C >48 hours: -70 °C
Sputum (Ensure the material is from the lower respiratory tract)	Sterile container	4 °C	≤48 hours: 4 °C >48 hours: -70 °C

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

### Specimen packaging and transport:

Sample should be safely packed in Triple container packing and should be transported under cold chain to the reference laboratory with prior intimation. The packaging consists of three layers as follows.

- Primary receptacle: A labelled primary watertight, leak-proof receptacle containing the specimen. The receptacle is wrapped in enough absorbent material to absorb all fluid in case of breakage.
- Secondary receptacle: A second durable, watertight, leak-proof receptacle to enclose and protect the primary receptacle(s). Several wrapped primary receptacles may be placed in one secondary receptacle. Sufficient additional absorbent material must be used to cushion multiple primary receptacles.
- Outer shipping package. The secondary receptacle is placed in an outer shipping package which protects it and its contents from outside influences such as physical damage and water while in transit.

Specimen data forms, letters and other types of information that identify or describe the specimen for “testing of 2019 nCoV - Acute Respiratory Disease ” and also identify the shipper and receiver should be taped to the outside of the secondary receptacle.

**CHECKLIST OF ITEMS FOR PREPAREDNESS OF DISTRICT HOSPITAL LABS FOR SAMPLE COLLECTION FROM SUSPECTED NEW CORONAVIRUS OUTBREAK CASES :-**

It is recommended that sample collection from suspected new corona virus outbreak cases should be carried out in a dedicated isolated room with independent air handling facility through use of exhaust fans and appropriate HEPA filters.

- 1. Guidelines for sample collection and transportation**
- 2. Hand sanitizer**
- 3. Round the clock running water and soap**
- 4. PPE (Personal Protective Equipment) KITS containing at least:**
  - a. Head cover
  - b. N-95 Respirator or equivalent
  - c. Eye goggles/Face shield
  - d. Full sleeved outer impermeable gown / Cover alls
  - e. Gloves
  - f. Shoe Covers
- 5. Patient proforma for 2019-nCoV testing**
- 6. VTM vials**
- 7. Sterile individually packed swabs with flocked nylon/Dacron/polyester tips with synthetic shaft with break point**
- 8. Permanent markers**
- 9. Tongue depressors**
- 10. Triple layer packaging materials including:**
  - a. Paraffin tape or equivalent for sealing individual VTM vials
  - b. Cotton or absorbent material
  - c. Clear ziplock bags
  - d. Ice packs
  - e. Vaccine carriers
  - f. Thermocol boxes
  - g. Biohazard labels
- 11. Refrigerators**
- 12. Deep freezers, if samples are to be stored beyond 48 hrs**
- 13. Facilities for disposal of bio-medical waste as per latest bio medical waste management rules**
  - a. Colored bins with colored disposal bio-medical waste bags, available at the anteroom for bio medical hazard
  - b. Puncture proof container
  - c. Sodium hypochlorite
- 14. SPILL KIT containing at least:**
  - a. PPE KIT
  - b. Warning labels – Biohazard, “DO NOT ENTER” sign
  - c. Marker/Chalk
  - d. 1% freshly prepared sodium hypochlorite
  - e. Cotton/Tissue paper rolls/Blotting paper/Absorbent material
  - f. Tongs /Forceps and Dust pan
  - g. BMW Bags
  - h. Mops and floor disinfectant



**ICMR- National Institute of Virology, Pune**  
**Specimen Referral Form for 2019 Novel Coronavirus (2019-nCoV)**

**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 also ICMR-NIV nodal officer in advance.

**PERSON DETAILS**

Name of patient: .....	Age:.....Yr.....Month Gender: Male <input type="checkbox"/> Female <input type="checkbox"/>
Address: .....	Date of birth: ...../...../..... (dd/mm/yyyy)
City: .....	Mobile/phone: .....
State: .....	Email: .....

**EXPOSURE HISTORY (2 WEEKS BEFORE THE ONSET OF SYMPTOMS)**

**Recent stay/travel in area (Wuhan, China):** Yes ☐ No ☐ If yes, stay/travel duration with date  
 History of visit to wet/seafood market: Yes ☐ No ☐ From:...../...../..... to:...../...../.....  
**Close contact with confirmed case** Yes ☐ NO ☐ Close contact with animal/birds Yes / N  
 Recent travel to any other country Yes ☐ NO ☐ Travel place: .....  
**Health care worker working in hospital involved in managing patients** YES / NO, .....  
 Hospitalization date: ...../...../..... Discharge date: ...../...../.....

**CLINICAL SYMPTOMS AND SIGNS**

Date of onset of symptoms: ...../...../.....		First symptom: .....						
<b>Symptoms</b>	<b>Yes</b>	<b>No</b>	<b>Symptoms</b>	<b>Yes</b>	<b>No</b>	<b>Symptoms</b>	<b>Yes</b>	<b>No</b>
<b>Fever</b> (<7 days)	<input type="checkbox"/>	<input type="checkbox"/>	<b>Cough</b>	<input type="checkbox"/>	<input type="checkbox"/>	Diarrhoea	<input type="checkbox"/>	<input type="checkbox"/>
<b>History of fever</b>	<input type="checkbox"/>	<input type="checkbox"/>	<b>Breathlessness</b>	<input type="checkbox"/>	<input type="checkbox"/>	Nausea	<input type="checkbox"/>	<input type="checkbox"/>
(< 7 days)			Sore throat	<input type="checkbox"/>	<input type="checkbox"/>	Body-ache	<input type="checkbox"/>	<input type="checkbox"/>
Chest pain	<input type="checkbox"/>	<input type="checkbox"/>	Sputum	<input type="checkbox"/>	<input type="checkbox"/>	Nasal discharge	<input type="checkbox"/>	<input type="checkbox"/>
<b>Signs</b>	<b>Yes</b>	<b>No</b>	<b>Sign</b>	<b>Yes</b>	<b>No</b>	<b>Sign</b>	<b>Yes</b>	<b>No</b>
Wheeze	<input type="checkbox"/>	<input type="checkbox"/>	Stridor	<input type="checkbox"/>	<input type="checkbox"/>	Lower chest indrawing	<input type="checkbox"/>	<input type="checkbox"/>
Nasal flaring	<input type="checkbox"/>	<input type="checkbox"/>	Crepitation	<input type="checkbox"/>	<input type="checkbox"/>	Accessory muscle use	<input type="checkbox"/>	<input type="checkbox"/>

**UNDERLYING MEDICAL CONDITIONS**

<b>Condition</b>	<b>Yes</b>	<b>No</b>	<b>Condition</b>	<b>Yes</b>	<b>No</b>	<b>Condition</b>	<b>Yes</b>	<b>No</b>
COPD	<input type="checkbox"/>	<input type="checkbox"/>	Bronchitis	<input type="checkbox"/>	<input type="checkbox"/>	Diabetes	<input type="checkbox"/>	<input type="checkbox"/>
Chronic renal disease	<input type="checkbox"/>	<input type="checkbox"/>	Malignancy	<input type="checkbox"/>	<input type="checkbox"/>	Heart disease	<input type="checkbox"/>	<input type="checkbox"/>
						Asthma	<input type="checkbox"/>	<input type="checkbox"/>

**IMMUNOCOMPROMISED CONDITION:** YES / NO ..... Other: .....

**HOSPITALIZATION, TREATMENT AND INVESTIGATION**

HOSPITALIZATION date: ...../...../.....	DIAGNOSIS: .....							
DIFFERENTIAL DIAGNOSIS: .....	ETIOLOGY IDENTIFIED: .....							
ATYPICAL PRESENTATION: YES / NO .....	UNUSUAL / UNEXPECTED COURSE: YES / NO .....							
Outcome: Discharge / Death / .....	OUTCOME date: ...../...../.....							
<b>Treatment</b>	<b>Yes</b>	<b>No</b>	<b>Treatment</b>	<b>Yes</b>	<b>No</b>	<b>Treatment</b>	<b>Yes</b>	<b>No</b>
Antibiotics	<input type="checkbox"/>	<input type="checkbox"/>	Ventilation	<input type="checkbox"/>	<input type="checkbox"/>	Antivirals	<input type="checkbox"/>	<input type="checkbox"/>
Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	CPAP	<input type="checkbox"/>	<input type="checkbox"/>	Steroids	<input type="checkbox"/>	<input type="checkbox"/>
						Bronchodilators	<input type="checkbox"/>	<input type="checkbox"/>
						Other: .....		

**Investigation findings:** Haematocrit: ..... Hb: ..... WBC (leukocyte count): .....  
 Differential Leukocyte count: Lymphocytes (%): ..... Monocytes (%): ..... Neutrophils (%): .....  
 Basophils (%): ..... Eosinophil (%): ..... Platelet (Thrombocyte) count: ..... ESR: .....

**Investigation details:** Chest X ray: Yes ☐ No ☐ , If yes (findings): .....  
 Blood culture findings (If any): .....  
 Other investigation details: .....

**SPECIMEN INFORMATION FROM REFERRING AGENCY**

Specimen type	Collection date	Label	FOR* ICMR- NIV →	Specimen ID	Test performed	Result
1.						
2.						

Name of Doctor: ..... Hospital Name/address: .....  
 Phone/mobile number: ..... Signature and date: .....

**ICMR- National Institute of Virology, Pune**  
**Specimen Referral Form for 2019 Novel Coronavirus (2019-nCoV)**

**CASE DEFINITION**

**1. Severe Acute Respiratory Illness (SARI), with**

- history of fever YES / NO
- cough YES / NO
- requiring admission to hospital YES / NO

**WITH**

- no other etiology explains the clinical presentation YES / NO  
*(clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised);*

**AND**

any of the following

- A history of travel to Wuhan, Hubei Province China in the 14 days prior to symptom onset. YES / NO
- the disease occurs in a health care worker who has been working in an environment where patients with severe acute respiratory infections are being cared for, without regard to place of residence or history of travel YES / NO
- the person develops an unusual or unexpected clinical course, especially sudden deterioration despite appropriate treatment, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation. YES / NO

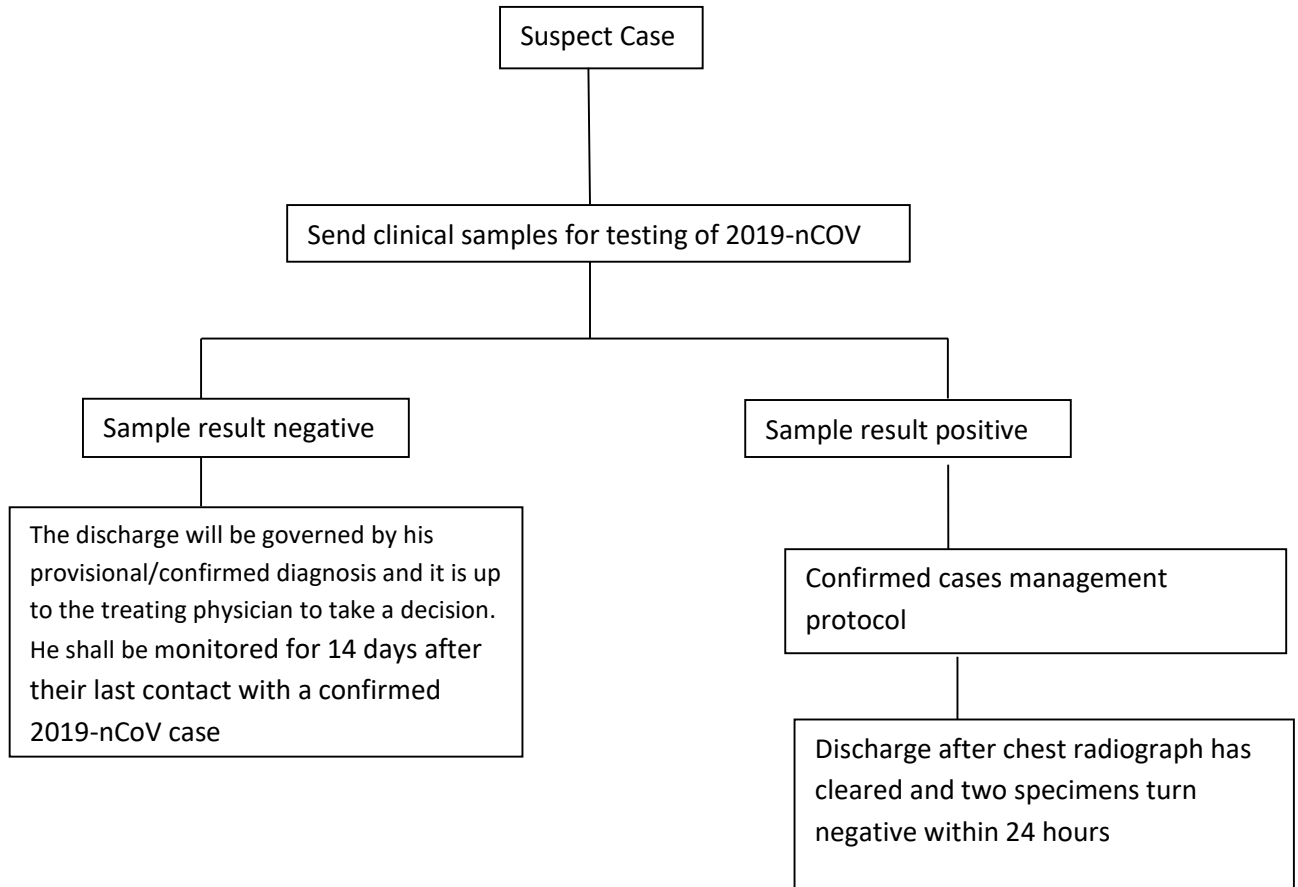
**2. Individuals with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures:**

- close physical contact with a confirmed case of nCoV infection, while that patient was symptomatic; YES / NO
- a healthcare facility in a country where hospital associated nCoV infections have been reported; YES / NO
- direct contact with animals (if animal source is identified) in countries where the nCoV is known to be circulating in animal populations or where human infections have occurred as a result of presumed zoonotic transmission\*. YES / NO

**\* To be added once/if animal source is identified as a source of infection**

### Discharge Policy of nCoV Case

Clinical samples of any suspect/probable case\* of nCoV will be sent for laboratory confirmation to designated laboratories. The case will be kept in isolation at health facility till the time of receipt of laboratory results and given symptomatic treatment as per existing guidelines. If the laboratory results for nCoV are negative, the discharge of such patients will be governed by his provisional/confirmed diagnosis and it is up to the treating physician to take a decision. The case shall still be monitored for 14 days after their last contact with a confirmed 2019-nCoV case. In case the laboratory results are positive for nCoV, the case shall be managed as per the confirmed case management protocol. The case shall be discharged only after evidence of chest radiographic clearance and viral clearance in respiratory samples after two specimens test negative for nCoV within a period of 24 hours.



#### **Case Classification\***

##### **Suspect case**

A. Patients with severe acute respiratory infection (fever, cough, and requiring admission to hospital), **AND** with no other etiology that fully explains the clinical presentation **AND** at least one of the following:

- a history of travel to or residence in the city of Wuhan, Hubei Province, China in the 14 days prior to symptom onset, or
- patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.

B. Patients with any acute respiratory illness **AND** at least one of the following:

- close contact with a confirmed or probable case of 2019-nCoV in the 14 days prior to illness onset, or
- visiting or working in a live animal market in Wuhan, Hubei Province, China in the 14 days prior to symptom onset, or
- worked or attended a health care facility in the 14 days prior to onset of symptoms where patients with hospital-associated 2019-nCoV infections have been reported.

##### **Probable case**

Probable case: A suspect case for whom testing for 2019-nCoV is inconclusive or for whom testing was positive on a pan-coronavirus assay.

**Confirmed case**

A person with laboratory confirmation of 2019-nCoV infection, irrespective of clinical signs and symptoms.

(Source: WHO: [https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-\(2019-ncov\)](https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-(2019-ncov)))

## **GUIDELINES FOR SCREENING CENTRES**

All hospitals identified to screen and admit patients with 2019 nCoV- Acute Respiratory Disease should conform to these guidelines. Identified hospitals would have a separate screening area to screen outdoor patients and an isolation facility to admit those requiring indoor treatment.

For clarity, these guidelines are in six parts:

- (i) Generic Guidelines
- (ii) Guidelines for pre hospital care
- (iii) Guidelines for the screening centre
- (iv) Guidelines for isolation facility
- (v) Guidelines for critical care
- (vi) Mortuary care.

### **Generic guidelines**

- Standard Precautions to be followed at all patient care areas: hand hygiene, gloves and use of personal protective equipment (PPE) to avoid direct contact with patient's blood, body fluids, secretions and non-intact skin, prevention of needle stick/sharp injury and cleaning and disinfection of the environment and equipment.
- Droplet precautions to be followed when caring for patients with 2019 nCoV- Acute Respiratory Disease (masks, respirators and eye shield) in isolation facilities.
- Airborne and Contact Precautions should complement Standard Precautions while managing case of 2019 nCoV- Acute Respiratory Disease in critical care facilities.
- Hospitals should follow the hospital waste management protocols as per the hospital waste management rules.
- Dead body should be handled using full cover of PPE.

### **Guidelines for Pre Hospital Care**

- All identified hospitals to have advanced life support ambulance.
- Designated paramedic and driver for the ambulance.

- The ambulance staff should follow standard precautions while handling the patient and airborne precautions if aerosol generating procedures are done.
- Triple layer surgical masks should be available and worn during transport.
- As far as possible the movements should be restricted.
- During transport, optimize the vehicle's ventilation to increase the volume of air exchange (e.g. opening the windows). When possible, use vehicles that have separate driver and patient compartments.
- Aerosol generating procedures to be avoided to the extent possible.
- Disinfect the ambulance after shifting patient.
- Notify the receiving facility as soon as possible.

### **Guidelines for setting up Screening Centre**

#### **Purpose of the Screening Centre is to:**

- Attend to patients of 2019 nCoV- Acute Respiratory Disease in a separate area so as to avoid these patients further infecting other patients in Out Patient Department.
- Facilitate implementing standard and droplet precautions.
- Triage the patients.
- Collect samples.

#### **The screening area should have:**

- A waiting area of about 2000 sq feet to accommodate 50-100 patients.
- Preferably standalone building with separate entry.
- Well ventilated to ensure frequent air changes. If airconditioned, then independent from central air conditioning. Exhaust air to be filtered through HEPA filter (desirable).
- Patient's seating to have at least one metre clearance on all sides.
- Avoid overcrowding of patients.
- Will have cabins for registration, clinical examination chambers, sample collection rooms and drug distribution centre.
- The waiting area should be adequately cleaned and disinfected.
- Source control (e.g. use of tissues, handkerchiefs, piece of cloth or triple layer surgical masks to cover nose and mouth) of the patient in the waiting room

when coughing or sneezing, and hand hygiene after contact with respiratory secretions.

- Facility for hand wash/ Wash rooms etc.

### **Guidelines for setting up isolation facility/ ward**

- Patients should be housed in single rooms, whenever possible.
- However, if sufficient single rooms are not available, beds could be put with a spatial separation of at least 1 meter (3 feet) from one another.
- To create a 10 bed facility, a minimum space of 2000 sq feet area clearly segregated from other patientcare areas is required.
- There should be double door entry with changing room and nursing station. Enough PPE should be available in the changing room with waste disposal bins to collect used PPEs.
- Place a puncture-proof container for sharps disposal inside the isolation room/area.
- Keep the patient's personal belongings to a minimum. Keep water pitchers and cups, tissue wipes, and all items necessary for attending to personal hygiene within the patient's reach.
- Non-critical patient-care equipment (e.g. stethoscope, thermometer, blood pressure cuff, and sphygmomanometer) should be dedicated to the patient, if possible. Any patient-care equipment that is required for use by other patients should be thoroughly cleaned and disinfected before use.
- Dedicated hand washes and wash room facilities.
- If room is air-conditioned, ensure 12 air changes/ hour and filtering of exhaust air. A negative pressure in isolation rooms is desirable for patients requiring aerosolization procedures (intubation, suction nebulisation). These rooms may have stand alone air-conditioning. These areas should not be a part of the central air-conditioning.
- If air-conditioning is not available negative pressure could also be created through putting up 3-4 exhaust fans driving air out of the room.
- In **district hospital**, where there is sufficient space, natural ventilation may be followed. Such isolation facility should have large windows on opposite walls of the room allowing a natural unidirectional flow and air changes. The principle

of natural ventilation is to allow and enhance the flow of outdoor air by natural forces such as wind and thermal buoyancy forces from one opening to another to achieve the desirable air change per hour.

- Avoid sharing of equipment, but if unavoidable, ensure that reusable equipment is appropriately disinfected between patients.
- Ensure regular cleaning and proper disinfection of common areas, and adequate hand hygiene by patients, visitors and care givers.
- **Visitors to the isolation facility should be restricted.** For unavoidable entries, they should use PPE according to the hospital guidance, and should be instructed on its proper use and in hand hygiene practices prior to entry into the isolation room/area.
- Doctors, nurses and paramedics posted to isolation facility **need to be dedicated** and not allowed to work in other patient-care areas.
- Consider having designated portable X-ray equipment.
- Corridors with frequent patient transport should be well-ventilated.
- All health staff involved in patient care should be well trained in the use of PPE.
- A telephone or other method of communication should be set up in the isolation room/area to enable patients or family members/visitors to communicate with nurses.

### **Guidelines for Critical Care facility**

- At least one identified hospital may have a 10 bed dedicated intensive care facility at state capital.
- The critical care facility is required to follow all the guidelines as mentioned above for infection control.
- Also more than or equal to 12 air changes and maintain negative pressure of 40 psi.
- Should have dedicated equipments. It should also have additional equipments to ventilate at least 10 patients manually.
- A telephone or other method of communication should be set up in the isolation room/area to enable patients or family members/visitors to communicate with nurses inside the facility.



- Would have an information board outside to update relatives on the clinical status.

### **Mortuary care**

- Mortuary staff should apply standard precautions i.e. perform proper hand hygiene and use appropriate PPE (use of gown, gloves, facial protection if there is a risk of splashes from patient's body fluids/secretions onto staff's body and face).
- Embalming, if required should be conducted according to usual procedures, subject to local regulations/legislation.
- Hygienic preparation of the deceased (e.g. cleaning of body, tidying of hair, etc) also may be done using standard precautions.

### **GUIDELINES FOR THE USE OF MASKS**

#### **Types of mask: Specification for Triple Layer Surgical Mask and N-95 Respirator Mask**

##### **The correct procedure of wearing triple layer surgical mask:**

- Unfold the pleats, make sure that they are facing down.
- Place over nose, mouth and chin.
- Fit flexible nose piece over nose bridge.
- Secure with tie strings (upper string to be tied on top of head above the ears – lower string at the back of the neck).
- Ensure there are no gaps on either side of the mask, adjust to fit.
- Do not let the mask hanging from the neck.
- Change the mask after six hours or as soon as they become wet.
- Disposable masks are never to be reused and should be disposed off.
- While removing the mask great care must be taken not to touch the potentially infected outer surface of the mask.
- To remove mask first untie the tie-string below and then the tie string above and handle the mask using the upper strings.

**Disposal of used masks:** Used mask should be considered as potentially infected medical waste:

- In the hospital setting it should be disposed off in the identified infectious waste disposal bag/container.
- In community settings where medical waste management protocol cannot be practiced, it may be disposed off either by burning or deep burial.
- During home care, patients and contacts using triple layer mask should first disinfect used mask with ordinary bleach solution or sodium hypochlorite solution and/or quaternary ammonium household disinfectant and then dispose off either by burning or deep burial.



## **MINISTRY OF HEALTH AND FAMILY WELFARE**

### **Detailed Guidelines for Infection Prevention Control for suspected cases of 2019-nCoV Acute Respiratory Disease**

Clinical triage includes early recognition and immediate placement of patients in separate area from other patients (source control). Triaging Station-Offer mask, follow hand hygiene and respiratory etiquettes. Minimize the waiting time at triage station. A self-declaration form should be filled up for all suspected cases reporting to the hospital. All individuals, including family members, visitors and HCWs should apply standard, contact and droplet precautions. Place patients in adequately ventilated single rooms. When single rooms are not available, cohort patients suspected of 2019-nCoV acute respiratory disease together with minimum distance between two patients to be 1 meter.

IPC strategies to prevent or limit infection transmission in health-care settings include the following:

#### **1. Standard Precautions**

- 1.1 Hand hygiene
- 1.2 Respiratory hygiene
- 1.3 Personal protective equipment (PPE)

#### **2. Additional Precautions**

#### **3. Bio Medical waste management**

#### **4. Laundry management**

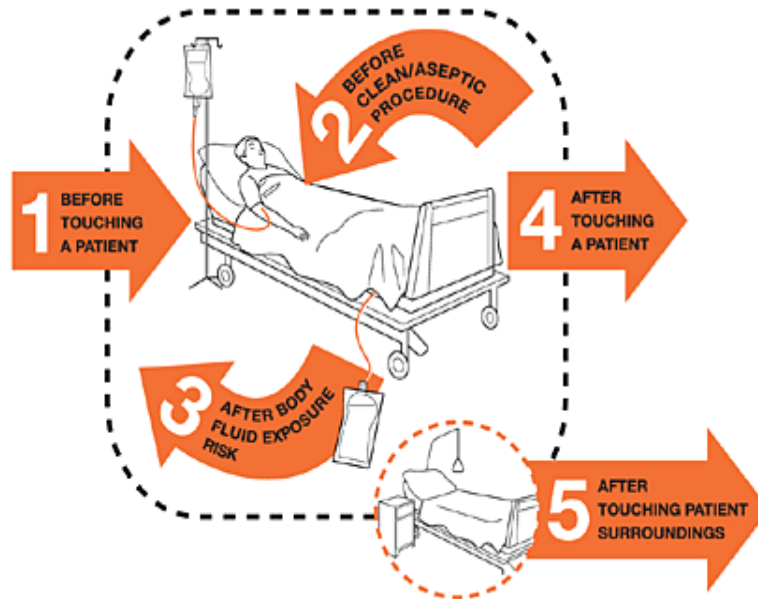
#### **5. Sample collection, storage and transportation**

#### **6. Monitor health of HCWs providing care to cases of 2019-nCoV Acute Respiratory Disease**

#### **7. Hospital Disinfection (Environmental)**

## 1.1 Hand Hygiene

- Moments of Hand Hygiene



- Steps of Hand Hygiene

### Hand-washing technique with soap and water







## 1.2 Respiratory Hygiene

- Offer a medical/surgical mask for suspected 2019-nCoV acute respiratory disease case for those who can tolerate it.
- Cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others.
- Perform hand hygiene after contact with respiratory secretions.

## 1.3 Personal Protective Equipment (PPE)

- PPE includes shoe cover, gown, mask, eye protection & gloves.
- Shoe cover should always be worn before entering the patient care area (Isolation ward etc.).
- If gowns are not fluid resistant, use a waterproof apron for procedures with expected high fluid volumes that might penetrate the gown.

**Donning & Doffing procedures should be diligently & carefully followed as given below.**

<p><b>SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)</b></p> <p>The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.</p> <p><b>1. GOWN</b></p> <ul style="list-style-type: none"><li>• Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back</li><li>• Fasten in back of neck and waist</li></ul>  <p><b>2. MASK OR RESPIRATOR</b></p> <ul style="list-style-type: none"><li>• Secure ties or elastic bands at middle of head and neck</li><li>• Fit flexible band to nose bridge</li><li>• Fit snug to face and below chin</li><li>• Fit-check respirator</li></ul>  <p><b>3. GOGGLES OR FACE SHIELD</b></p> <ul style="list-style-type: none"><li>• Place over face and eyes and adjust to fit</li></ul>  <p><b>4. GLOVES</b></p> <ul style="list-style-type: none"><li>• Extend to cover wrist of isolation gown</li></ul>  <p><b>USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION</b></p>	<ul style="list-style-type: none"><li>• Keep hands away from face</li><li>• Limit surfaces touched</li><li>• Change gloves when torn or heavily contaminated</li><li>• Perform Hand Hygiene</li></ul>
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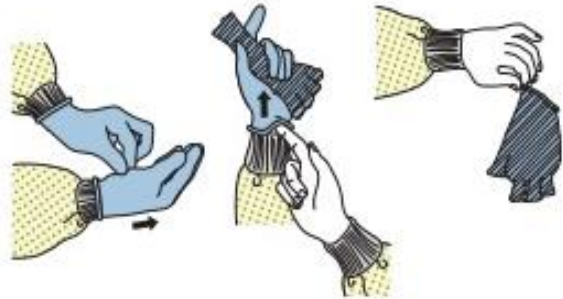
# HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

## EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

### 1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container



### 2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



### 3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container

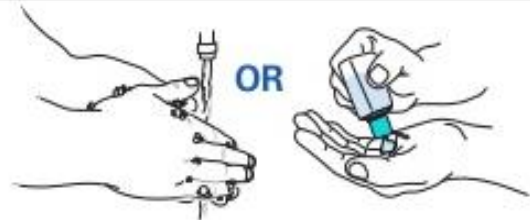


### 4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



### 5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



**PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE**

## 2. Additional precautions

- Cohort HCWs to exclusively care for cases to reduce the risk of spreading transmission.
- Place patient beds at least 1m apart;
- Perform procedures in an adequately ventilated room; i.e. at least natural ventilation with at least 160 l/s/patient air flow or negative pressure rooms with at least 12 air changes per hour (ACH) and controlled direction of air flow when using mechanical ventilation
- Limit the number of persons present in the room to the absolute minimum required for the patient's care and support.
- Use either single use disposable equipment 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 (e.g. ethyl alcohol 70%);
- Refrain from touching eyes, nose or mouth with potentially contaminated hands;
- Some **aerosol generating procedures** have been associated with increased risk of transmission of coronaviruses such as tracheal intubation, non-invasive ventilation, tracheotomy, cardiopulmonary resuscitation, manual ventilation before intubation and bronchoscopy. Ensure that HCWs performing aerosol-generating procedures use PPE with particulate respirator at least as protective as a NIOSH-certified N95, EU FFP2 or equivalent. When putting on a disposable particulate respirator, always perform the seal-check. Note that if the wearer has facial hair (beard) this can prevent a proper respirator fit.
- Avoid the movement and transport of patients out of the room or area unless medically necessary.
- Use designated portable X-ray equipment and/or other important diagnostic equipment.
- If transport is required, use pre-determined transport routes to minimize exposures to staff, other patients and visitors and apply medical mask to patient;
- Ensure that HCWs who are transporting patients wear appropriate PPE as described in this section and perform hand hygiene;
- Notify the receiving area of necessary precautions as soon as possible before the patient's arrival;



- Routinely clean and disinfect patient-contact surfaces;
- Limit the number of HCWs, family members and visitors in contact with a patient with suspected 2019 nCoV- Acute Respiratory Disease;
- Maintain a record of all persons entering the patient's room including all staff and visitors.
- Duration of contact and droplet precautions for 2019 nCoV- Acute Respiratory Disease Standard precautions should always be applied at all times. Additional contact and droplet precautions should continue until the patient is asymptomatic.

### **3. Bio Medical Waste Management from suspected case of nCoV**

- All articles like swab, syringes, IV set, PPE etc are to be discarded in yellow bag.
- All sharps like needle etc are to be collected in puncture proof container which should be discarded in yellow bag.

### **4. Laundry**

- All soiled clothing bedding and linen should be gathered without creating much motion / fluffing.
- Do not shake sheets when removing them from the bed.
- Always perform hand hygiene after handling soiled laundry items.
- Laundry should be disinfected in freshly prepared 1% bleach and then transported to laundry in tightly sealed and labeled plastic bag.

### **5. Sample collection, storage and transportation**

- Collection and handling of laboratory specimens from patients with suspected 2019 nCoV- Acute Respiratory Disease. All specimens collected for laboratory investigations should be regarded as potentially infectious, and HCWs who collect, or transport clinical specimens should adhere rigorously to Standard Precautions to minimize the possibility of exposure to pathogens.
- Ensure that HCWs who collect specimens use appropriate PPE (eye protection, medical mask, long-sleeved gown, gloves).



- If the specimen is collected under aerosol generating procedure, personnel should wear a particulate respirator at least as protective as a NIOSH-certified N95, EU FFP2 or equivalent
- Ensure that all personnel who transport specimens are trained in safe handling practices and spill decontamination procedures (As per Hospital Policy).

**Samples to be collected:**

- Nasopharyngeal swab / Nasal Swabs – 2
- Throat Swab
- Before collecting the samples, it requires to be ensured that neck is in extended position. Nasopharyngeal swab will be collected with the per nasal swab provided in the kit, after taking out the swab it is passed along the floor of nasal cavity and left there for about five second and transferred into VTM and transported to the designated lab at 4 degree Celsius as soon as possible (same day).
- For collection of samples from throat area the other sterilized swab is swabbed over the tonsillar area and posterior pharyngeal wall and finally transferred into VTM and stored and transported to the designated lab at 4 degree Celsius as soon as possible (same day).
- Other respiratory material like endotracheal aspirated / broncho-alveolar lavage in patients with more severe respiratory disease can also be collected and transported in the same way.
- Place specimens for transport in leak-proof specimen bags /Zip lock pouch (secondary container) with the patient's label on the specimen container (primary container), and a clearly written laboratory request form.
- Ensure that health-care facility laboratories adhere to appropriate biosafety practices and transport requirements according to the type of organism being handled.
- Deliver all specimens by hand whenever possible.
- Document patients full name, age / date of birth of suspected 2019-nCoV case of potential concern clearly on the accompanying laboratory request form.
- Notify the laboratory as soon as possible that the specimen is being transported.

## **6. Monitor health of HCWs providing care to cases of 2019-nCoV Acute Respiratory Disease**

HCWs and housekeeping staff providing care to cases of 2019-nCoV acute respiratory diseases cases shall be monitored daily for development of any symptoms as per the suspect case definition including charting of their temperature twice daily for 14 days after last exposure. If they develop any symptoms then standard protocol laid down for management of suspect case of 2019-nCoV acute respiratory disease shall be followed.

## **7. Hospital Disinfection (Environmental)**

- Environmental surfaces or objects contaminated with blood, other body fluids, secretions or excretions should be cleaned and disinfected using standard hospital detergents/disinfectants e.g. freshly prepared 1% Sodium Hypochlorite or 5% Lysol. Spray the surface with 0.5% to 1% solution of Sodium Hypochlorite.
- The contact period of the chemical with the surface should be min. of 30 Minutes.
- Disinfect all external surfaces of specimen containers thoroughly (using an effective disinfectant) prior to transport. E.g. Sodium hypochlorite at 1%, 500 ppm available chlorine (i.e. 1:100 dilution of household bleach at initial concentration of 5%) or 5% Lysol
- Environmental surfaces or objects contaminated with blood, other body fluids, secretions or excretions should be cleaned and disinfected using standard hospital detergents/disinfectants e.g. freshly prepared 1% Sodium Hypochlorite or 5% Lysol
- Do not spray (i.e. fog) occupied or unoccupied clinical areas with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.
- Wear gloves, gown, mask and closed shoes (e.g. boots) when cleaning the environment and handling infectious waste. Cleaning heavily soiled surfaces (e.g. soiled with vomit or blood) increases the risk of splashes. On these occasions, facial protection should be worn in addition to gloves, gown and closed, resistant shoes. Wear gloves, gown, closed shoes and goggles/facial protection, when handling liquid infectious waste (e.g. any secretion or excretion)

with visible blood even if it originated from a normally sterile body cavity). Avoid splashing when disposing of liquid infectious waste.

- Clean and disinfect mattress impermeable covers.
- Non-critical instruments /equipment (that are those in contact with intact skin and no contact with mucous membrane) require only intermediate or low level disinfection before and after use.

Intermediate Level disinfectant: Alcohols, chlorine compounds, hydrogen Peroxide, chlorhexidine,

Low level disinfectants: Benzalkonium chloride, some soaps

#### LIQUID SPILL MANAGEMENT:

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

#### References

- Infection Prevention Control Guidelines for suspected cases of Novel Coronavirus (nCoV) Atal Bihari Vajpayee Institute of Medical Sciences & Dr Ram Manohar Lohia Hospital, New Delhi-110001
- Infection prevention and control during health care when novel coronavirus (2019-nCoV) infection is suspected Interim guidance January 2020 WHO/2019-nCoV/IPC/v2020.1
- CDC guidelines on PPE <https://www.cdc.gov/HAI/pdfs/ppe/PPEslides6-29-04.pdf>

## **SJH Policy on Bio-medical waste management for BMW from patients in novel Corona Virus Ward/OPD**

**As per BMWM (Principal) rules 2016 and BMWM (Amendment) rules 2018, 2019, National IPC guidelines 2020, CDC and WHO IPC update Jan 2020**

Biomedical waste categories and their segregation, collection, treatment, processing and disposal options in Safdarjung Hospital and VMMC. Only pretreatment and segregation will be done in the hospital and the final disposal will be done by common biomedical waste treatment and disposal facility (CBMWTF). Biomedical waste devices, articles generated during diagnosis, treatment, management, immunization etc from patients with nCoV and HCW working in such ward/opd should be managed in accordance with safe routine procedures and rules.<sup>1-7</sup>

### **Yellow Category**

#### **(a) Human Anatomical Waste:**

Human tissues, biopsy: Yellow coloured non-chlorinated plastic bags.

(b) Animal anatomical waste: Not applicable in nCoV ward/OPD (only in nCoV research labs)

#### **(b) Soiled Waste:**

Items contaminated with blood, body fluids like dressings, plaster casts, cotton swabs and bags containing residual or discarded blood and blood components are disposed off in yellow bag.

(d) Cytotoxic drug vials shall not be handed over to unauthorised person under any circumstances. Expired cytotoxic drugs to be returned back to the manufacturer or supplier for incineration at temperature >1200°C. Leftover cytotoxic drugs and items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc to common biomedical waste treatment facility for incineration at >1200 °C in yellow bag or container with cytotoxic label.

#### **(e) Chemical Waste:**

Chemicals used in production of biological and used or discarded solid disinfectants, residual or discarded chemical solid waste and chemical sludge are discarded in yellow coloured non-chlorinated plastic bags or containers and disposed of by incineration by CBMWTF.

(f) Liquid waste generated due to use of chemicals in production of biologicals, used or discarded disinfectants, patients samples infected secretions, aspirated body fluids liquid from laboratory, ward, OT and disinfecting activities etc should be collected separately and made safe by disinfection by chemical treatment using **1-2% sodium hypochlorite**<sup>2,4</sup> solution for a contact period of 30 min and directed to effluent treatment system or then discharged into drains/sewers. The combined discharge should conform to the discharge norms given in schedule III, as per BMWM (Principal) rules, 2016.<sup>1,2</sup>

#### **(g) Discarded items:**

Linen, Mattresses, beddings contaminated with blood or body fluid Non-chlorinated (lime/alcoholic: 5 % Lysol for 30 minutes, 5% Phenol for 30 min) or 1-2% sodium hypochlorite chemical disinfection followed by shredding and customised to fit in nonchlorinated yellow bag for incineration.

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#### **(h) Microbiology, biotechnology waste**

Microbiology, biotechnology waste i.e. laboratory cultures, stocks or specimens of microorganisms, live or attenuated vaccines, humans and animals cell culture used in research, residual toxins culture plates dishes have to be pretreated on site by autoclaving in an autoclave safe plastic bag/container there after sent for final disposal in its respective colour category to CBMWTF. The discarded blood bags are to be counted, sealed, weighed and all the records to be made and then packed in autoclave safe plastic bags or containers to be autoclaved on site and then sent in yellow bag to CBMWTF for incineration.

#### **Red category**

Contaminated Waste (Recyclable)

(a)Wastes generated from disposable items such as tubing, drains, oxygen mask, bottles, intravenous tubes and sets (with needles cut), catheters, urine bags, and gloves are nicked, wherever applicable and put in red bag. The needles of syringes are cut with the needle destroyer/needle cutter preferably. The cut/mutilated syringe is disposed finally in red coloured non chlorinated plastic bags or containers.

#### **Translucent (White) Category**

Waste sharps including Metals:

Needles, needles from needle tip cutter or burner, scalpels, blades or any other contaminated sharp object that may cause puncture and cuts. The needles of syringes are cut with the needle destroyer/needle cutter preferably. This includes both used, discarded and contaminated metal sharps. These are stored in tamper proof, leak proof and puncture proof containers for sharps storage. Collect and send for final disposal when 3/4 full. These are sent to central common waste site in tamper proof, leak proof and puncture proof containers for final disposal to CBMWTF.

#### **Blue category: Glass and metallic implants**

The blood sample glass vials or broken or discarded and contaminated glass like slides etc, have to be disinfected (1-2% sodium hypochlorite for 30 minutes atleast) to be packed in puncture proof and leak proof boxes or containers with blue colored marking and then sent to common central waste site for final disposal to CBMWTF. The uninfected glass like medicine bottles or ampoules are noninfected and are put in puncture proof and leak proof boxes or containers with blue coloured marking. The metallic implants are pretreated in the same manner and are to be packed in separate puncture proof and leak proof boxes or containers with blue coloured marking.

### Color-coded bags & Colour Category wise Treatment

Category	Type of Waste	Type of Bag or Container to be used*	Treatment and Disposal options
(1)	(2)	(3)	(4)
Yellow	<b>(a) Human Anatomical Waste:</b>	Yellow coloured non-chlorinated plastic bags	Incineration by CBMWTF
	<b>(b) Animal Anatomical Waste:</b>		
	<b>(c) Soiled Waste:</b> Items contaminated with blood, body fluids like dressings, plaster casts, cotton swabs		Incineration by CBMWTF
	<b>(d) Expired or Discarded Medicines:</b>	Yellow coloured non-	Expired cytotoxic drugs to be returned back to the manufacturer or supplier

	antibiotics, cytotoxic drugs	chlorinated plastic bags or containers with cytotoxic labels	for incineration at temperature >1200 °C. Leftover cytotoxic drugs and items contaminated with cytotoxic drugs along with glass or plastic ampoules, vials etc to common biomedical waste treatment facility for incineration at >1200 °C.
	<b>(e) Chemical Waste: solid discarded chemicals</b>	Yellow coloured non-chlorinated plastic bags or containers	Disposed of by incineration by CBMWTF
	<b>(f) Chemical Liquid Waste:</b> Liquid Waste generated due to use of chemicals and used or discarded disinfectants.	Separate collection system leading to effluent treatment plant (ETP) system.	After resource recovery, the chemical liquid waste shall be pre-treated before mixing with other wastewater. The combined discharge shall conform to the discharge norms given in BMWM rules, 2016
	<b>(g) Discarded linen:</b> contaminated with blood or body fluid.  Routine mask and gown	Non-chlorinated yellow plastic bags or suitable packing material	Non-chlorinated (alcoholic: 5% lysol, 5% phenol) chemical disinfection followed by incineration. Incineration
	<b>(h) Microbiology, Biotechnology and other clinical laboratory waste, PVC Blood bags</b>	Autoclave safe plastic bags or containers	Autoclave or Pre-treat to disinfect.** Treated waste to be sent to CBMWTF for incineration.
Red	<b>Contaminated Waste(Recyclable)</b> Plastics tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes(without needles and fixed needle syringes) and vacutainers with their	Red coloured non chlorinated plastic bags or containers	Autoclaving/Chemical disinfection. Treated waste to be sent to CBMWTF who would send such waste to registered or authorized recyclers or for energy recovery

	needles cut) and gloves		
White (Translucent)	<b>Waste sharps</b>	Puncture proof, Leak proof, tamper proof containers	Disinfection/Autoclaving or dry heat sterilization/ sent to CBMWTF and who will ensure final disposal to iron foundries(having consent to operate from the SPCB/PCC.
Blue	<b>Glass: medicine</b> glass vials or broken or discarded and contaminated glass  <b>Metal implants/metal guns etc</b>	Puncture proof and leak proof boxes or containers with blue coloured marking  Puncture proof and leak proof boxes or containers with blue colored marking	Autoclaving/Microwaving/hydroclaving by CBMWTF and then recycling. Contaminated glass slides require pretreatment (disinfection by sodium hypochlorite)

\*Barcode label will have to be made available on every bag or container as per CPCB guidelines

\*\*For disinfection of BMW articles freshly prepared 1-2% Sodium hypochlorite is recommended

\*\*\*1% Sodium hypochlorite is 1:100 dilution (525-615 ppm of available chlorine)

\*\*\*\*Hospital supply of sodium hypochlorite is 10% or 4% (please see label and manufacturers instructions)

\*\*\*\*\*All lab waste, patient's samples, blood bags, toxins, live vaccines, cultures (liq/solid), devices used to transfer cultures need pretreatment

### Articles: bins, bags, trolleys

**Bags:** The bags used for storing and transporting biomedical waste shall be in compliance with the Bureau of Indian Standards. Till the Standards are published, the carry bags shall be as per the Plastic Waste Management Rules, 2016.

Yellow, Blue, Red and translucent bags/bins/containers are marked with Biohazard symbol, hospital logo and with barcoding to be supplied by CBMWTF.

### BINS:

**Containment of waste:** An optimum number of easy to use, standard, uniform, covered, foot-operated bins of colors i.e, yellow, red bins of appropriate size would be placed at identified places in all clinical areas.



## **DISINFECTION OF BINS:**

Chemical disinfection of the waste bins using hypochlorite solution (1-2%) should be done frequently at a separate washing facility in the hospital, **daily preferably**, at least once a week.

## **Segregation, package and then transport and storage to common waste site**

All the biomedical waste is labeled as waste type, site of generation, date of generation before transportation from the generation site. Waste is stored in the areas of generation at an identified safe area, for an interim period after which it is transported to CBMWTF for final treatment and final disposal. During this period it is the responsibility of the administration, sanitation and security staff to ensure the safety and prevention of pilferage and recycling of the waste. No untreated bio-medical waste shall be kept stored beyond a period of 48 hours.

Collection is done

- Done twice daily or more frequently from wards/laboratories
- Label is filled up by staff on duty and given to waste collectors

Each patient care area has been provided with the waste receipt (log) book to record the quantity /number of yellow, blue, red, white (translucent) bags handed over to HCW. All the staff are required to duly fill in the waste book color code wise mentioning the number and size of bags handed over and sign the slip for further record and also to fill BMW register daily colour category wise.

## **TRANSPORTATION:**

Hospital waste is transported in securely tied bags from the site of generation to central waste storage site through designated route, on dedicated, color coded, covered and leak proof wheel barrows/Trolleys. At the waste treatment premises verification of the number/size of the bags is done for each trolley by the sanitation staff for recording and quantification and barcoding before disposal. The central waste storage site is cleaned daily.

Chemical disinfection of the trolleys using hypochlorite solution is being done at the waste storage site, should be cleaned and disinfected daily.

## **Transportation to CBMWTF**

The operator of CBMWTF shall transport the bio-medical waste from the premises of an occupier to any off-site bio-medical waste treatment facility only in the vehicles having label as per BMW (Principal) rules, 2016.<sup>1,2,3,4</sup> The vehicles used for transportation of bio-medical waste shall comply with the conditions stipulated by the SPCB in addition to the requirement contained in the Motor Vehicles Act, 1988 (59 of 1988), or the rules made there under for transportation of such infectious waste. Global positioning system has been added by the CBMWTF.

## References:

- 1 Bio-Medical Waste Management (Principal) Rules, 2016. Published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-Section (i), Government of India Ministry of Environment, Forest and Climate Change. Notification; New Delhi, the 28th March, 2016.
- 2 BMW (Amendment) rules, 2018. Government of India Ministry of Environment, Forest and Climate Change. Notification; New Delhi, the 16th March, 2018.
- 3 BMW (Amendment) rules, 2019. Government of India Ministry of Environment, Forest and Climate Change. Notification; New Delhi, Feb, May 2019.
- 4 National Guidelines for Infection Prevention and Control in Healthcare Facilities. MoHFW, Jan 2020
- 5 WHO. Infection prevention and control of epidemic and pandemic prone acute respiratory infections in healthcare. WHO guidelines. WHO; 2014 ([http://www.who.int/csr/bioriskreduction/infection\\_control/publication/en/](http://www.who.int/csr/bioriskreduction/infection_control/publication/en/), accessed on 31 Jan 2020).
- 6 WHO. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. Interim guidance. 25 Jan 2020
- 7 CDC. Infection Control 2019 Novel Coronavirus. Update 28 Jan, 2020





## Ministry of Health & Family Welfare

### 2019-nCoV Acute Respiratory Disease Prevention and Control Guidelines

#### Ambulance Transfer

When a suspect case of **2019 nCoV- Acute Respiratory Disease** patient has to be transported, the following precautions should be taken by ambulance personnel accompanying the patient:

##### **On arrival to the healthcare facility from where the patient is to be transferred**

**A. Decontaminate hands (alcohol gel/rub) (Fig 1, 2)**

**B. Don Personal Protective Equipment (PPE): (Fig 3)**

A patient requiring Aerosol Generating Precaution: N95 mask with respirator, gloves, long sleeved fluid repellent gown and goggles (Annexure donning PPE)

**C. Inform the hospital of the admission/transfer of a potentially infectious person**

##### **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 **2019 nCoV- Acute Respiratory Disease** should not travel with other patients

##### **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

## **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 (Fig 4)
- Perform hand hygiene

## **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 labelling 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)

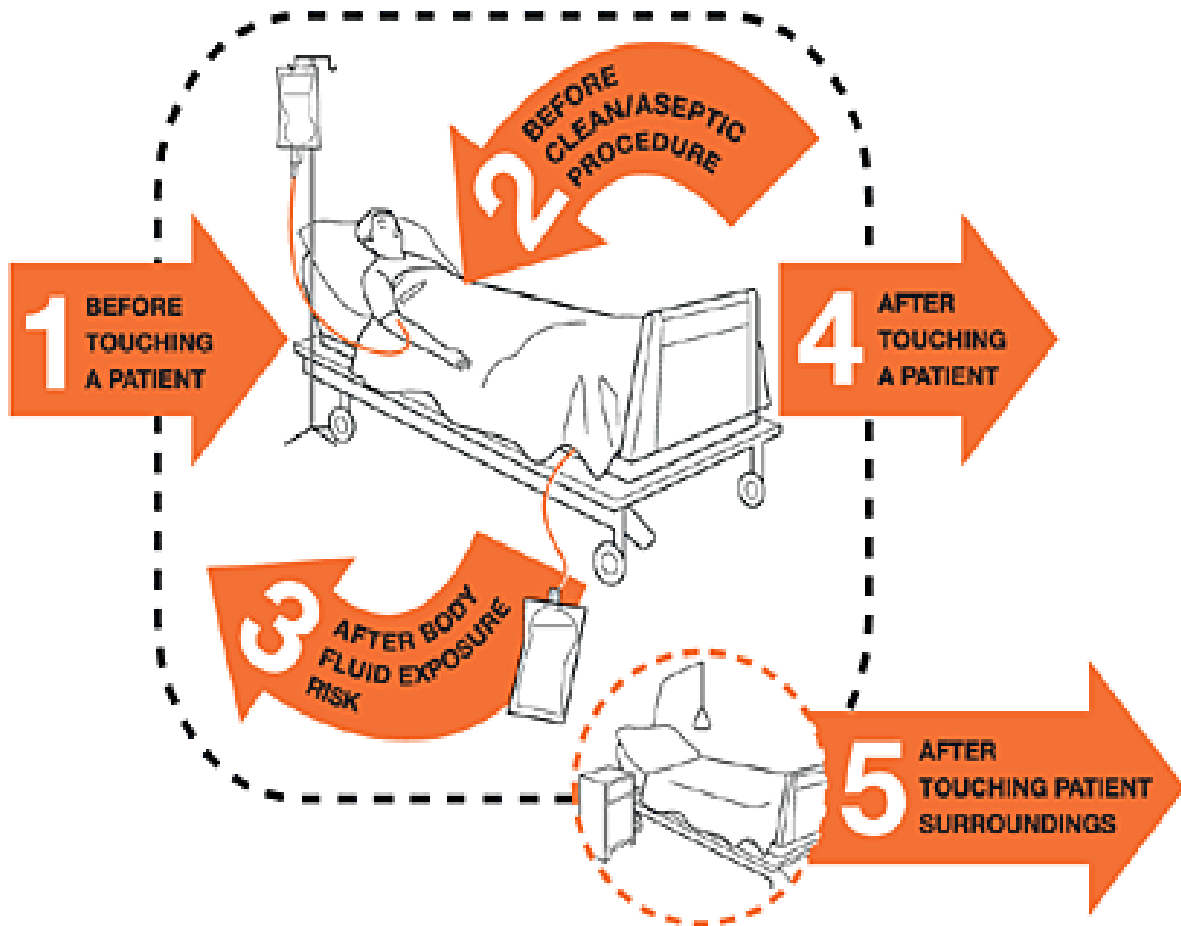
- **Management of waste**

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

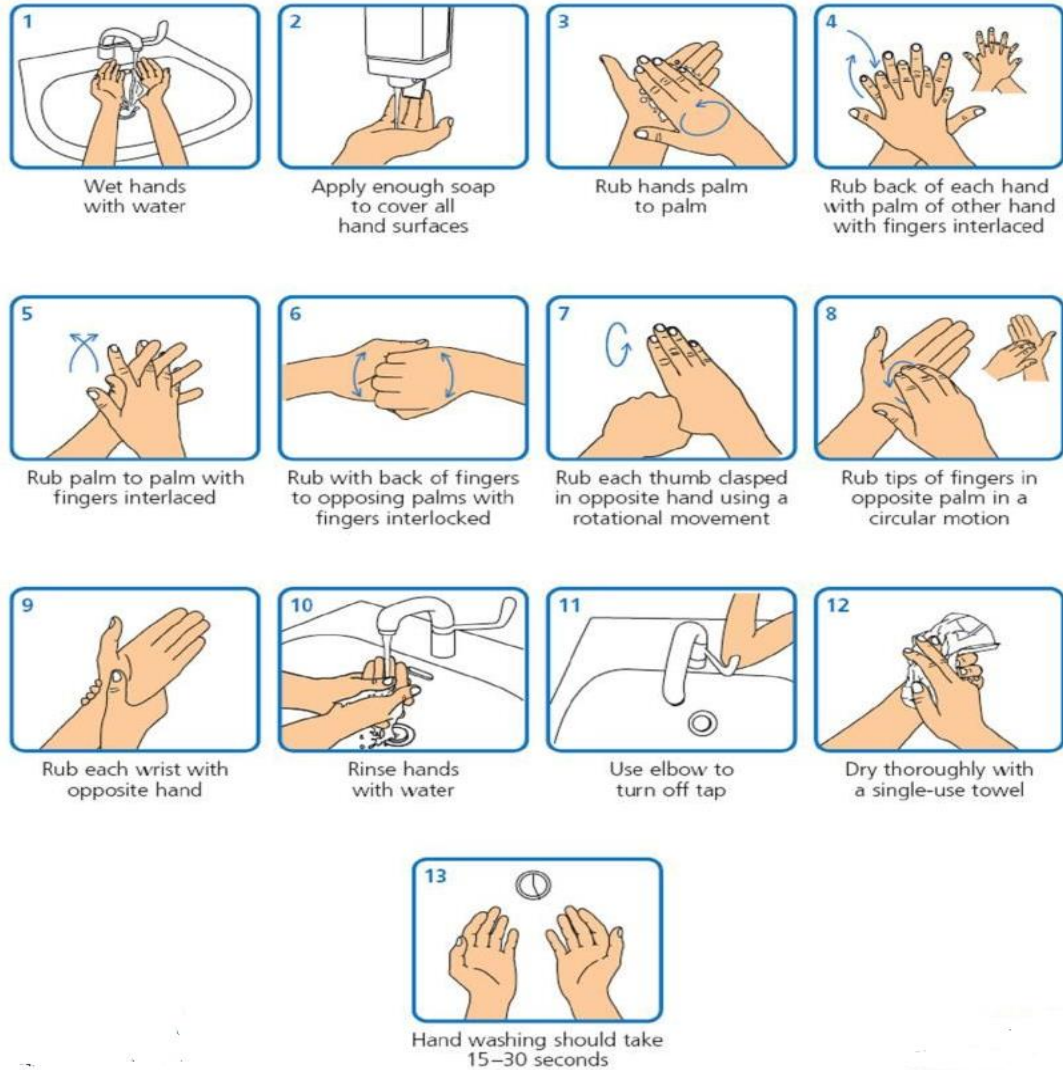
In the ambulance, if the driver's chamber is not separate, driver should also use PPE.

**Fig 1 Hand Hygiene: Moments of Hand Hygiene**



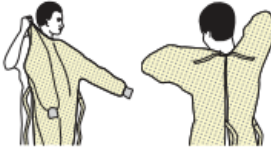



**Fig 2 Steps of Hand Hygiene**

## Hand-washing technique with soap and water



Steps 3-9 are same while using hand rub

**Fig 3 Donning procedures should be diligently & carefully followed as given below.**

<p><b>SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)</b></p> <p>The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.</p> <p><b>1. GOWN</b></p> <ul style="list-style-type: none"> <li>Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back</li> <li>Fasten in back of neck and waist</li> </ul>  <p><b>2. MASK OR RESPIRATOR</b></p> <ul style="list-style-type: none"> <li>Secure ties or elastic bands at middle of head and neck</li> <li>Fit flexible band to nose bridge</li> <li>Fit snug to face and below chin</li> <li>Fit-check respirator</li> </ul>  <p><b>3. GOGGLES OR FACE SHIELD</b></p> <ul style="list-style-type: none"> <li>Place over face and eyes and adjust to fit</li> </ul>  <p><b>4. GLOVES</b></p> <ul style="list-style-type: none"> <li>Extend to cover wrist of isolation gown</li> </ul>  <p><b>USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION</b></p>	<ul style="list-style-type: none"> <li>Keep hands away from face</li> <li>Limit surfaces touched</li> <li>Change gloves when torn or heavily contaminated</li> <li>Perform Hand Hygiene</li> </ul>
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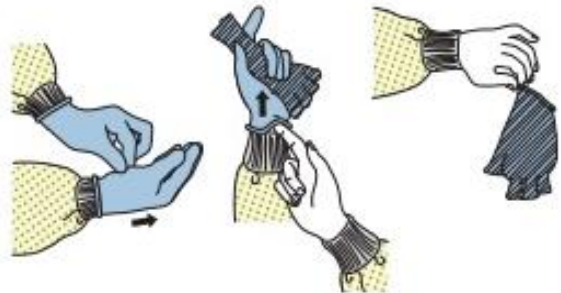
**Fig 4: Doffing procedures should be diligently & carefully followed as given below:**

## HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

There are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example. **Remove all PPE before exiting the patient room** except a respirator, if worn. Remove the respirator **after** leaving the patient room and closing the door. Remove PPE in the following sequence:

### 1. GLOVES

- Outside of gloves are contaminated!
- If your hands get contaminated during glove removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Using a gloved hand, grasp the palm area of the other gloved hand and peel off first glove
- Hold removed glove in gloved hand
- Slide fingers of ungloved hand under remaining glove at wrist and peel off second glove over first glove
- Discard gloves in a waste container



### 2. GOGGLES OR FACE SHIELD

- Outside of goggles or face shield are contaminated!
- If your hands get contaminated during goggle or face shield removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Remove goggles or face shield from the back by lifting head band or ear pieces
- If the item is reusable, place in designated receptacle for reprocessing. Otherwise, discard in a waste container



### 3. GOWN

- Gown front and sleeves are contaminated!
- If your hands get contaminated during gown removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Unfasten gown ties, taking care that sleeves don't contact your body when reaching for ties
- Pull gown away from neck and shoulders, touching inside of gown only
- Turn gown inside out
- Fold or roll into a bundle and discard in a waste container



### 4. MASK OR RESPIRATOR

- Front of mask/respirator is contaminated — DO NOT TOUCH!
- If your hands get contaminated during mask/respirator removal, immediately wash your hands or use an alcohol-based hand sanitizer
- Grasp bottom ties or elastics of the mask/respirator, then the ones at the top, and remove without touching the front
- Discard in a waste container



### 5. WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE



PERFORM HAND HYGIENE BETWEEN STEPS IF HANDS BECOME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE





# Guidelines for Home based care of 2019-nCoV

## Novel Corona Virus (2019-nCoV)

Any person(s) suggestive of 2019-nCoV, should be confined at home for a period of 14 days and avoid close contact with public and other members in the family.

### Guiding Principles for home care

1. Be informed about the illness.
2. Stay home, preferably isolate himself / herself in a separate & well-ventilated room. Avoid common areas frequented by other members of the family.
3. Avoid close contact with others. If inevitable, always maintain at-least two metres distance.
4. Avoid having visitors.
5. Avoid frequent touching of face
6. Avoid hand shaking and wash hands frequently with soap and water. In case of non-availability of soap and water, commercially available hand rubs can be used
7. Take plenty of fluids.
8. Follow cough etiquettes -
  - Cover mouth and nose with a tissue/ handkerchief when coughing or sneezing; In case tissue/handkerchief is not available cough/ sneeze onto your upper arm or shoulder; coughing/ sneezing directly onto hands should not be done.
  - Turn away from others when coughing or sneezing
  - Do not spit/blow nose here and there, use a water filled receptacle for collecting sputum, thereby minimizing aerosol generation.

**Monitor your health for appearance of symptoms like fever, cough and/or breathing difficulty. If you develop any of these symptoms Please do contact the nearest Government Health Facility.**

**For any further information Please contact District Surveillance Office.**





Ministry of Health & Family Welfare  
Government of India

# Reduce the risk of Coronavirus infection

## Follow these important precautions

Coronavirus is a new disease which is happening in China and has affected other countries. The virus has flu like symptoms such as:



Fever



Cough



Difficulty in breathing



If you have returned from **Wuhan, China** after 15th January, then get yourself tested for 2019-nCoV. To know about the centres for testing, call the Ministry of Health and Family Welfare helpline +91-11-23978046

If you have returned from China in the last 15 days or have been in contact with any person affected by Coronavirus, then limit your contact with others and follow these important steps:



Limit contact with everybody for the next 14 days and sleep in a separate room



Cover your nose and mouth while sneezing



Wash your hands with soap regularly



Stay far away from persons who have cough, cold and fever



If you have cough, fever or difficulty in breathing, contact a doctor immediately

If you develop fever, cough and difficulty in breathing within 28 days of return from China, immediately call the Ministry of Health and Family Welfare helpline

24X7

+91-11-23978046

Stay protected!

Stay safe from Coronavirus!

[www.mohfw.nic.in](http://www.mohfw.nic.in)  
[www.mygov.in](http://www.mygov.in)  
[www.pmindia.gov.in](http://www.pmindia.gov.in)

YouTube [mohfwindia](https://www.youtube.com/mohfwindia)  
Twitter [@MoHFW\\_INDIA](https://twitter.com/MoHFW_INDIA)

<http://ncdc.gov.in/>  
Twitter [@director\\_NCDC](https://twitter.com/director_NCDC)



## **ANNEXURE 2 – Format For Case-Wise Contact Listing And Follow – Up**

<b>Case Information</b>																																			
Name		Age (yrs)		Sex (M/F)		Address	District	Date of Symptom Onset	Any other information																										
<b>Contact Information and follow up</b>																																			
S. No.	Date of Contact	Name	Age (yrs)	Sex (M/F)	Address	District	Phone Number	Day of follow - up (Put a 'X' if the contact has no symptom and put a '√' if the contact has one of the following symptoms listed below)																											
								1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

**Form A**  
**NATIONAL CENTRE FOR DISEASE CONTROL**  
**(To be filled for 2019-nCoV Acute Respiratory Disease)**

<b>A</b>	<b>PATIENT INFORMATION</b>			
	Date of reporting to health facility:	Name of Reporting Health Facility:	Date of interview	
	State	Local Patient ID.....		
	Name of interviewer	Address of interviewer:	Contact Number of interviewer	
	Name of patient:	Age	Gender	
	Case Classification*: Confirmed <input type="checkbox"/> Suspect <input type="checkbox"/>			
<b>B</b>	<b>SOCIODEMOGRAPHIC PROFILE</b>			
	Residency: Indian Non-Indian(name of country).....			
	Postal Address	District	Phone number	email id
<b>C</b>	<b>CLINICAL INFORMATION</b>			
<b>1</b>	<b>Patient clinical course</b>			
1.1	Date of Onset of symptoms			
1.2	Date of first contact with health facility (name of health facility: )			
1.3	Date of admission (name of health facility: )			
1.4	Outcome (circle): Under treatment/ Discharged/ LAMA/ Died/ Cured			1.5 Date of death(if applicable)
1.6	Cause of death(As mentioned on death certificate):			
1.7	Was patient ventilated Yes/No			
<b>2</b>	<b>Patient Symptoms at admission (tick all reported)</b>			
a)	Fever/chills	f) Sore throat	j) Nausea/Vomiting	
b)	General weakness	g) Breathlessness	k) Headache	
c)	Cough	h) Diarrhea	l) Irritability/confusion	
d)	Runny nose	i) Pain(circle)muscular, chest, abdominal, joint		
e)	Any other, Specify			
<b>3</b>	<b>Patient signs at admission: Details of following Signs to be taken from the case sheet if the patient is admitted</b>			
a)	Temperature	d) Abnormal Lung X-Ray findings (yes/no)	g) Coma(yes/no)	
b)	Stridor (yes/ no)	e) Tachypnoea(yes/no)	h) Seizure(yes/no)	
c)	Redness of eyes (yes/no)	f) Abnormal lung auscultation(yes/no)	i) Any other(specify)	
<b>4</b>	<b>Underlying medical conditions (tick all that apply)</b>			
a)	COPD	f) Hypertension	k) Chronic neurological or neuromuscular disease	
b)	Chronic Renal Disease	g) Asthma	l) Heart disease	
c)	Bronchitis	h) Pregnancy (trimester)	m) Immunocompromised condition including HIV, TB	
d)	Malignancy	i) Post-partum(< 6 weeks)	n) Any other(mention)	
e)	Diabetes	j) Liver Disease	o) None	
<b>D</b>	<b>EXPOSURE HISTORY</b>			
<b>5</b>	Occupation (circle): Student/ Businessman/ Health care worker/Health care lab worker/ animal handler/ any other (specify).....			
<b>6</b>	H/O contact with 2019-nCoV case (Circle): Yes/ No			
6.1	If yes, then was it any of the following (tick appropriate option)			
a)	laboratory confirmed case of 2019-nCoV	b) person who is under investigation for 2019-nCoV while that person was ill		
6.2	If yes to Q. 6, then mention contact setting (tick all that apply)			
a)	While taking samples/ other investigations	f) Visit to a place where 2019-nCoV cases are treated or sampled(specify detail)		
b)	Clinical care of case (among HCW)	h) Immigration Staff at Point of Entry (details of place)		
c)	Housekeeping (Hospital)	i) Others, Specify		
d)	Caregiver of the case (specify details of case)	j) Not known		
<b>7</b>	Is patient a member of a cluster of patients with severe acute respiratory illness (e.g., fever and pneumonia requiring hospitalization) of unknown etiology in which nCoV is being evaluated? (Yes/No)			
<b>E</b>	<b>TRAVEL HISTORY</b>			

8	Have you travelled outside India in the past one month? Yes/ No. If yes then give date of arrival and fill details from Q. 8.1 onwards else skip to Q.9		8.1 Date of arrival to India:
8.2	Have you visited China? Yes/No If yes, then fill following columns else skip to Q. 8.3		
a)	Duration of stay:	b) Date of arrival in China:	c) Date of departure from China:
d)	Did you visit Wuhan (yes/no)	e) Any other places visited in China (specify)	
f)	During your stay, did you visit any animal market? Yes/No		
8.3	Details of visit to any other country in past one month: <i>Names of the countries</i>		
a)	Duration of stay: <i>Country name&amp; duration</i>	Date of arrival:	Date of departure:
b)	Duration of stay: <i>Country name&amp; duration</i>	Date of arrival:	Date of departure:
9	Have you travelled within India in the past one month? Yes/ No. If no, skip to Section F		
	If yes, details of visit to other places: <i>Names of places</i>		
a)	Duration of stay: <i>Place &amp; duration</i>	Date of arrival:	Date of departure:
b)	Duration of stay: <i>Place &amp; duration</i>	Date of arrival:	Date of departure:
c)	Duration of stay: <i>Place &amp; duration</i>	Date of arrival:	Date of departure:
F	<b>LABORATORY INFORMATION (to be obtained from treating physician)</b>		
10	Any sample collected for confirmation of 2019-nCoV case (y/n)		
a)	If yes, then Type of sample collected	Date of collection	Sent to    Test Performed    Result
b)	If yes, then Type of sample collected	Date of collection	Sent to    Test Performed    Result
c)	If yes, then Type of sample collected	Date of collection	Sent to    Test Performed    Result

### Suspect case

A. Patients with acute respiratory illness (fever, cough, breathing difficulty), **AND** with no other etiology that fully explains the clinical presentation **AND** at least one of the following:

- a history of travel to or residence in China in the 14 days prior to symptom onset, or
- patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.
- worked or attended a health care facility where a confirmed case of 2019-nCoV is admitted in the last 14 days
- close contact with a confirmed case of 2019-nCoV in the 14 days prior to illness onset, or

B. A suspect case for whom testing for 2019-nCoV is inconclusive

### Confirmed case

A person with laboratory confirmation of 2019-nCoV infection, irrespective of clinical signs and symptoms.

G	<b>ENLIST THE CONTACTS** IN THE FOLLOWING FORMAT</b>				
S. No.	Name	Age	Gender	Type of contact(Family (f), community(c), health care facility(h))	Contact details (Phone Number)

### Contact\*\*

- Health care associated exposure, including providing direct care for 2019-nCoV patients, working with health care workers infected with 2019-nCoV, visiting patients or staying in the same close environment of a 2019-nCoV patient. Clinicians should also be alert to the possibility of atypical presentations in patients who are immunocompromised;
- Working together in close proximity or sharing the same classroom environment with a with 2019-nCoV patient
- Traveling together with 2019-nCoV patient in any kind of conveyance
- Living in the same household as a 2019-nCoV patient



# Risk communication and community engagement (RCCE) readiness and response to the 2019 novel coronavirus (2019-nCoV)

Interim guidance v2

26 January 2020

[WHO/2019-nCoV/RCCE/v2020.2](#)



This document provides checklists developed by WHO for risk communication and community engagement (RCCE) readiness and initial responses to the 2019 novel coronavirus (2019-nCoV) recently identified in Wuhan, Hubei Province, China (2019-nCoV). The objective of this document is to provide actionable guidance for countries to implement effective RCCE strategies that will help protect the public's health during the early response to an nCoV. This document includes recommended RCCE goals and actions for countries preparing for nCoV cases and for countries that already have confirmed cases of 2019-nCoV infection.

WHO will update these recommendations as new information becomes available. This interim guidance was adapted from WHO's RCCE guidance and training materials.

## Why is it important to include RCCE as part of a national public health emergency response?

One of the major lessons learned during public health events of the 21st Century – including outbreaks of severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), influenza A(H1N1) and Ebola – is that RCCE is integral to the success of responses to health emergencies. Every public health emergency faces new communication challenges and can benefit from lessons learned previously. The nCoV outbreak has and will continue to challenge public health systems and their ability to effectively communicate with their populations. Challenges such as communicating uncertainty and risk while addressing public concern can lead to a range of outcomes, including a loss of trust and reputation, economic impacts, and – in the worst case – a loss of lives. While there are always new lessons to be learned, there are actions we know will work. This is a call to leaders to ensure that RCCE is an essential component of your health emergency readiness and response activities for the following reasons.

**One of the most important and effective interventions in a public health response to any event is to proactively communicate** what is known, what is unknown and what is being done to get more information, with the objectives of saving lives and minimizing adverse consequences.

**RCCE helps prevent infodemics (an excessive amount of information about a problem that makes it difficult to identify a solution), builds trust in the response and increases the probability that health advice will be followed.** It minimizes and manages rumours and misunderstandings that undermine responses and may lead to further disease spread.

**Regular and proactive communication and engagement** with the public and at-risk populations can help alleviate confusion and avoid misunderstandings.

**People have the right to be informed** about and understand the health risks that they and their loved ones face.

**The perception of risk among affected populations often differs from that of experts and authorities.** Effective RCCE can help bridge that gap by determining what people know, how they feel and what they do in response to disease outbreaks, as well as what they ought to know and do to bring the outbreak under control. Effective RCCE helps transform and deliver complex scientific knowledge so that it is understood by, accessible to and trusted by populations and communities.

**Effective RCCE uses community engagement strategies to involve communities** in the response and develops acceptable and beneficial interventions to stop further amplification of the outbreak and to ensure that individuals and groups take protective measures.

**RCCE is essential** for surveillance, case reporting, contact tracing, caring for the sick, delivering clinical care and gathering local support for any logistic and operational needs for the response.

**Effective RCCE can minimize social disruption.** Therefore, in addition to protecting health, it can protect jobs, tourism and the economy.

## RCCE readiness checklist for countries preparing for a possible 2019-nCoV imported case (no cases yet identified)

### Goals

- ☐ Communicate about preparedness measures and communicate the public health advice for your country.
- ☐ Prepare to communicate about a first case in your country: what is unknown and about the uncertainty of what is known.
- ☐ Assess national and subnational communication capacity (both persons and resources).
- ☐ Identify who will be the main actors and form partnerships with them.
- ☐ Plan for the activation and implementation of an RCCE plan.
- ☐ Identify and train emergency RCCE staff and potential surge staff on plans and procedures.

### Action steps

#### Risk communication systems

- ☐ Ensure that the highest levels of government agree to include RCCE in preparedness and response activities and are ready to release information to protect the public's health in a rapid, transparent and accessible manner.
- ☐ Review existing RCCE plans and consider whether adjustments are needed for an outbreak of nCoV infection.
- ☐ Agree on procedures to ensure the timely release of information, such as clearance procedures for messages and information products: keep clearance chains short.
- ☐ Prepare a budget for communication (including scale up).
- ☐ Set up an RCCE team and define members' roles and responsibilities.

#### Internal and partner coordination

- ☐ Identify partners – such as other agencies, organizations, community planners and healthcare workers – and their contact information (in the case of an nCoV outbreak consider, for example, the ministries of agriculture and travel and tourism, as well as hospital systems); should an outbreak occur, these partners should be notified and work together as a multisectoral RCCE response team.
- ☐ Assess the communication capacity of all relevant partners: identify the typical target audiences and channels of communication used by partners.
- ☐ Plan and agree on communication roles and responsibilities using standard operating procedures (SOPs) (e.g., determine which agency will speak first on which issue, what specific topics and audiences will be best addressed through which agency or partner, how messaging will be aligned).

#### Public communication

- ☐ Review the roster of spokespeople at all levels; list their areas of expertise in the context of an nCoV outbreak; and, if necessary, train them.
- ☐ Produce and pre-test message templates to announce the first case, action taken, public health advice and follow-up communications.
- ☐ Identify key media; create and/or update a list of journalists and foster good relations with the media by providing regular information on the evolution of the outbreak and your country's preparedness.
- ☐ Identify media and other communication channels and influencers, and assess their potential to reach the target audiences: use the channels and influencers that are trusted, preferred and regularly used by the target audiences. In the context of nCoV, it is critical that health professionals are aware of public concerns and trained to provide public health advice to people.

#### Community engagement

- ☐ Establish methods for understanding the concerns, attitudes and beliefs of key audiences.
- ☐ Identify the target audiences, and gather information about their knowledge and behaviours (e.g., who they trust, how they are likely to receive information, their daily habits, their concerns).
- ☐ Engage through social media: proactively inform audiences and collect and answer all questions.
- ☐ Engage through radio programs so that people can call in and ask questions.
- ☐ Identify community influencers (e.g., community leaders, religious leaders, health workers, traditional healers, alternative medicine providers) and networks (e.g., women's groups, community health volunteers, youth associations, religious groups, unions, and social mobilizers for polio, malaria, HIV) that can help with community engagement.
- ☐ Anticipate special information and engagement needs for people who are disabled or illiterate.

### **Addressing uncertainty and perceptions and managing misinformation**

- ☐ Be prepared to communicate about the first nCoV case before the full picture is known by ensuring leaders agree to communicate with affected populations by addressing populations' concerns and questions while offering actions that can be taken to protect their health.
- ☐ Establish a system for listening to public perceptions as well as for finding out about rumours and misinformation, for example, by monitoring media and social media and by gathering feedback from healthcare workers and hotlines; if necessary, establish systems for responding to rumours, misinformation and frequently asked questions.
- ☐ Keep in mind to always establish dialogue in any activity you implement in order to systematically collect and provide answer to all questions coming from the public.

### **Capacity building**

- ☐ Consider what training will be needed for RCCE responders about what is known and unknown about nCoV, and current plans and procedures, as well as what subnational preparation is needed for an RCCE response.

## RCCE initial response checklist for countries where one or more 2019-nCoV cases have been identified

### Goals

- ☐ Adapt and apply action steps from the readiness checklist above if this has not already been completed.
- ☐ Establish, build and/or maintain trust with the population through ongoing two-way communication and engagement that regularly addresses misunderstandings, misinformation, rumours and frequently asked questions.
- ☐ Encourage people to adopt protective behaviours.
- ☐ Manage expectations and communicate uncertainties.
- ☐ Coordinate and encourage collaboration among response partners.
- ☐ Assess the initial perception of risk among affected and at-risk populations.
- ☐ Provide information and guidance.

### Action steps

#### Risk communication systems

- ☐ Adapt the existing RCCE plan to the response and activate the RCCE response team and plan.
- ☐ Activate the spokespersons identified for the emergency.
- ☐ Draw up timelines for communication activities and products.
- ☐ Monitor the RCCE response by identifying processes that delay the release of information and create confusion among affected populations.

#### Internal and partner coordination

- ☐ Activate SOPs for coordinating RCCE activities with other response agencies and partners.
- ☐ Link national, regional and local RCCE operations.
- ☐ Assign responsibilities for internal communication (within and between each response agency) and external communication (to the public).
- ☐ Coordinate message preparation, consistency and dissemination.

#### Public communication

- ☐ Announce the first nCoV case early, and update information after a risk assessment and an analysis of risk perception have been undertaken.
- ☐ Provide information as soon as it is received, even if it is not complete, and openly explain the degree to which information is uncertain (i.e., manage uncertainty); provide the public with regular channels through which they can get updated information (e.g., hotlines, a website).
- ☐ Produce and test messages, including messages about public health advice.
- ☐ Make sure messages are consistent across sectors and levels.
- ☐ Use trusted and effective communication channels that the target audiences regularly use.
- ☐ Engage, train and activate trusted influencers for the audiences, particularly including healthcare workers.

#### Community engagement

- ☐ Conduct a rapid risk perception analysis based on existing formal and informal information.
- ☐ Monitor possible barriers to the uptake of protective behaviours.
- ☐ Segment the audiences for the communication response (e.g., affected people, healthcare workers, political leaders, donors).
- ☐ Translate materials into relevant languages and adapt them to appropriate literacy levels.
- ☐ Develop short multimedia pieces that present key information (e.g., explain the disease etiology, symptoms, transmission, how to protect oneself and what to do if someone gets sick) and that can be shared online and transmitted on TV.

#### Addressing uncertainty and perceptions and managing misinformation

- ☐ Communicate what is known and what is not known: explain the degree to which uncertainty exists.
- ☐ Activate rumour monitoring and response mechanisms, and try to determine what issues might be causing rumours.
- ☐ Monitor mass and social media, hotlines, healthcare worker feedback from patients, and community concerns, and continually apply feedback into the adapted RCCE strategy.

#### Capacity building

- ☐ Plan to provide regular, updated guidance to all RCCE responders.
- ☐ Train surge staff.

- ☐ Consider training leaders, responders and spokespeople on RCCE guidance as needed.

## RCCE crisis and control checklist for countries with ongoing 2019-nCoV transmission

### Goals

- ☐ Adapt and apply action steps from the readiness and initial response checklists above if this has not already been completed.
- ☐ Maintain trust by listening to the population and modifying your plan for risk communications depending on people's perceptions and questions.
- ☐ Empower and foster resilience in individuals, groups and communities.
- ☐ Ensure that ongoing and nimble support is provided for the response so that it adapts to the needs of the affected populations.
- ☐ Monitor the process so that it can be evaluated.

### Action steps

#### Risk communication systems

- ☐ Strengthen the surge capacity of communicators and community engagement experts.
- ☐ Develop, continually update and share RCCE strategies according to response needs.
  - Systems and staff, such as risk communication, health education/promotion and social science experts, should be activated at provincial and state health departments, in healthcare settings and hospitals, at transit points and at other community gathering points.
- ☐ Monitor RCCE campaigns.

#### Internal and partner coordination

- ☐ Strengthen engagement with partners to:
  - share information in a timely information to avoid inconsistent and potentially conflicting guidance;
  - diversify relevant channels to disseminate important health messages;
  - gain new audiences by cross-linking communication materials;
  - benefit from others' financial and human resources;
  - publish materials jointly as appropriate (e.g., press releases, situation reports, health protection guidance); and
  - broaden the reach of community engagement activities by using partners' strengths and outreach capacities.

#### Public communication

- ☐ Identify spokespersons based on the trust they have with the population, the type of message that needs to be conveyed (e.g., about political commitment, technical expertise, health protection) and/or the severity of the situation.
- ☐ Make sure messages are consistent across sectors and levels.
- ☐ Share information regularly (ideally each day at the same time of day).
- ☐ Share leadership and response decision-making in messages to the public so that the reasoning behind difficult decisions is clear.
- ☐ Share stories, photos and videos that illustrate key messages.
- ☐ Ensure that the public knows where to obtain up-to-date information regularly (e.g., on websites, during daily press briefings, through hotlines).
- ☐ Provide regular, transparent communication through the channels that the targeted audiences use.
- ☐ Use traditional media, the Internet and social media, hotlines and SMS as appropriate.

#### Community engagement

- ☐ Maintain two-way communication with affected audiences to understand and respond to their concerns, attitudes, beliefs, and barriers to following health guidance through mechanism such as
  - hotlines operated by medical students, who can answer calls and engage on social media, and
  - call-in radio programs where information is provided and the public can ask questions.
- ☐ Monitor those who are affected to ensure that they follow health guidance, and identify barriers to engaging in protective behaviours.
- ☐ Engage with trusted influencers, particularly healthcare workers, to communicate with affected populations, especially those who are hard to reach.
- ☐ Establish consistent feedback between communities and the emergency response team, and provide actionable guidance for emergency responders to better meet the health protection needs of communities.

### **Addressing uncertainty and perceptions and managing misinformation**

- ☐ Establish regular feedback and capture common questions, misunderstandings and misinformation through health hotlines, healthcare workers and communities.
- ☐ Ensure that the results of monitoring traditional and social media are assessed rapidly through the team set up for this purpose.
- ☐ Engage with influencers to capture people's perceptions through their feedback.
- ☐ Prepare guidance according to people's perceptions and concerns, and repeat guidance through a number of information channels.

### **Capacity building**

- ☐ Ensure that a lexicon of terminology and cleared guidance messages are shared with responders.
- ☐ Update skills training among RCCE responders as new methodologies and campaigns are rolled out.
- ☐ Consider training leaders, responders and spokespeople on RCCE guidance as needed.

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WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

Hospital Preparedness for n- Corona Virus Disease Hospital Assessment Checklist				
<b>1 Generic Hospital Information</b>				
1.1	Name of the Hospital			Comments
1.2	Address			
1.3	Contact No.			
1.4	Name of Director/ Med Supdt.			
	Contact Number			
1.4	Name of Second in Command			
	Contact Number			
1.5	Total Number of Beds in the Hospital			
<b>2 Hospital Plan</b>				
2.1	Hospital Disaster Plan/ Manual	Yes	No	
2.1.1	The Manual has provided for surge capacity to manage an outbreak of Emerging diseases (EVD)			
2.2	Hospital Committee/ Adhoc Group to support technical decision making	Yes	No	
<b>3 Isolation Facility</b>				
3.1	Location within the hospital (Away from main crown, ground floor, level etc)			
3.2	No of beds available			
3.1	No. of beds available as single isolation rooms with washroom facility.			
3.2	By use of Exhaust fans (direction must outside & not towards dormitory /patient waiting area)	Yes	No	
3.3	Ante room / changing room attached to the isolation facility	Yes	No	
3.4	Separate entry to the isolation facility	Yes	No	
<b>4 Infection prevention and control; practices</b>				
4.1	Hand washing Facility	Yes	No	
4.2	Hand sanitizer	Yes	No	
4.3	Availability of 24 X 7 Water & Generator Back up	Yes	No	
4.4	Availability of Sodium Hypochlorite in different strengths.	Yes	No	
4.5	Facilities for disposable of sharps, and other consumable wastes as per bio medical waste management rules.	Yes	No	
4.6	Disposable bags available at the ante rooms for bio medical hazard	Yes	No	



4.7	Decontamination of infectious waste done prior to disposal through identified waste management agency.	Yes	No	
4.8	Frequency of Disinfection of floors, door knobs, bed railings etc.			
4.9	Hospital infection Control Committee exists	Yes	No	
4.10	Frequency of meeting & last date when the committee met			
4.11	Infection Control Protocols available	Yes	No	
4.12	Hospital workers knowledgeable about hand hygiene, cough Etiquettes, distancing measures Use of PPE			
4.13	Laid down protocol for limiting entry of visitors	Yes	No	
5	<b>ICU/ Critical care (AC)</b>			
5.1	Number of intensive care beds available and earmarked for nCorona virus disease			
5.2	ICU beds available within the nCorona virus disease isolation facility	Yes	No	
5.3	Mode of Oxygen availability Cylinders/ Central supply with Generator backup			
5.4	Consumables: masks, respirators, ET tubes, etc for managing critical patient available.	Yes	No	
5.5	Ventilators, Monitors, Pulse, Dialysis machine, Oxymeters, Nebulizers, Syringe infusion pumps etc for managing, ECG machine critical patient available	Yes	No	
5.6	Specialists/ Physicians trained in critical care/ intensive care/ respiratory medicine to manage cases	Yes	No	
5.7	Standard case management protocol available	Yes	No	
5.8	Availability of dedicated doctor, nurses and support staff for ncorona cases			
5.9	Training on Donning and Doffing of PPE to ICU staff.			
6	<b>Laboratory</b>			

6.1	Laboratory with in the hospital has the required facilities to handle nasopharyngeal swab/oropharyngeal swab/ blood/serum/ bronchoalveolar lavage / tracheal or nasopharyngeal aspirate/ nasal swab/ sputum	Yes	No	
6.2	Sample collection kits available for collection, labeling and transportation	Yes	No	
6.3	Vaccine carriers available	Yes	No	
6.4	Refrigerator available for storing samples at 2-8 degree C	Yes	No	
6.5	Trained personal available for taking samples	Yes	No	
6.6	Identified laboratory personal aware of the lab where samples are to be sent and the contact details of the lab.	Yes	No	
7	<b>PPE</b>			
7.1	Personal Protective equipment available	Yes	No	
7.1.1	Stock available (In absolute numbers)			
7.1.2	The Personal protective kit has an outer impermeable gown	Yes	No	
7.3	3 layered surgical mask (quantity)			
7.4	N 95 Respirator (quantity)			
7.5	Surgical gloves (quantity)			
7.6	Rubber gloves (quantity)			
7.7	Gum boots (quantity)			
7.8	Availability of NIV guidelines for sample collection and transportation	Yes	No	
8	<b>Communication</b>			
8.1	Important contact numbers listed	Yes	No	
8.2	Networking with the attached Airports	Yes	No	
9	<b>Training</b>			
9.1	Hospital staff trained on nCorona virus / SARS/ H1N1/ MERS-COV Disease			
10	<b>Ambulance</b>			
10.1	Dedicated ambulance available for shifting of patients, with BLS/ Trasport Ventilator	Yes	No	
10.2	Driver knows how to wear 3 layered surgical mask and Gloves	Yes	No	

10.3	Stretcher Bearers are trained to wear personal protective equipment and it safe disposal	Yes	No	
<b>11</b>	<b>Morgue</b>			
11.1	Motuary staff trained in handling patients and dorning PPE	Yes	No	
11.2	Availability of body bags	Yes	No	