

**INDIAN MEDICAL ASSOCIATION**  
**Hospital board of India**  
**Kerala Chapter**



**MANUAL FOR**  
**HOSPITAL PREPAREDNESS**  
**MANAGEMENT OF COVID-19**

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**Coronaviruses (CoV)** are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).

Coronavirus disease (COVID-19) is a new strain that was discovered in 2019 and has not been previously identified in humans.

In view the current situation regarding COVID-19 disease in India, we need to be prepared for the handling of suspect and confirmed cases, who might present to the DMC&H. These guidelines are supplementary to the existing Hospital Infection control Manual of DMC&H. The guidelines have been adapted from the existing WHO & CDC recommendations.

**Standard precautions:** Health-care workers caring for PUI (patient under investigation) should implement standard infection control precautions. These include basic **hand hygiene, use of personal protective equipment, respiratory etiquettes, and environmental disinfection.**

Patients suspected of having 2019-nCoV infection should be shifted to the isolation facility from the triage area as soon as possible. The HCP should do this after donning appropriate PPE. The patient should wear mask/respirator.

<b>SARI</b>	An acute respiratory illness (ARI) with history of fever or measured temperature $\geq 38\text{ C}^\circ$ and cough; onset within the last ~10 days; and requiring hospitalization.
<b>Surveillance case definitions for SARI</b>	<p>1. SARI in a person, with history of fever and cough requiring admission to hospital, with no other etiology that fully explains the clinical presentation<sup>1</sup> (clinicians should also be alert to the possibility of atypical presentations in patients who are immune-compromised); AND any of the following:</p> <ul style="list-style-type: none"> <li>a) A history of international travel in 14 days prior to symptom onset; or</li> <li>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</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> </ul>

	<p>2. A person with acute respiratory illness of any degree of severity who, within 14 days before onset of illness, had any of the following exposures:</p> <ul style="list-style-type: none"><li>a) close physical contact<sup>2</sup> with a confirmed case of COVID-19 infection, while that patient was symptomatic; or</li><li>b) a healthcare facility in a country where hospital associated COVID-19 infections have been reported;</li></ul>
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## **Guidelines on Clinical Management of COVID – 19**

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

management of patients with COVID - 19, particularly those with severe acute respiratory illness and critical ill.

### **Triage: Early recognition of patients with COVID - 19**

- The purpose of triage is to recognize and sort all patients with COVID - 19 at first point of contact with health care system (such as the emergency department).
- Suspect patients should be given a mask and directed to separate area.
- Keep at least 1 m distance between suspected patients.
- Triage patients and start emergency treatments based on disease severity.

### **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 (Emergency Department or OP/clinics).
- Suspect patients should be given a mask and directed to separate area. Keep at least 1m distance between suspected patients.
- Standard precautions should always be routinely applied in all areas of health care facilities. Standard precautions include hand hygiene; use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and non-intact skin. Standard precautions also include prevention of needle-stick or sharps injury; safe waste management; cleaning and disinfection of equipment; and cleaning of the environment.

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

<b>At triage</b>	<ul style="list-style-type: none"><li>• Give suspect patient a triple layer surgical mask and direct patient to separate area, an isolation room if available. Keep at least 1meter distance between suspected patients and other patients. Instruct all patients to cover nose and mouth during coughing or sneezing with tissue or flexed elbow for others. Perform hand hygiene after contact with respiratory secretions</li></ul>
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<p><b>Apply droplet precautions</b></p>	<ul style="list-style-type: none"> <li>• Droplet precautions prevent large droplet transmission of respiratory viruses. Use a triple layer surgical mask if working within 1-2 metres of the patient. Place patients in single rooms, or group together those with the same etiological diagnosis. If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation. When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur. Limit patient movement within the institution and ensure that patients wear triple layer surgical masks when outside their rooms</li> </ul>
<p><b>Apply contact precautions</b></p>	<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 (triple layer surgical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving. If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers). If equipment needs to be shared among patients, clean and disinfect between each patient use. Ensure that health care workers refrain from touching their eyes, nose, and mouth with potentially contaminated gloved or ungloved hands. Avoid contaminating environmental surfaces that are not directly related to patient care (e.g. door handles and light switches). Ensure adequate room ventilation. Avoid movement of patients or transport. Perform hand hygiene.</li> </ul>
<p><b>Apply airborne precautions when performing an aerosol generating procedure</b></p>	<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). (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

## **CASE DEFINITIONS**

### **Suspect Case:**

- A Patient with acute respiratory illness, {fever and at least one sign/symptom of respiratory disease (e.g. cough, shortness of breath or diarrhoea), AND a history of travel to or residence in a country / area or territory reporting to transmission (See NCDC/WHO website for updated list) of COVID-19 disease 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 symptom of respiratory disease (e.g cough, shortness of breath) AND requiring hospitalization AND with no other etiology that fully explain the clinics presentation;

OR

- A case for whom the testing for Covid-19 is inconclusive

### **Laboratory Confirmed Case:**

- A Person with Laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptoms.

## **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
- Travelling together in close proximity (within 1 m) with a symptomatic person who later tested positive for COVID-19.

**High Risk (HR) Contact:**

1. Contact with a confirmed case of COVID-19.
2. Travelers who visited a hospital where COVID-19 cases are being treated
3. Travel to a province where COVID-19 LOCAL TRANSMISSION is being reported as per WHO daily situation report.
4. Touched body fluids of patients (respiratory tract secretions, blood, vomitus, saliva, urine, faeces).
5. Had direct physical contact with the body of the patient including physical examination without PPE.
6. Touched or cleaned the linens, clothes or dishes of the patient
7. Close contact, within 3 feet (1 metre) of the confirmed case
8. Co-passengers in an airplane /vehicle seated in the same row, 3 rows in front and behind of a confirmed COVID19 case

**Low Risk (LR) Contact:**

1. Shared the same space (same classroom/same room for work or similar activity and not having high risk exposure to the confirmed/suspected case)
2. Travel in the same environment (bus/train) but not having high risk exposure as cited above.
3. Any traveler from abroad not satisfying high risk criteria

## **COVID-19 TESTING & MANAGEMENT STRATEGY**

### **BASED ON RISK ASSESSMENT**

#### **Background**

The epidemiology of COVID-19 shows that 75 to 80 % of the affected will develop only mild symptoms which do not require hospitalization. Severe infection and mortality are seen only in high risk groups like elderly and those with chronic lung disease, heart disease, liver disease, renal disease, malignancies, immunocompromised, pregnancy, post-transplant, haematological disorders, HIV and in those on chemotherapy and long term steroids. In majority of patients with mild symptoms, there is no need for hospitalization of symptomatic management.

Just like any viral infection, COVID-19 also will resolve by itself in majority of the patients. Epidemiology of COVID-19, SARS, MERS clearly demonstrate that hospitals act as amplifying centres for the epidemic. This happens due to mixing of patients with different risk categorization in the busy outpatient areas of designated COVID-19 centres.

**So patients with mild symptoms are advised not to come to hospitals for testing and treatment. Testing is not going to change either that clinical course or management of the patient with mild symptoms.**

### **CLINICAL CATEGORIZATION**

<b>A</b>	Mild sore throat / cough / rhinitis /diarrhea
<b>B</b>	Fever and/or severe sore throat / cough /diarrhea OR Category-A plus two or more of the following <ul style="list-style-type: none"> <li>• Lung/ heart / liver/ kidney / neurological disease/ Hypertension / haematological disorders/ uncontrolled diabetes/ cancer /HIV-AIDS</li> <li>• On long term steroids /immunosuppressive drugs.</li> <li>• Pregnant lady</li> <li>• Age –more than 60 years.</li> </ul> OR Category A Plus cardiovascular disease
<b>C</b>	<ul style="list-style-type: none"> <li>• Breathlessness, chest pain, drowsiness, fall in blood pressure, haemoptysis, cyanosis [red flag signs]</li> <li>• Children with ILI (influenza like illness) with <i>red flag signs</i> (Somnolence, high/persistent fever, inability to feed well, convulsions, dyspnoea /respiratory distress, etc).</li> <li>• Worsening of underlying chronic conditions.</li> </ul>

***\*Categorization should be reassessed every 28-48 hours for Category A & B.***

### **Admission Criteria**

#### **Category A:**

- *Patients with Cat A (mild disease) do not require hospital admission; but home isolation is necessary to contain virus transmission.*
- Provide patient with mild COVID-19 with symptomatic treatment such as antipyretics for fever.
- Avoid using NSAIDs other than Paracetamol.
- Telephonic follow up has to be arranged.
- Counsel patients with about signs and symptoms of complicated disease. If they develop any of these symptoms, they should seek healthcare facility.

#### **Category B:**

- Based on clinical assessment *either admit in COVID-19 isolation unit OR send for home isolation after collecting samples.*
- If sending home daily telephonic follow up to be done.

### **Category C:**

- Admit in designated COVID-19 isolation unit

## **Testing Guidelines**

- Do CBC, CRP, Trop T, D Dimer, RFT, LFT, S. Sodium, S. potassium, RBS, URE, CXR, ECG on admission
- Do Procalcitonin, ABG, CT Thorax for ICU patients in addition to routine

### **Current testing strategy by MOHFW:**

- i. All asymptomatic individuals who have undertaken international travel in the last 14 days: - They should stay in home quarantine for 14 days. - ***They should be tested only if they become symptomatic*** (fever, cough, difficulty in breathing) - All family members living with a confirmed case should be home quarantined.
- ii. All symptomatic contacts of laboratory confirmed cases.
- iii. All symptomatic health care workers.
- iv. All hospitalized patients with Severe Acute Respiratory Illness (fever AND cough and/or shortness of breath).
- v. Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 of coming in his/her contact. –
  - Direct and high-risk contact include those who live in the same household with a confirmed case and healthcare workers who examined a confirmed case without adequate protection as per WHO recommendations.
  - *Decision on testing to be taken by the institutional Medical Board.*

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

- Collect blood cultures for bacteria that cause pneumonia and sepsis, ideally before antimicrobial therapy. DO NOT delay antimicrobial therapy to collect blood cultures
- ***Collect specimens of nasopharyngeal and oro – pharyngeal swab for RT - PCR. Clinicians may also collect LRT (Lower Respiratory Tract) samples when these are readily available (for example, in mechanically ventilated patients).***

- *In hospitalized patients with confirmed COVID-19, repeat URT and LRT samples can be collected to demonstrate viral clearance. For hospital discharge, in a clinically recovered patient two negative tests, at least 24 hours apart, is recommended.*
- Use appropriate PPE for specimen collection (droplet and contact precautions for URT specimens; airborne precautions for LRT specimens). When collecting URT samples, use viral swabs (sterile Dacron or rayon, not cotton) and viral transport media. Do not sample the nostrils or tonsils. In a patient with suspected COVID - 19, especially with pneumonia or severe illness, a single URT sample does not exclude the diagnosis, and additional URT and LRT samples are recommended. Sputum induction should be avoided due to increased risk of increasing aerosol transmission.
- Dual infections with other respiratory viral infections have been found in SARS and MERS cases. At this stage we need detailed microbiologic studies in all suspected COVID - 19 cases. Both URT and LRT specimens can be tested for other respiratory viruses, such as influenza A and B (including zoonotic influenza A), respiratory syncytial virus, parainfluenza viruses, rhinoviruses, adenoviruses, enteroviruses (e.g. EVD68), human metapneumovirus, and endemic human coronaviruses (i.e. HKU1, OC43, NL63, and 229E). LRT specimens can also be tested for bacterial pathogens, including *Legionella pneumophila*.
- In hospitalized patients with confirmed COVID - 19 infection, repeat URT samples should be collected to demonstrate viral clearance. The frequency of specimen collection will depend on local circumstances but should be done at least every 2 to 4 days until there are two consecutive negative results (of URT samples) in a clinically recovered patient at least 24 hours apart.

### **IP Management of Categories B & C : oxygen therapy and monitoring**

- *Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia or shock and target > 94%.*
  - 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, nasal prongs, simple face mask and mask with reservoir bag).

- Adults with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive airway management and oxygen therapy during resuscitation to target  $\text{SpO}_2 \geq 94\%$ . Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target  $\text{SpO}_2 \geq 93\%$  during resuscitation; or use face mask with reservoir bag (at 10–15 L/min) if patient in critical condition. Once patient is stable, the target is  $> 90\%$   $\text{SpO}_2$  in non-pregnant adults and  $\geq 92\text{--}95\%$  in pregnant patients.
- Children with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) should receive airway management and oxygen therapy during resuscitation to target  $\text{SpO}_2 \geq 94\%$ ; otherwise, the target  $\text{SpO}_2$  is  $\geq 90\%$  (25). Use of nasal prongs or nasal cannula is preferred in young children, as it may be better tolerated
- ***Closely monitor patients with COVID-19 for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis and respond immediately with supportive care interventions.***
  - Patients hospitalized with COVID-19, require regular monitoring of vital signs and, where possible, utilization of medical early warning scores (e.g. NEWS2) that facilitate early recognition and escalation of the deteriorating patient.
  - Haematology and biochemistry laboratory testing, and ECG should be performed at admission and as clinically indicated to monitor for complications, such as acute liver injury, acute kidney injury, acute cardiac injury or shock. Application of timely, effective and safe supportive therapies is the cornerstone of therapy for patients that develop severe manifestations of COVID-19.
  - After resuscitation and stabilization of the pregnant patient, then fetal well-being should be monitored.
- ***Understand the patient's co-morbid condition(s) to tailor the management of critical illness.***
  - Determine which chronic therapies should be continued and which therapies should be stopped temporarily. Monitor for drug-drug interactions.

- 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.
  - This applies for care of children and adults

### **Treatment of co-infections**

- ***Give empiric antimicrobials to treat all likely pathogens causing SARI and sepsis as soon as possible, within 1 hour of initial patient assessment for patients with sepsis.***
  - Although the patient may be suspected to have COVID-19, administer appropriate empiric antimicrobials within 1 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 health care setting] or sepsis), local epidemiology and susceptibility data, and national treatment guidelines.
  - When there is ongoing local circulation of influenza, empiric therapy with Oseltamivir should be considered for the treatment for patients with influenza with or at risk for severe disease
  - Empiric therapy should be de-escalated on the basis of microbiology results and clinical judgment.

### **Management of critical COVID-19: acute respiratory distress syndrome (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<sub>2</sub> 0.60-0.95).
  - Hypoxemic respiratory failure in ARDS commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation.

- ***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. 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 NIV systems with good interface fitting do not create widespread dispersion of exhaled air and therefore should be associated with low risk of airborne transmission.
- ***Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions.***
  - Patients with ARDS, especially young children or those who are obese or pregnant, may de-saturate quickly during intubation. Pre-oxygenate with 100% FiO<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. The initial tidal volume is 6 ml/kg PBW; tidal volume up to 8 ml/kg PBW is allowed if undesirable side effects occur (e.g. dyssynchrony, pH <7.15). Hypercapnia is permitted if meeting the pH goal of 7.30-7.45. Ventilator protocols are available. The use of deep sedation may be required to control respiratory drive and achieve tidal volume targets.
  - In children, a lower level of plateau pressure (< 28 cmH<sub>2</sub>O) is targeted, and lower target of pH is permitted (7.15–7.30). Tidal volumes should be adapted

to disease severity: 3–6 mL/kg PBW in the case of poor respiratory system compliance, and 5–8 mL/kg PBW with better preserved compliance

- ***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.
  - There is little evidence on prone positioning in pregnant women. Pregnant women may benefit from being placed in lateral decubitus position.
- ***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>. In younger children, maximal PEEP rates are 15 cmH<sub>2</sub>O
  - 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.
- ***In patients with moderate-severe ARDS (PaO<sub>2</sub>/FiO<sub>2</sub> <150), neuromuscular blockade by continuous infusion should not be routinely used.***
  - Results of a recent larger trial found that use of neuromuscular blockage with high PEEP strategy was not associated with a survival benefit when compared with a light sedation strategy without neuromuscular blockade. Continuous

neuromuscular blockade may still be considered in patients, adult and children, with ARDS in certain situations: ventilator dyssynchrony despite sedation, such that tidal volume limitation cannot be reliably achieved; or refractory hypoxemia or hypercapnea.

- *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).*
- *In settings with access to expertise in extracorporeal membrane oxygenation (ECMO), consider referral of patients with refractory hypoxemia despite lung protective ventilation.*
  - ECMO should only be offered in expert centres with a sufficient case volume to maintain expertise and that can apply the IPC measures required for COVID – 19 patients.

### **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 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 2 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 ≥ 48 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>

## **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  $< 2$  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 for septic shock in adults, give at 250–500 mL crystalloid fluid as rapid bolus in first 15–30 minutes and reassess for signs of fluid overload after each bolus.
- In resuscitation from septic shock in children, give 10–20 mL/kg crystalloid fluid as a bolus in the first 30–60 minutes and reassess for signs of fluid overload after each bolus.
  - Crystalloids include normal saline and Ringer’s lactate.
  - 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 venacava size, or stroke volume in response to changes in intrathoracic pressure during mechanical ventilation.
- **Administer vasopressors when shock persists during or after fluid resuscitation. The initial blood pressure target is MAP  $\geq$ 65 mmHg in adults and age-appropriate targets in children.**
- If central venous catheters are not available, vasopressors can be given through a peripheral IV, but use a large vein and closely monitor for signs of extravasation and

local tissue necrosis. If extravasation occurs, stop infusion. Vasopressors can also be administered through intraosseous needles.

- If signs of poor perfusion and cardiac dysfunction persist despite achieving MAP target with fluids and vasopressors, consider an inotrope such as dobutamine.
- 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, epinephrine is considered first-line, while norepinephrine can be added if shock persists despite optimal dose of epinephrine.

### **Adjunctive therapies for COVID-19: corticosteroids**

- *Do not routinely give systemic corticosteroids for treatment of viral pneumonia outside of clinical trials.*
- For patients with progressive deterioration of oxygenation indicators, rapid worsening on imaging and excessive activation of the body's inflammatory response, glucocorticoids can be used for a short period of time (3 to 5 days). It is recommended that dose should not exceed the equivalent of methylprednisolone 1 – 2mg/kg/day. Note that a larger dose of glucocorticoid will delay the removal of coronavirus due to immunosuppressive effects.

### **Caring for pregnant women with COVID-19**

- There is no evidence that pregnant women present with different signs and/or symptoms or are at higher risk of severe illness.
- So far, there is no evidence on mother-to-child transmission when infection manifest in the third trimester, based on negative samples from amniotic fluid, cord blood, vaginal discharge, neonatal throat swabs or breastmilk.
- Similarly, evidence of increased severe maternal or neonatal outcomes is uncertain, and limited to infection in the third trimester, with some cases of premature rupture of membranes, fetal distress and preterm birth reported
- For pregnant severe and critical cases, pregnancy should be preferably terminated. Consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential.

- Patients often suffer from anxiety and fear and they should be supported by psychological counselling.

**Caring for infants and mothers with COVID-19: IPC and breastfeeding**

- Relatively few cases have been reported of infants confirmed with COVID-19 and they experienced mild illness.
- No vertical transmission has been documented. Amniotic fluid from six mothers positive for COVID-19 and cord blood and throat swabs from their neonates who were delivered by caesarean section all tested negative for SARS-CoV-2 by RT-PCR. Breastmilk samples from the mothers after the first lactation were also all negative for SARS-CoV-2).
- Breastfeeding protects against death and morbidity also in the post-neonatal period and throughout infancy and childhood. The protective effect is particularly strong against infectious diseases that are prevented through both direct transfer of antibodies and other anti-infective factors and long-lasting transfer of immunological competence and memory. Therefore, standard infant feeding guidelines should be followed with appropriate precautions for IPC.

**Specific COVID - 19 treatments and clinical research**

B	<p>1. Tab HCQs 400mg 1-0-1 x 1 day, then 200 1-0-1 x 4 days                  (Children : 6.5mg/kg/ dose PO BD day 1 followed by 3.25mg/kg/dose PO BD X 4 days)</p> <p style="text-align: center;">OR</p> <p>Tab Chloroquine base 600 mg (10mg/kg) at diagnosis and 300mg (5 mg/kg) 12 h</p>	<p>Contraindications to chloroquine /HCQS</p> <ul style="list-style-type: none"> <li>• QTc &gt; 500msec</li> <li>• Porphyria</li> <li>• Myasthenia gravis</li> <li>• Retinal pathology</li> <li>• Epilepsy</li> </ul> <p>Pregnancy is NOT a contraindication</p>
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	<p>later, followed by 300 mg (5 mg/kg) BD up to Day 5                  Plus                  2. Tab Azithromycin                  500mg 1-0-0 x 1 day and                  250mg 1-0-0 x 4 days                  Children: 10 mg/kg (max 500mg) day 1, Followed by 5mg/kg/day on days 2 to 5.                  3. Tab Oseltamivir 75mg 1-0-1 in all symptomatic patients with influenza like illness until PCR report.                  Children : 3mg/kg/dose BD                  Dose adjustment for those with renal insufficiency</p>	<p>If Baseline QT is prolonged – frequent ECG monitoring is required</p>
C	<p>1. Tab HCQs 400mg 1-0-1 x 1 day, then 200mg 1-0-1 x 4 days                  Children : 6.5mg/kg/ dose PO BD day 1 followed by 3.25mg/kg/dose PO BD X 4 days                  OR                  Tab Chloroquine base 600 mg (10mg/kg) at diagnosis and 300mg (5 mg/kg) 12 h later, followed by 300 mg (5 mg/kg) BID up to Day 5.                  [Usually 1 tablet of chloroquine has 150 mg base]                  PLUS                  Inj Azithromycin 500mg IV stat and 250mg IV OD for 5 days</p>	<p>For chloroquine and derivatives as discussed above                  For Protease inhibitors                  Assess for drug-drug interactions (including with calcineurin inhibitors) before starting.                  Gastrointestinal intolerance may be seen                  Monitor liver function tests while on therapy.                  Discontinue these agents upon discharge regardless of duration, unless previously used as maintenance medications for another indication.</p>

	<p>Children: 10mg/kg (max 500mg) day 1, Followed by 5mg/kg/day on days 2 to 5.                  2. Tab Lopinavir / Ritonavir (400/100) 1-0-1 for 14 days</p>	
	<p>or for 7 days after becoming asymptomatic.                  Children                  14 days to 6 months : 16mg/kg (based on lopinavir component) PO BD                  &lt; 15kg : 12 mg/kg PO ( based on lopinavir component BD )                  15-25 kg: 200 mg-50 mg PO BD                  26-35 kg: 300 mg-75 mg PO BD                  &gt;35 kg: 400 mg-100 mg PO BD                  Lopinavir/ritonavir is to be used only if HCQS/chloroquine is contraindicated.                  Lopinavir/ritonavir should be used only on a compassionate ground after informed consent. It has to be started within 10 days of symptom onset.                  3. Tab Oseltamivir 75mg 1-0-1 in all symptomatic patients with influenza like illness until PCR report with dose adjustment for children and those with renal insufficiency</p>	
<p>If CAT C patient progresses to ARDS/ MODS while on HCQS/chloroquine plus azithromycin, addition of Lopinavir/ritonavir may be considered in case of progressive worsening as Remdesivir is not available in India. In that case azithromycin is to be stopped. QTc is to be monitored very frequently. This combination is to be used on a compassionate ground after taking informed consent explaining the possibility of life threatening QTc prolongation and cardiac arrhythmias.</p>		

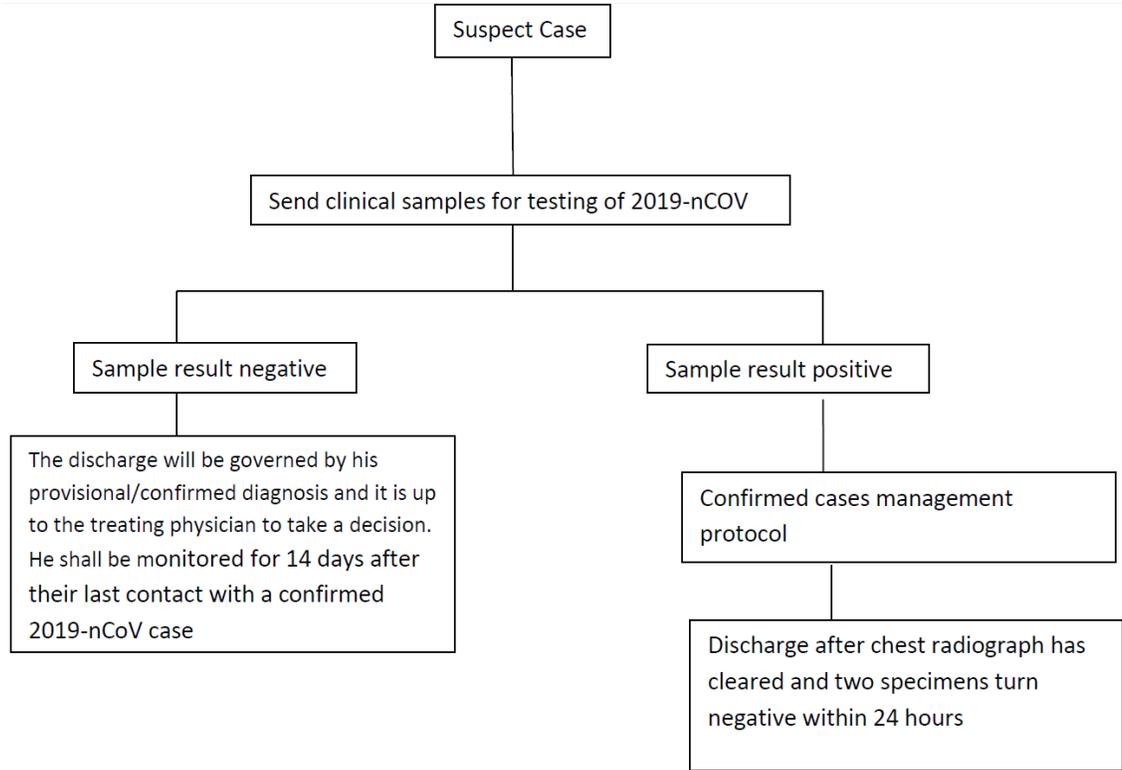
**Remdesivir**

Experimental antiviral drug in phase 3 clinical trials for COVID-19 as well as available for compassionate use for COVID-19

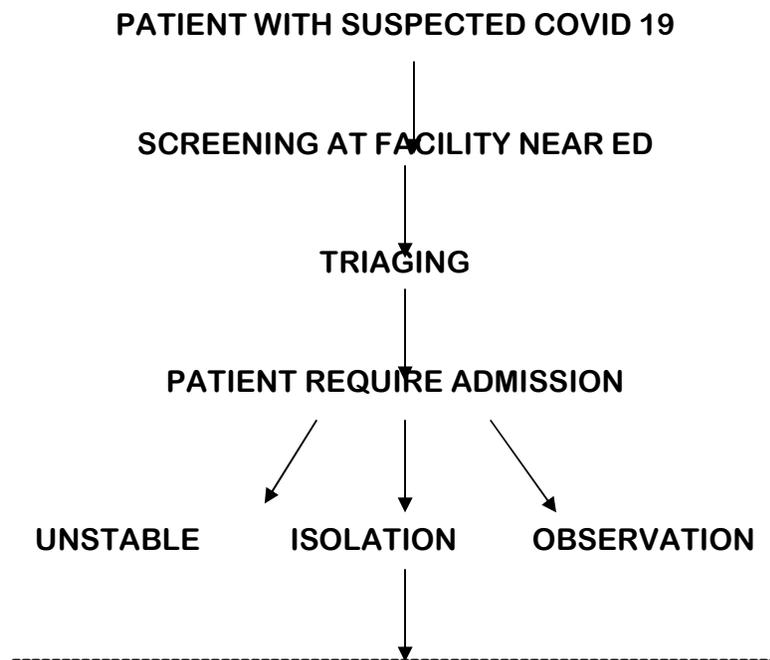
- Not yet available in India
- Broad-spectrum antiviral with in vitro activity against (not full list) Ebola virus, Marburg virus, Nipah virus, Hendra virus, RSV, and human and zoonotic coronaviruses
- Although when tested for Ebola, outcomes were not favourable, the clinical safety profile in humans appear reasonable
- Remdesivir appears to have a high genetic barrier for viral resistance with decreased fitness and pathogenicity in the remdesivir-resistant mutants

### **Discharge Policy**

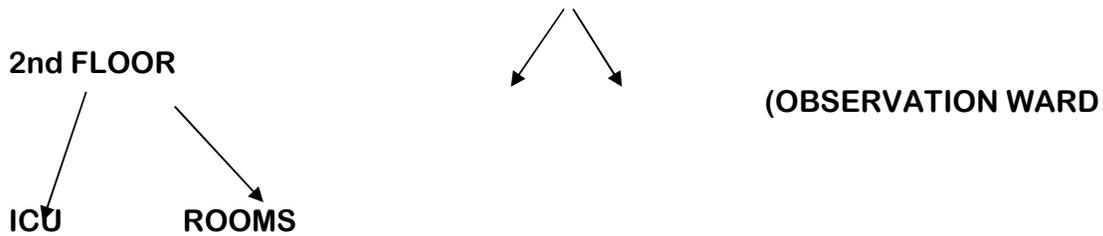
- If the laboratory results of any suspect/probable case\* of COVID-19 are negative, the discharge of such patients will be governed by his provisional/confirmed diagnosis and it is up to the treating physician to take a decision.
- The case shall still be monitored for 14 days after their last contact with a confirmed COVID case.
- In case the laboratory results are positive for COVID-19, 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 COVID-19 within a period of 24 hours.



**CHART OF COVID 19 PATIENT PATHWAY FOR HOSPITALS FOR TREATING 50-100 COVID PATIENTS**



**LIFT ( DESIGNATED FOR COVID PATIENTS)**



**FACILITIES, JOB RESPONSIBILITY & STAFFING AT CARE AREAS**

**1. EMERGENCY DEPT**

- Screening at entry : PR dept staff 1/ shift x 8hrs N95 mask.
- Doctors : 2 RMOs / Shift/ 6hrs Full PPE
- Nurses & Hospital Assistants : 4 Nurses / Shift 6hrs Full PPE
- Attenders : 2 Attenders/ Shift 6hrs Full PPE
- Security : 2 security / Shift 8hrs N95 mask
- Housekeeping staff : 1 HK / Shift 6hrs Full PPE
- Trolley with oxygen 2 numbers
- Wheel chair 2 numbers
- Emergency resuscitation area:.....
- Donning area: .....
- Doffing area: .....
- 2 staff/ Nursing assistant/ Nursing student per shift 8th hourly

**2. FLOOR WITH ROOMS (40-50 Patients)**

- Doctors : 1RMO / Shift/ 6hrs Full PPE
- Nurses : 1:6 ratio (maximum 7) / Shift 6hrs Full PPE
- Hospital / Nursing Assistants : 2 per Shift, 6 hrs, Full PPE
- Attenders : 2 Attender / Shift 6hrs Full PPE
- Security : 1 security / Shift 8hrs N95 mask
- Housekeeping staff : 2 HK / Shift 6hrs Full PPE
- Trolley with oxygen 2 numbers
- Wheel chair 2 numbers
- Donning area, Doffing area : Nursing Stations in 7th Floor
- 2 staff/ Nursing assistant/ Nursing student per shift 8th hourly

**3. OBSERVATION WARD 20-30 PATIENTS**

**Doctors** : 1RMO / Shift/ 6hrs Full PPE  
**Nurses** : Two / Shift 6hrs Full PPE  
**Hospital / Nursing Assistants** : 2 per Shift, 6 hrs, Full PPE  
**Attenders** : 1 Attender / Shift 6hrs Full PPE  
**Security** : 1 security / Shift 8hrs N95 mask  
**Housekeeping staff** : 1 HK / Shift 6hrs Full PPE  
**Donning area, Doffing area** : Use ED facility  
2 staff/ Nursing assistant/ Nursing student per shift 8th

hourly

**4.INTENSIVE CARE UNIT  
(10-20 PATIENTS)**

**Doctors** : 1RMO / Shift/ 6hrs Full PPE  
**Nurses** : 4-8 nurses / Shift 6hrs Full PPE  
**Hospital /Nursing Assistants/students:** 2 per Shift, 6 hrs, Full PPE  
**Attenders** : 2 Attender / Shift 6hrs Full PPE  
**Security** : 1 security / Shift 8hrs N95 mask  
**Housekeeping staff** : 2 HK / Shift 6hrs Full PPE  
**Donning area, Doffing area** : Rooms near cardio ICU  
2 staff/ Nursing assistant/ Nursing student per shift 8th hourly

**PERSONAL PROTECTIVE EQUIPMENT**

**Hand hygiene remains one of the most important measures** for all persons for the prevention and control of majority of the respiratory viral infections -, including 2019-nCoV infections or COVID-19. This can be performed with soap and water or alcohol-based hand rubs. Wearing a medical mask is one of the prevention measures to limit spread of certain respiratory diseases, including 2019-nCoV, is useful when worn by the persons suffering from the disease or contacts of the patients. These measures must be combined with other IPC measures to prevent the human-to-human transmission of COVID-19, depending on the specific situation.

Setting	Target personnel or patients	Activity	Type of PPE or procedure
Healthcare facilities			
<b>Inpatient facilities</b>			
Patient room	Healthcare workers	Providing direct care to COVID-19 patients.	Medical mask Gown Gloves Eye protection (goggles or face shield).
		Aerosol-generating procedures performed on COVID-19 patients.	Respirator N95 or FFP2 standard, or equivalent. Gown, Gloves, Eye protection, Apron
	Cleaners	Entering the room of COVID-19 patients	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
	Visitors	Entering the room of a COVID-19 patient	Medical mask Gown Gloves
Other areas of patient transit (e.g., wards, corridors).	All staff, including healthcare workers.	Any activity that does not involve contact with COVID-19 patients.	PPE as per existing infection control guidelines

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Setting	Target personnel or patients	Activity	Type of PPE or procedure
Triage	Healthcare workers	Preliminary screening not involving direct contact	Maintain spatial distance of at least 1 m. PPE as per existing infection control guidelines
	Patients with respiratory symptoms.	Any	Maintain spatial distance of at least 1 m. Provide medical mask

			if tolerated by patient.
	Patients without respiratory symptoms.	Any	PPE as per existing infection control guidelines
Laboratory	Lab technician	Manipulation of respiratory samples.	Medical mask Gown Gloves Eye protection (if risk of splash)
Administrative areas	All staff, including healthcare workers	Administrative tasks that do not involve contact with COVID-19 patients	No PPE required

**Outpatient facilities**

Consultation room	Healthcare workers	Physical examination of patient with respiratory symptoms.	Medical mask Gown Gloves Eye protection
	Healthcare workers	Physical examination of patient without respiratory symptoms.	PPE according to standard precautions and risk assessment.
	Patients with respiratory symptoms.	Any	Provide medical mask if tolerated.
	Patients without respiratory symptoms.	Any	PPE as per existing infection control guidelines

Setting	Target personnel or patients	Activity	Type of PPE or procedure
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	Cleaners	After and between consultations with patients with respiratory symptoms	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Waiting room	Patients with	Any	Provide medical mask if

	respiratory symptoms.		tolerated. Immediately move the patient to an isolation room or separate area away from others; if this is not feasible, ensure spatial distance of at least 1 m from other patients.
	Patients without respiratory symptoms.	Any	PPE as per existing infection control guidelines
Administrative areas	All staff, including healthcare workers	Administrative tasks	No PPE required
Triage	Healthcare workers	Preliminary screening not involving direct contact	Maintain spatial distance of at least 1 m. PPE as per existing infection control guidelines
	Patients with respiratory symptoms.	Any	Maintain spatial distance of at least 1 m. Provide medical mask if tolerated by patient.
	Patients without respiratory symptoms.	Any	PPE as per existing infection control guidelines

**Points of entry**

Administrative areas	All staff	Any	Maintain spatial distance of at least 1 m. No PPE required
Screening area	Staff	First screening (temperature measurement) not involving direct contact	Maintain spatial distance of at least 1 m. PPE as per existing infection control guidelines
<b>Setting</b>	<b>Target personnel or patients</b>	<b>Activity</b>	<b>Type of PPE or procedure</b>

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	Staff	Second screening (i.e., interviewing passengers with fever for clinical symptoms suggestive of COVID-19 disease and travel history).	Medical mask Gloves
	Cleaners	Cleaning the area where passengers with fever	Medical mask Gown

		are being screened.	Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Temporary isolation area	Staff	Entering the isolation area, but not providing direct assistance.	Maintain spatial distance of at least 1 m. Medical mask Gloves
	Staff, healthcare workers	Assisting passenger being transported to a healthcare facility.	Medical mask Gown Gloves Eye protection
	Cleaners	Cleaning isolation area	Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes
Ambulance or transfer vehicle	Healthcare workers	Transporting suspected COVID-19 patients to the referral healthcare facility	Medical mask Gown Gloves Eye protection
	Driver	Involved only in driving the patient with suspected COVID-19 disease and the driver's compartment is separated from the COVID-19 patient.	Maintain spatial distance of at least 1 m. PPE as per existing infection control guidelines
<b>Setting</b>	<b>Target personnel or patients</b>	<b>Activity</b>	<b>Type of PPE or procedure</b>

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		Assisting with loading or unloading patient with suspected COVID19 disease	Medical mask Gown Gloves Eye protection
		No direct contact with patient with suspected COVID-19, but no separation between	Medical mask

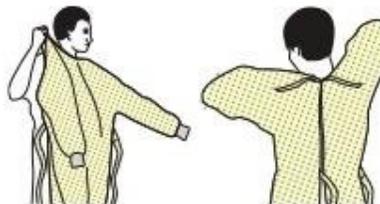
		driver's and patient's compartments.	
	Patient with suspected COVID19 disease.		Medical mask
	Cleaners		Medical mask Gown Heavy duty gloves Eye protection (if risk of splash from organic material or chemicals). Boots or closed work shoes

## SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

### 1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



### 2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



### 3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



### 4. GLOVES

- Extend to cover wrist of isolation gown



## USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

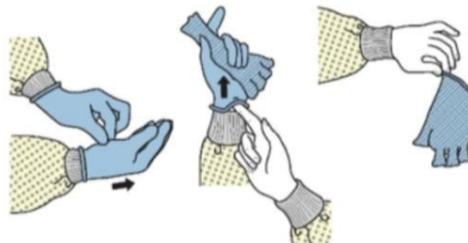


## HOW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE) EXAMPLE 1

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



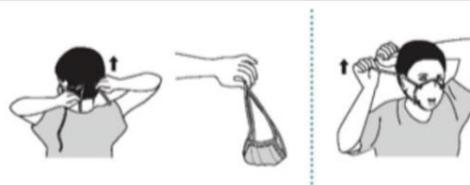
### 3. GOWN

- 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

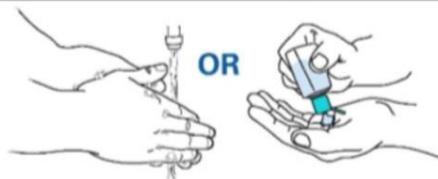


### 4. MASK OR RESPIRATOR

- 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**



## USE OF MASK

There is no scientific evidence as on date to show the health benefit of using triple-layer surgical masks for the public in general. In fact, erroneous use of masks or continuous use of

a disposable mask for longer than 6 hours or repeated use of the same mask may actually increase the risk of infection further.

The advisory for use of two types of masks (Triple layer surgical mask & N 95 Respirator) in present times is as below:

**Triple-layer surgical mask** is recommended for:

- All medical personnel including nursing and paramedical staff while interacting with patients/suspects
- Doctors in screening centers/Private practitioners attending cases in general practice and other health workers working with them
- Suspect/probable/confirmed cases of COVID-19
- Close family contacts of such cases undergoing quarantine/surveillance
- The driver of the ambulances earmarked for transporting Suspects/probable/confirmed cases
- Health workers involved in community surveillance contact tracing and health monitoring of cases at home or under home quarantine
- Security personnel working near an infected/potentially infected area like isolation ward/hospital, screening center, etc

**N 95 Respirator** is recommended for:

- Medical and nursing staff working in the Isolation ward involved in any aerosolgenerating procedures like suction, intubation, nebulization, etc.
- Medical personnel collecting clinical samples from patients/suspects
- Medical and nursing staff involved in critical care in the Intensive Care Unit
- All personnel working in laboratories and handling and testing clinical samples
- The paramedic inside the ambulance if the performance of any aerosol-generating procedures is contemplated (suction, oxygen administration by nasal catheter, intubation, nebulization, etc).

### **ISOLATION GUIDELINES**

**Isolation** refers to separation of individuals who are ill and suspected or confirmed of COVID-19.

- All **suspect cases** should be kept in isolation till they are tested negative.
- Persons testing **positive** for COVID-19 to be hospitalized till 2 of their samples are tested negative.
- Patients should be isolated in **individual isolation rooms** with **negative pressure and at least 12 air-changes per hour**. These should not be a part of central air-conditioning.
- Post sign on the door indicating 'Isolation area'.

- The isolation ward should have dedicated lift/guarded stairs, separate entry/exit and should be in a segregated area where outsiders are not allowed.
- There should be double door entry with changing room and nursing station.
- Ensure that separate toilets, hand washing facilities and hand-hygiene supplies are available for patient and staff.

### **Personnel**

- Doctors, nurses and paramedics should be **dedicated** and not allowed to work in other patient-care areas.
- **Visitors to the isolation facility should be restricted /disallowed.** • HCW and attendants should wear appropriate PPE (including N95 masks)
- Minimum number of HCW to enter the room.
- Maintain a log of all persons who care for or enter the isolation rooms.
- Use dedicated or disposable noncritical patient-care equipment (e.g., blood pressure cuffs). If equipment will be used for more than one patient, clean and disinfect such equipment before use on another patient.
- HCP entering the room soon after a patient vacates the room should use respiratory protection.
- The support staff engaged in cleaning and disinfection will also wear appropriate PPE.
- Environmental cleaning should be done twice daily and consist of damp dusting of surfaces and floor mopping with sodium hypochlorite solution.

### **Checklist for isolation rooms**

- Eye protection (visor or goggles)
- Face shield (provides eye, nose and mouth protection)
- Gloves
- Reusable vinyl or rubber gloves for environmental cleaning
- Latex single-use gloves for clinical care
- Hair covers
- Particulate respirators (N95, FFP2, or equivalent)
  
- Medical (surgical or procedure) masks
- Gowns and aprons
- Single-use long-sleeved fluid-resistant
- Alcohol-based hand rub
- Plain soap (liquid if possible, for washing hands in clean water)
- Clean single-use towels (e.g. paper towels)
- Sharps containers
- Appropriate detergent for environmental cleaning and disinfectant for disinfection of surfaces, instruments or equipment
- Large plastic bags
- Appropriate clinical waste bags

- Linen bags
- Collection container for used equipment

**TESTING STRATEGY IN INDIA**

- To contain the spread of infection of COVID19
- To provide reliable diagnosis to all individuals meeting the inclusion criteria of COVID19 testing
- i. **All asymptomatic individuals who have undertaken international travel in the last 14 days:**
  - They should stay in home quarantine for 14 days.
  - They should be tested only if they become symptomatic (fever, cough, difficulty in breathing)
  - All family members living with a confirmed case should be home quarantined
- ii. **All symptomatic contacts of laboratory confirmed cases.**
- iii. **All symptomatic health care workers.**
- iv. **All hospitalized patients with Severe Acute Respiratory Illness** (fever AND cough and/or shortness of breath).
- v. **Asymptomatic direct and high-risk contacts of a confirmed case should be tested once between day 5 and day 14 of coming in his/her contact.**
  - Direct and high-risk contact include those who live in the same household with a confirmed case and healthcare workers who examined a confirmed case without adequate protection as per WHO recommendations.

**SAMPLE COLLECTION**

<b>Consider all specimens as potentially hazardous/ infectious</b>	
<b>Wear appropriate PPE while collecting samples</b>	
<b>• Essential samples:</b>	
✦ Oropharyngeal swab (Throat swab)	<b>Viral transport medium (3ml)</b>
AND	
✦ Nasopharyngeal swab	
<b>• Others samples:</b>	
✦ BAL	<b>Wide mouthed container</b>
✦ Tracheal aspirate	
✦ Sputum	
<b>• Lab confirmed patients:</b>	
✦ Blood EDTA vial and plain vial	<b>Wide mouthed sterile plastic container</b>
✦ Stool & urine	

- **Collection of Oropharyngeal (OP) & Nasopharyngeal (NP) swabs:** Annexure attached
  - ✦ Collect samples within 3 days of symptom onset and not later than 7 days
  - ✦ Preferably before antimicrobial chemoprophylaxis and therapy
  - ✦ Only sterile dacron/ nylon flocced swabs to be used
  - ✦ **Place them (OP & NP swab) in the same VTM**

- **Blood samples:**
  - ✦ Collect only from lab confirmed positive cases
    1. Plasma samples- collect in EDTA vials
    2. Serum sample- Resin separator tubes

**Consider all specimens as potentially hazardous/ infectious**  
**Place each specimen into a separate container and label it**

- **Labeling of samples :**
  - ✦ Patient name
  - ✦ ID number
  - ✦ Collection site
  - ✦ Date of collection
  - ✦ Time of collection
- **Triple packaging:**
- **Transport :**
  - ✦ Send samples immediately at 4°C to the testing lab
- **Storage :**
  - ✦ 2 to 8°C for 48hrs
  - ✦ -10 to -20°C after 48hrs within 7 days
  - ✦ -70°C after one week

## Collection of Oropharyngeal swab

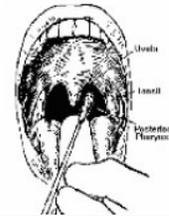


### Materials:

- Sterile Dacron/Nylon flocked swab
- Viral Transport Medium (3 ml sterile VTM)

### Procedure:

- Hold the tongue out of the way with a tongue depressor.
- Use a sweeping motion to swab posterior pharyngeal wall and tonsillar pillars
- Have the subject say "aahh" to elevate the uvula.
- Avoid swabbing soft palate and do not touch the tongue with swab tip.
- Put the swab in VTM



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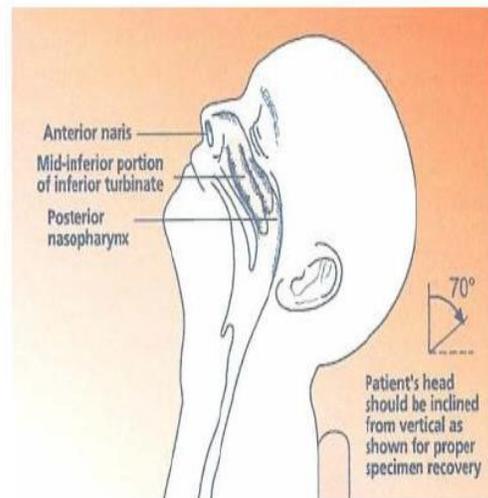
## Collection of Nasopharyngeal swabs

- Materials

- Sterile Dacron/Nylon flocked swab
- Viral Transport Medium (3 ml sterile VTM)

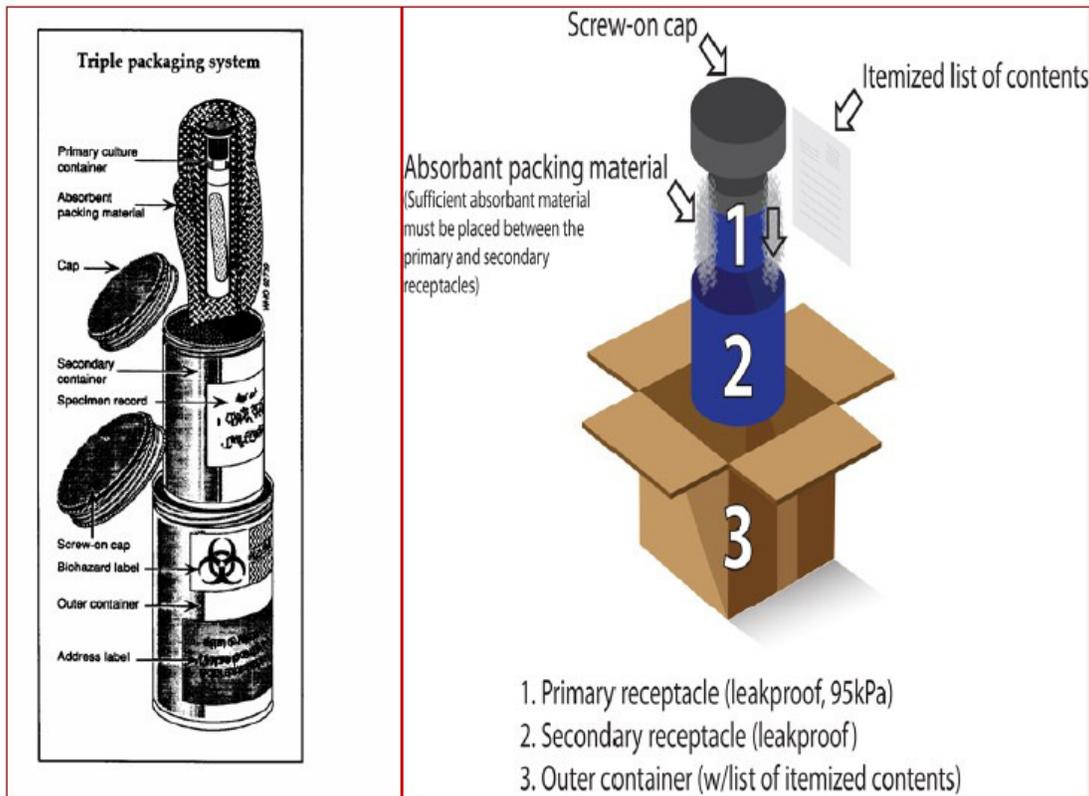
- Procedure

- Tilt patient's head back 70 degrees
- Insert swab into nostril (Swab should reach depth to distance from nostrils to outer opening of the ear)
- Leave swab in place in place for several seconds to absorb secretions
- Slowly remove swab while rotating it
- Place tip of swab into VTM and snap/cut off the applicator stick



## Triple packaging system

Primary Container	Secondary Container	Outer Container/ Packaging Box
<ul style="list-style-type: none"> <li>• Watertight and leak proof</li> <li>• Cap correctly and securely closed.</li> <li>• Keep in upright position during transport</li> </ul>	<ul style="list-style-type: none"> <li>• Watertight</li> <li>• Several clinical specimens may be placed into one secondary container</li> <li>• Containers have to be cleansed and disinfected if they are to be re-used</li> </ul> <p>E.g.: Disposable, zip-lock plastic bags; Large centrifuge tubes (50 ml) with screw caps</p>	<ul style="list-style-type: none"> <li>• Made of strong material that can be cleansed and disinfected</li> <li>• Should have the Biohazard warning label</li> <li>• A content list in a sealed plastic bag inside the transport box may also be included</li> </ul>



## **MANAGEMENT IN SURGICAL SPECIALITIES**

**Screening-** All patients should be screened and asked for history of fever or acute respiratory infection (cough, sore throat, shortness of breath), history of travel or residing in affected country and contact with a confirmed COVID-19 case.

**Core Team-** Each surgical unit should have a core team comprising of at least one specialist, two medical officers and two staff nurses.

### **Designated suite for suspected patients**

i. All surgical units should have a fully equipped and a designated ward/ labour room/ operation theatre for the management of patients with COVID-19. ii. Their location should ideally be nearest to the point of entry.

### **Transfer**

i. Patients should wear a properly fitted N95 mask and should be transferred based on the identified pathway to minimize exposure to others. ii. HCW should wear PPE during treatment as long as they are in contact with the person iii. Family and visitors should be minimized

**Elective surgery:** If the patient is due for an elective surgery, the procedure should be deferred for at least 14 days.

### **Management of COVID-19 in Pregnancy**

i. Patient in active labour (cervical dilatation >6cms) ⑦ inform core team

- Not imminent delivery: offer caesarean section ⑦ designated OT ⑦ isolation ward
- Imminent delivery ⑦ designated labour room ⑦ isolation ward

ii. Patient not in labour ⑦ isolation ward iii. Breastfeeding should ideally be deferred until confirmatory diagnosis excludes COVID19 infection in the mother.

### **Emergency Surgery**

**Restricted entry-** Assigned surgical team

**Occupancy-** Maximum 6 persons (specialist, medical officer, anaesthetists, staff nurses) **OT**

**Attire-** Appropriate PPE (N95 mask, face shield, disposable gown, double gloves)

### **Anaesthesia**

i. Regional anaesthesia is recommended as this is a safer option as compared to general anaesthesia.

ii. If general anaesthesia is to be given, this should be with the routine biohazard measures implemented during and post procedure. The patient can then be transferred via a portable ventilator.

- iii. Intubation and extubation should be done wearing a full PPE (N95 well fitted and face shield/ goggle).
- iv. The extubation of such patients should also be done in a negative pressure setting as to minimize the risk of aerosol transmission.
- v. Post-operatively, these patients should be managed in the isolation ward as per protocol. Consider thromboprophylaxis throughout the hospital stay.

**Cleaning and disinfection of designated OT**

- Appropriate PPE should be worn for cleaning and disinfection
- Remove all portable equipment.
- Always clean from more clean to less clean area.
- Restrict personnel entering after cleaning.
- If blood spill is present, disinfect with 1% sodium hypochlorite before wiping
- Discard used PPE (gloves- red bag/ gown cap/mask- yellow bag)

Area/ Item	Method
OT table, sitting stools, IV stands, basin stands, X-ray view boxes, stainless steel surfaces	Clean with detergent and hot water, then with Virex 0.4%
Over head lights, doors, glass inserts	Clean with Virex 0.4%
Storage shelves	Damp dusting with 1% sodium hypochlorite
Suction bottles	Empty, clean and disinfect by immersing in 1% sodium hypochlorite solution for 20 minutes
Transport vehicles	Clean with 1% sodium hypochlorite
Floor	2 buckets (i) wet mopping with hot water and detergent (ii) mopping with 1% sodium hypochlorite
Used instruments	Send to CSSD for sterilization

**Biomedical Waste Management (For OTs)**

- Sanitation workers should wear PPE (3-layer mask, splash-proof apron, nitril gloves, gum boots and safety goggles)
- Use double-layered bag
- Label as COVID-19 waste
- Maintain separate record of waste generated
- Use dedicated vehicle to collect COVID-19 waste
- Surface of containers, bins, trolleys used for storage and transport should be disinfected using 1% sodium hypochlorite

### **ENVIRONMENTAL CLEANING**

Due to the potential survival of the virus in the environment for about a week, the premises and potentially contaminated areas should be cleaned before their reuse.

#### **Personal protective equipment (PPE):**

1. Appropriate PPE to be worn while carrying out cleaning & disinfection work
2. Avoid touching eyes, nose and mouth
3. Gloves should be removed and discarded if they become soiled or damaged.

<b>Area/Item</b>	<b>Method</b>	<b>Frequency</b>
General cleaning (floor, walls, washrooms, lifts)	2 buckets (i) Hot water and detergent (ii) 1% Sodium hypochlorite	Thrice a day
Tables, chairs, benches, cupboards, bedrails, lockers, storage shelves, cots, etc	Damp dusting with 1% Sodium hypochlorite	Thrice a day
Staircase railings	3 Buckets (i) Water (ii) Water and detergent (iii) 1% Sodium hypochlorite	Thrice a day
Doorknobs, switchboards, lift buttons	Wipe with Virex 0.4%	Thrice a day
Telephones	Clean with 70% alcohol	Thrice a day
Soiled beddings, towels, clothes, curtains	Machine wash with warm water and detergent at 70°C for 25 minutes	As per requirement
Mattress/ pillow with rexin cover	Wipe with 1% Sodium hypochlorite	As per requirement
Mattress/ pillow without rexin cover	Dry in bright sunlight for 1-2 days	As per requirement
Toilet pot/ lid	Clean with soap water, then with 1% sodium hypochlorite using long-handle angular brush	Twice a day
Air conditioning system	Clean and disinfect	Once a week
Transport disinfection	Spray 1% sodium hypochlorite	Twice a day

\*Disinfect all cleaning equipment including buckets after use and before cleaning other area

\*Discard used PPE

- Masks- yellow bag
- Gloves- red bag

- \*Discard mops & wiping cloth in yellow bag
- \*Hands should be washed with soap and water immediately following completion of cleaning
- \* Switch off central air condition in the room of suspected case
- \* Spray 1% sodium hypochlorite wherever indicated

**Fogging** (when indicated): 1 litre of 20% v/v solution (hydrogen peroxide 11% w/v with 0.01% w/v diluted silver nitrate) for 1000 cu.ft. of space in 60 min

### **IN HOUSE PRODUCTION AND DISTRIBUTION OF HAND RUB**

#### **Reagents for formulation:**

<b>Reagents</b>	<b>Final recommended concentrations</b>
Isopropyl Alcohol (99.8%)	75% (v/v)
Hydrogen Peroxide(3%)	0.125%(v/v)
Glycerol (98%)	1.45%(v/v)
Sterile distilled water	

#### **Other Materials required:**

- 50-100 litre plastic tanks (preferably in polypropylene or high density polyethylene)
- Wooden, plastic or metal paddles for mixing
- Measuring cylinders and measuring jugs
- Plastic or metal funnel
- 500 ml plastic bottles for dispensing
- An alcoholometer: the temperature scale is at the bottom and the alcohol concentration (percentage v/v) at the top.

#### **Method of Preparation:**

Reagents	For 5 litres	For 10 litres	For 20 Litre	For 50 Litre
Isopropyl Alcohol (99.8%)	3757ml	7515ml	150300ml	37575ml
Hydrogen Peroxide(3%)	208ml	417ml	834ml	2085ml
Glycerol(98%)	73ml	145 ml	290ml	725ml
Sterile distilled water	961ml	1923ml	3846ml	9615ml

#### **Procedure:**

- The required amount of alcohol is poured in the tank.
- Hydrogen peroxide is added using the measuring cylinder.

- Glycerol is added using a measuring cylinder. As glycerol is very viscous and sticks to the wall of the measuring cylinder, it should be rinsed with some sterile distilled and then emptied into the bottle/tank.
- Add the required amount of distilled water to make the final volume.
- The solution is mixed by shaking gently where appropriate or by using a paddle.
- Immediately dispense the solution into dispensing bottles (500 or 100 ml plastic bottles), and place the bottles in quarantine for 72 hours before use. This allows time for any spores present in the alcohol or the new/re-used bottles to be destroyed

**Quality Control:**

- Verify the alcohol concentration with alcoholmeter for every lot. The accepted limits should be  $\pm 5\%$  of the target concentration (75-85%).
- Assess the microbial flora of the user before and after application of the hand rub.

**Labeling:**

Labeling should include the following:

- Name of institution
- WHO-recommended handrub formulation
- For external use only(Not for sale)
- Avoid contact with face
- Keep out of the reach of children
- Date of production and batch number
- Use: Apply 2-3ml of alcohol-based handrub and cover all surfaces of the hands andrub until dry
- Composition: isopropyl alcohol, glycerol and hydrogen peroxide
- Caution: Dangerous if ingested. Keep away from flame and Heat (Highly Inflammable)

**Risks/Precautions concerning the use of alcohol-based hand rub preparations: Fire/ General:**

- Do not produce in quantities exceeding 50 litres locally. If producing in excess of 50 litres, produce only in central pharmacies with specialized air conditioning and ventilation.
- Since undiluted isopropyl alcohol is highly flammable, production facilities should directly dilute it to the desired concentrations.
- Involve fire officers, fire safety advisers, risk managers, and health and safety and infection control professionals in risk assessments.
- Risk assessment should take into account: – The location of dispensers  
–The storage of stock  
–The disposal of used containers/ dispensers and expired stock.
- Store away from high temperatures or flames

- Water or aqueous (water) film-forming foam (AFFF) should be used in case of fire; other types of extinguishers may be ineffective and may spread the fire over a larger area rather than put it out.

**Ingestion:**

- In areas where there is thought to be a high risk of ingestion, a staff-carried product is advised.
- If a wall-mounted product is used, consideration should be given to small bottles.
- Product containers may be labelled as “antimicrobial handrubs” with a warning of dangers associated with ingestion.

**Cleaning and disinfection of reusable hand rub bottles**

- Reusable bottles should never be refilled until they have been completely emptied and then cleansed and disinfected.
- Empty bottles should be brought to a central point to be reprocessed using standard operating procedures.
- Bottles should be thoroughly washed with detergent and tap water.
- Disinfection should be done by  
**Chemical disinfection-** Soak the bottles in a solution containing 1000ppm of chlorine (0.1% solution of sodium hypochlorite) for a minimum of 15 minutes and then rinse with sterile/cooled boiled water.
- Drying: Bottles should be left to dry completely upside-down and closed with a lid.
- Storage: Dry bottles should be stored, protected from dust, until use.

**BIOMEDICAL WASTE MANAGEMENT**

The guidelines are required to be followed by all areas of the hospital in addition to existing practices under BMW Management Rules, 2016.

1. Keep separate colour coded bins/bags labelled as ‘COVID-19 Waste’ and maintain separate record of waste generated from COVID-19 isolation wards.
2. Double-layered bags (using 2 bags) should be used for collection of waste from COVID-19 isolation wards
3. COVID-19 waste should be lifted by dedicated trolleys directly from ward into CBWTF collection van or use a dedicated collection bin labelled as ‘COVID-19’ to store waste temporarily prior to handling over to CBWTF.
4. The inner and outer surface of containers used for storage of COVID-19 should be disinfected with 1% sodium hypochlorite.
5. Dedicated sanitation workers should be deputed for BMW and general solid waste. Moreover, the authorised collector of medical waste should use separate vehicle for

collecting COVID-19 waste and vehicle should be sanitised with sodium hypochlorite after every trip.

## **HANDLING OF DEAD BODY**

### **Isolation Room**

- The dead and bereaved should be respected at all times.
- Bathing, hugging, etc. of the dead body should not be allowed.
- All tubes, drains and catheters on the dead body should be removed and puncture holes or wounds should be disinfected with 1% hypochlorite and dressed with impermeable material.
- Plug oral, nasal orifices of the dead body to prevent leakage of body fluids.
- If the family of the patient wishes to view the body, they may be allowed with the standard precautions.
- Place the dead body in leak-proof plastic body bag and exterior of the bag to be decontaminated with 1% hypochlorite.
- All used/ soiled linen should be handled with standard precautions, put in biohazard bag and the outer surface of the bag disinfected with hypochlorite solution.
- All used equipment should be autoclaved or decontaminated with disinfectant as per infection prevention control practices

### **Mortuary**

- Mortuary staff handling COVID dead body should observe standard precautions.
- Dead bodies should be stored in cold chambers maintained at approximately 4°C.
- Environmental surfaces, instruments and transport trolleys should be properly disinfected with 1% Hypochlorite solution.
- Embalming of dead body should not be allowed
- Autopsies should be avoided. If autopsy is to be performed for special reasons, the infection prevention control practices should be adopted
- After transportation of the body to cremation, the vehicle will be decontaminated with 1% sodium hypochlorite.

### **Crematorium**

- At the crematorium, the staff and family will practice standard precautions.
- Large gathering at the crematorium/ burial ground should be avoided as a social distancing measure.
- The ash does not pose any risk and can be collected to perform the last rites.

# HOSPITAL PREPAREDNESS FOR EPIDEMICS

PREPARED BY INDIAN MEDICAL ASSOCIATION,  
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## INTRODUCTION

Hospitals and other healthcare facilities play a critical role in national and local responses to emergencies, such as communicable disease epidemics

### OBJECTIVES:

- Established Risk Management Program
- Established Emergency Response Plan
- Defined Roles
- Established Communication mechanism
- Able to adapt to challenges of an Epidemic
- Appropriate resources in sufficient quantities
- Addressed the emotional, physical, mental and social needs of the staff and families

### STRATEGIES:

- Existing plans and capacity to cope with epidemics
- Hospitals capacity to cope with non epidemic emergencies
- The range of services which the hospital normally provides

### POTENTIAL PITFALLS

- Amplifying an epidemic
- Overwhelming demand for health care
- Overwhelming complexity
- Limited time to forge partnerships
- Difficulty in integrating the hospital

### OVERCOMING PITFALLS

- Implement infection prevention and control measures
- Prepare for any and all emergencies
- Train hospital staff

## MANAGEMENT

### Goals

- To ensure that the hospital is at all times in a state of preparedness to participate fully, efficiently and effectively in the coordinated health-sector response to an emergency, such as a communicable disease epidemic
- To ensure that the hospital has established the mechanisms and procedures—including those for more strategic all-hazards emergency risk assessment and specific epidemic event risk assessment, prevention, preparedness, response and recovery—that are needed for overall coordination of the hospital’s epidemic risk management activities

### General principles

- To be prepared to face any risk or emergency, a hospital should have in place a permanent Hospital Emergency Committee responsible for developing the Hospital Emergency Risk Management Programme, of which an Emergency Response Plan is an essential component.
- The Hospital Emergency Management Committee should include representatives of the hospital’s main activities, including administration, medical and nursing care, emergency department services, infection prevention and control, pharmacy services, laboratory services, security, engineering and maintenance, human resources, laundry, food services, cleaning and waste management, and communication.
- Specific measures needed to cope with an epidemic may be included in a hospital’s Epidemic Sub-plan annexed to the Hospital Emergency Response Plan.
- The Hospital Emergency Committee also establishes an Incident Command Group, which is responsible for adapting the hospital incident management system and the all hazard Hospital Emergency Response Plan (and its annexed Epidemic Sub-plan) to produce an Incident Action Plan that specifies the tasks needed to respond specifically to the current emergency.
- The Hospital Emergency Committee, Emergency Risk Management Programme, Emergency Response Plan, Incident Command Group and Incident Action Plan form a preparedness and response system that ensures the coordination of all the activities required to prepare for and respond to an emergency.

### Basic requirements

- A permanent Hospital Emergency Committee chaired by a hospital executive or senior manager
- A Hospital Emergency Risk Management Programme developed and maintained by the Hospital Emergency Committee
- An Incident Command Group established by the Hospital Emergency Committee

- An all-hazards Hospital Emergency Response Plan that includes an Epidemic Sub-plan specifying the measures needed to cope with an epidemic
- An Incident Action Plan developed by the Incident Command Group

## HOSPITAL EMERGENCY COMMITTEE

The Hospital Emergency committee will plan, co ordinate and execute the epidemic management strategy of the hospital.

It will set up plan & facilities for

- **EMERGENCY RISK MANAGEMENT:** The plan for emergency risk management is prepared
- **EMERGENCY PREPAREDNESS:** The preparations to be done in case an emergency situation comes.
- **EMERGENCY RESPONSE PLAN:** The actions which will be taken when an emergency situation comes.
- **INCIDENT COMMAND GROUP:** The command group will control the activities undertaken when an cases of an epidemic comes
- **INCIDENT ACTION PLAN:** The activities undertaken during the epidemic
- **EMERGENCY CO ORDINATION CENTRE:** Area where incident command group meets.

## COMPONENTS

Each of the committees should prepare a plan for their hospital using the following template

1. GOAL
2. GENERAL PRINCIPLES
3. BASIC REQUIREMENTS
4. PREPAREDNESS TASKS
5. RESPONSE TASKS
6. RECOVERY TASKS

## FIELDS

- **INFECTION PREVENTION & CONTROL :** Strategies for infection prevention and control in the hospital during the epidemic.

- **COMMUNICATION** :Communication between staff inside the hospital, with the patients and their relatives, relatives of the staff, public, media and the authorities.
- **HUMAN RESOURCES** : The management of staff in the hospital during epidemic. Doctors to work in spite of their specialisations. The staff may have to stay in the hospital. Recruitment of additional manpower as situation demands and arrangements for it. Staff to be posted as per their competency
- **LOGISTICS**: The arrangements for transportation, ambulance, transport of supplies, medicines, water etc to be looked after. Ambulance arrangements and patient transport.
- **HOSPITAL PHARMACY**: Continuous supply of medicines according to the needs. Stock and supply to be planned now.
- **HOSPITAL LABORATORY**: Plan for all the investigations required during the epidemic. Testing facility for COVID 19 also may be required if government directs.
- **CONCURRENT EMERGENCIES**; The hospital should also be prepared to deal with other emergencies attending the hospital.
- **ESSENTIAL SUPPORT SERVICES**
  - **Food & Nutrition**: food for patients, relatives, staff etc to be planned. Sufficient stocks to be procured early in case of probable lock down.
  - **Security**: Security of patients, relatives staff and equipments to be planned.
  - **Engineering & Maintenance**: The arrangements and modifications to be made in the hospital. Eg. Exhaust fans in rooms to maintain negative pressure.
  - **Laundry, Cleaning & waste management**: Cleaning of Linen and equipments. Management of general waste, liquid waste and BMW.
  - **Mortuary services**:
- **CONTINUITY OF ESSENTIAL HEALTH CARE SERVICES** :Although the hospital is dealing with emergencies essential health care services has to be continued and plan to be prepared.
- **PSYCHOLOGICAL & SOCIAL SUPPORT SERVICES**: Support for patients, relatives, staff, relatives of staff etc to be taken care of
- **PATIENT MANAGEMENT**: Management of patients as per the guidelines provided by the authorities.
- **SURGE CAPACITY**: The maximum intake of the hospital in the scenario of an epidemic. All the planning has to be done as per the surge capacity.

## COVID 19 TREATMENT FACILITY

## **JOB CARD**

### **JOB CARD HIC**

#### **Responsibility : Coordinators :**

- To monitor the overall infection control activities
- To ensure adequate supplies of disinfectants, hand sanitizers and liquid soaps.
- All donning and doffing areas to be monitored and to make sure the presence of an observer in these areas.
- PPEs to be issued to the staff as per the instruction of HIC Team
- To ensure the rationale use of PPE. As PPEs are to be used based on the risk profile of the health care worker.
- To train staffs regarding donning and doffing of PPE.
- To ensure adequate disinfection of all medical equipment.
- To monitor the isolation facilities.
- To ensure regular health monitoring of doctors and other staffs working during an epidemic. In case of any symptoms to inform the medical board.
- Continuous monitoring of housekeeping activities and to increase the cleaning frequency.
- Supervision of handling and transportation of infected linen.
- To ensure proper disposal of biomedical waste.
- To be available to clear any queries regarding infection control activities.

STATION :

**COVID 19 TREATMENT FACILITY**

***JOB CARD  
COMMUNICATIONS***

***RESPONSIBILITY:  
CO ORDINATOR :***

- To make all arrangements for internal communications inside the hospital, communication between ICT and staff, management and staff etc
- To communicate with relatives of patients admitted in the hospital with covid 19
- To communicate with local administrative bodies authorities (DMO,Collector, Police etc) and receive communications from them
- To communicate with family members of staff working in the Covid 19 treatment facility
- To facilitate communication with the media by the medical board.
- Maintain an Information Desk at the reception area.

STATION:

**COVID 19 TREATMENT FACILITY**

***JOB CARD  
CMO***

**Responsibility :  
Coordinator :**

- Clear and organize the Triage area.
- Allot emergency residents & nursing staff to the Triage area
- To identify the persons for giving information to the incident command team
- Receive the patients on arrival and supervision of primary triaging.
- Shift the patients to the designated area as per the triage and allot a nurse to man this area.
- Shift patients requiring acute resuscitation to the resuscitation ICU.
- Informing the incident command team about the statistics.
- To arrange the additional requirement of trolleys and wheel chairs
- Arrange separate path and separate staffs for epidemic and non epidemic patients
- To make sure epidemic and non epidemic patients are treated and shifted in proper designated channel.
- Shift those received dead, to the mortuary after identification and other medico legal procedures.
- Documentation of overall activities.

STATION:

**COVID 19 TREATMENT FACILITY**

***JOB CARD***  
***CONTINUITY OF ESSENTIAL SERVICES***

***RESPONSIBILITY:***  
***CO ORDINATOR :***

- To ensure services of emergency department of the hospitals for conditions which require early intervention and concurrent emergencies.
- To ensure the defined services of the hospitals are carried out on a priority basis unless otherwise directed by the authorities.
- Ensure that all the intensive care areas, high dependency units, theatres, labour rooms and procedure rooms are kept ready to receive any patient requiring urgent intervention.
- Ensure that adequate manpower and infrastructure are made available in these areas
- Define the services which will be offered in such a manner

STATION:

**COVID 19 TREATMENT FACILITY**

***JOB CARD***  
***ENGINEERING & MAINTENENCE***

***RESPONSIBILITY:***  
***CO ORDINATOR :***

- To ensure uninterrupted supply of electricity in the Covid 19 treatment facility
- Ensure alternate sources of supply are in force
- Ensure uninterrupted supply of electricity in accommodation facility
- Ensure uninterrupted supply of water in the hospital and accommodation facility.
- Ensure alternate sources of supply of water
- Ensure uninterrupted supply of medical gases and alternate sources of supply.
- Ensure adequate stock
- Undertake emergency works related to modifications like negative pressure room etc.

**STATION:**

**COVID 19 TREATMENT FACILITY**

***JOB CARD***  
***FOOD & NUTRITION***

***RESPONSIBILITY:  
CO ORDINATOR :***

- To make all arrangements for providing food according to the clinical needs to all the patients admitted to Covid 19 treatment facility.
- To provide diet for all the staff on duty in the hospital and all the staff staying in the accommodation facility provided by the hospital.
- To provide dining facility for relatives of patients.
- To ensure provisions supply to staff on duty or in quarantine.
- To ensure adequate stock of raw materials required for preparing diet.
- To ensure all the infection control protocols, hygiene, storage guidelines and standard protocols regarding food & nutrition.

STATION

**COVID 19 TREATMENT FACILITY**

**JOB CARD  
HUMAN RESOURCE**

***RESPONSIBILITY:  
CO ORDINATOR :***

- To ensure availability of healthcare providers at Covid-19 –Emergency Department, ICU, Ward, Observation area.
- To prepare duty roster for Doctors, Nursing staff, Hospital Assistants, Housekeeping staff, Attenders, Caretakers, Public Relation Department in each area.
- To ensure reserve doctors and staff to meet the requirement in each category.
- To provide necessary training for all category of staff involved in Covid 19 disaster management with regard to their responsibility.
- To ensure the availability of voluntary health care providers on a temporary basis from outside in case if we are running out resources

STATION:

## COVID 19 TREATMENT FACILITY

### JOB CARD LABORATORY

***RESPONSIBILITY:  
CO ORDINATOR :***

- Samples will be received from the concerned areas by attenders. Two attenders will be allotted duty on shift basis for the same.
- Receiving of samples based on standard guidelines.
- Adequate PPE to be worn while receiving and processing of samples.
- To arrange adequate laboratory technicians in each shift
- Deputes a senior laboratory technician to keep all the required material for processing the specimens, like the stains, media and reagents for various biochemical tests ready.
- To run quality control check before processing patients' samples.
- To ensure results are dispatched within the turnaround time for each test.
- All critical results to be intimated immediately to the concerned consultant and the same to be documented.
- To ensure proper triple packing of samples, in case of outsourcing for COVID-19 testing.
- To ensure the availability of reagents and other laboratory supplies and to stock in surplus to meet the additional demand.
- All the blood samples to be autoclaved before sending it to IMAGE
- All the work benches to be disinfected with 1% sodium hypochlorite frequently.
- To ensure good housekeeping practices round the clock.

STATION:

**COVID 19 TREATMENT FACILITY**

***JOB CARD***  
***LAUNDRY CLEANING & WASTE MANAGEMENT***

***RESPONSIBILITY:***  
***CO ORDINATOR :***

- To undertake adequate disinfection and cleaning of linen being used in the Covid 19 treatment facility.
- To undertake adequate disinfection and cleaning of dress worn by doctors, nurses, nursing assistants, nursing students, attenders, security, housekeeping staff etc working in the facility.
- Ensure cleaning of the hospital premises, care areas, accommodation facilities, dining facility etc as per protocols
- Ensure proper disposal of solid waste, liquid waste and biomedical waste from the hospitals as per recommendations.

**STATION**

## COVID 19 TREATMENT FACILITY

### ***JOB CARD LOGISTICS***

#### ***RESPONSIBILITY: CO ORDINATOR :***

- To make all arrangements for transport of doctors and staff on duty at EMS Covid 19 treatment facility.
- To arrange transport equipments, materials, medicines, food materials, water etc to the hospital.
- To co ordinate transport of patients in and out of the hospital.
- To co ordinate ambulance services using the two ICU and two BLS ambulances in the hospital. if necessary arrange for more ambulances.
- To arrange for any special travel needs of patients and their relatives.
- Maintain an Information Desk at the reception area.

#### **STATION:**

## COVID 19 TREATMENT FACILITY

### JOB CARD MORTUARY IN CHARGE

***RESPONSIBILITY:  
CO ORDINATOR :***

- Identification of deceased and tagging them.
- Documentation of diagnosis and possible cause of death.
- To keep separate registers for epidemic and non-epidemic cases.
- To inform concerned authorities, and to arrange for autopsy if required.
- To make sure availability of freezers without interruption (maximum duration of 72 hrs. requirement for each freezer)
- Proper disinfection of freezers, to avoid transmission to persons dealing with bodies.
- Arrange for security personnel.
- Proper PPE for staffs dealing with epidemic deaths.
- Updating incident command team about the statistics.
- To inform concerned authorities for funeral of unidentified dead bodies
- To arrange training regarding handling of dead bodies
- To ensure adequate stock of dead-body bags
- To ensure all HIC practices related to the dead bodies

**STATION:**

**COVID 19 TREATMENT FACILITY**

**JOB CARD  
PHARMACY**

***RESPONSIBILITY:  
CO ORDINATOR :***

- Ensure the availability of all essential drugs and surgical items in the pharmacy, as per the list & stock requirement provided.
- Ensure the availability of adequate number of Pharmacists & Pharmacy Assistants in the Covid-19 Pharmacies (Casualty Pharmacy, Main Pharmacy & IP 6th Floor Pharmacy), round the clock.
- Ensure immediate supply of ordered drugs & surgical items to the concerned patient through runners
- Ensure adequate staff (runners) for the supply of pharmacy items from the Covid-19 Pharmacies to the concerned patient locations in the Hospital
- Contact the suppliers and arrange additional drugs & surgical item requirement on emergency basis, if additional requirement is reported by the command team.
- Procurement & maintenance of stock of PPEs; and issue of these items to the staff as per the instruction of HIC Team

STATION

**COVID 19 TREATMENT FACILITY**

**JOB CARD**  
***PSYCHOLOGICAL & SOCIAL SUPPORT***

***RESPONSIBILITY:***  
***CO ORDINATOR :***

- To provide services of psychosocial support to any patient requiring treatment
- To provide psychosocial support to Covid 19 patients.
- To provide psychosocial support to relatives of Covid 19 patients
- To provide psychosocial support to staff who are treating Covid 19 patients
- To provide psychosocial support to relatives of staff who are treating Covid 19 patients
- To make community interventions to provide psychosocial support to the people and their relatives affected by Covid 19

STATION:

**COVID 19 TREATMENT FACILITY**

**JOB CARD  
SECURITY**

***RESPONSIBILITY:  
CO ORDINATOR :***

- To make all arrangements for ensuring secure environment at Covid 19 treatment facility.
- To prepare and arrange security at main entrance near the road, ED, Reception, treatment areas, accommodation and dining facility for staff etc.
- To manage security cameras and ensure that the key areas are properly monitored and ensure recording of events.
- To ensure compliance with the instructions of authorities regarding secure environment.

**STATION:**

## COVID 19 TREATMENT FACILITY

### **JOB CARD** ***SURGE CAPACITY***

#### ***RESPONSIBILITY:*** ***CO ORDINATOR :***

1. Arrange reserve team of specialist doctors who are not in the first phase of treatment of covid patients. Eg:dermatologist /psychiatry / pathology / microbiology etc. To provide essential training in the care of covid patients to the reserve team
2. Nursing care: Reserve nursing staff who are not in prima facie care of covid patients to be recruited eg. paramedicals / nursing students/OT technicians etc. To provide a prior training to them.
3. Surge capacity measures to ensure adequate pharmacy and supplies - to keep more reserve suppliers and a prior agreement with nearby pharmacies
4. Extra accommodation facilities to be activated as per plan .
5. Lab: To activate reserve staff to add on to existing staff utilising lab trainees and students
6. Food: To be arranged when the surge is activated
7. Referral /counter referral with allied hospital and other care centres to be considered to meet surge- a prior agreement with nearby smaller hospital to receive less severe patients after early discharge or non covid patients after specialist care at our hospital
8. Ensure early discharge of less severe patients to smaller hospitals or care centres or home
9. Analysis of situation on hourly basis and necessary update and modification after consultation with Incident Command Team .

#### **STATION:**

## COVID 19 TREATMENT FACILITY

### JOB CARD

#### PATIENT MANAGEMENT

***RESPONSIBILITY:***  
***CO ORDINATOR :***

- Ensure adequate doctors, staffs are posted in Triage, Isolation facilities (ward/room/ICU)
- Ensure standard treatment protocols for patients according to guidelines
- Ensure patient condition communicated to bystanders at regular intervals
- Ensure daily COVID case statistics made available to medical board
- Ensure updating of clinical management guidelines by ministry

STATION :

## COVID 19 TREATMENT FACILITY

### JOB CARD HIC

***RESPONSIBILITY:  
CO ORDINATOR :***

- To monitor the overall infection control activities
- To ensure adequate supplies of disinfectants, hand sanitizers and liquid soaps.
- All donning and doffing areas to be monitored and to make sure the presence of an observer in these areas.
- PPEs to be issued to the staff as per the instruction of HIC Team
- To ensure the rationale use of PPE. As PPEs are to be used based on the risk profile of the health care worker.
- To train staffs regarding donning and doffing of PPE.
- To ensure adequate disinfection of all medical equipment.
- To monitor the isolation facilities.
- To ensure regular health monitoring of doctors and other staffs working during an epidemic. In case of any symptoms to inform the medical board.
- Continuous monitoring of housekeeping activities and to increase the cleaning frequency.
- Supervision of handling and transportation of infected linen.
- To ensure proper disposal of biomedical waste.
- To be available to clear any queries regarding infection control activities.

STATION:

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# HOSPITAL PREPAREDNESS FOR EPIDEMICS

.....HOSPITAL

....., ....., India

## INTRODUCTION

Hospitals and other healthcare facilities play a critical role in national and local responses to emergencies, such as communicable disease epidemics

## **OBJECTIVES:**

Established Risk Management Program

Established Emergency Response Plan

Defined Roles

Established Communication mechanism

Able to adapt to challenges of an Epidemic

Appropriate resources in sufficient quantities

Addressed the emotional, physical, mental and social needs of the staff and families

## **STRATEGIES:**

Existing plans and capacity to cope with epidemics  
Hospitals capacity to cope with non epidemic emergencies  
The range of services which the hospital normally provides

## **POTENTIAL PITFALLS**

Amplifying an epidemic  
Overwhelming demand for health care  
Overwhelming complexity  
Limited time to forge partnerships  
Difficulty in integrating the hospital

## **OVERCOMING PITFALLS**

Implement infection prevention and control measures  
Prepare for any and all emergencies  
Train hospital staff

## **MANAGEMENT**

### ***Goals***

To ensure that the hospital is at all times in a state of preparedness to participate fully, efficiently and effectively in the coordinated health-sector response to an emergency, such as a communicable disease epidemic

To ensure that the hospital has established the mechanisms and procedures—including those for more strategic all-hazards emergency risk assessment and specific epidemic event risk assessment, prevention, preparedness, response and recovery—that are needed for overall coordination of the hospital's epidemic risk management activities

### ***General principles***

To be prepared to face any risk or emergency, a hospital should have in place a permanent Hospital Emergency Committee responsible for developing the Hospital Emergency Risk Management Programme, of which an Emergency Response Plan is an essential component.

The Hospital Emergency Management Committee should include representatives of the hospital's main activities, including administration, medical and nursing care, emergency department services, infection prevention and control, pharmacy services, laboratory services, security, engineering and maintenance, human resources, laundry, food services, cleaning and waste management, and communication.

Specific measures needed to cope with an epidemic may be included in a hospital's Epidemic Sub-plan annexed to the Hospital Emergency Response Plan.

The Hospital Emergency Committee also establishes an Incident Command Group, which is responsible for adapting the hospital incident management system and the all hazard Hospital Emergency Response Plan (and its annexed Epidemic Sub-plan) to produce an Incident Action Plan that specifies the tasks needed to respond specifically to the current emergency.

The Hospital Emergency Committee, Emergency Risk Management Programme, Emergency Response Plan, Incident Command Group and Incident Action Plan form a preparedness and response system that ensures the coordination of all the activities required to prepare for and respond to an emergency.

### ***Basic requirements***

A permanent Hospital Emergency Committee chaired by a hospital executive or senior manager

A Hospital Emergency Risk Management Programme developed and maintained by the Hospital Emergency Committee

An Incident Command Group established by the Hospital Emergency Committee

An all-hazards Hospital Emergency Response Plan that includes an Epidemic Sub-plan specifying the measures needed to cope with an epidemic

An Incident Action Plan developed by the Incident Command Group

## **HOSPITAL EMERGENCY COMMITTEE**

The Hospital Emergency committee will plan, co ordinate and execute the epidemic management strategy of the hospital.

It will set up plan & facilities for

**EMERGENCY RISK MANAGEMENT:** The plan for emergency risk management is prepared

**EMERGENCY PREPAREDNESS:** The preparations to be done in case an emergency situation comes.

**EMERGENCY RESPONSE PLAN:** The actions which will be taken when an emergency situation comes.

**INCIDENT COMMAND GROUP:** The command group will control the activities undertaken when an cases of an epidemic comes

**INCIDENT ACTION PLAN:** The activities undertaken during the epidemic

**EMERGENCY CO ORDINATION CENTRE:** Area where incident command group meets.

## **COMPONENTS**

Each of the committees should prepare a plan for their hospital using the following template

1. GOAL
2. GENERAL PRINCIPLES
3. BASIC REQUIREMENTS
4. PREPAREDNESS TASKS

- 5. RESPONSE TASKS
- 6. RECOVERY TASKS

## **FIELDS**

**INFECTION PREVENTION & CONTROL** : Strategies for infection prevention and control in the hospital during the epidemic.

**COMMUNICATION** : Communication between staff inside the hospital, with the patients and their relatives, relatives of the staff, public, media and the authorities.

**HUMAN RESOURCES**:The management of staff in the hospital during epidemic. Doctors to work in spite of their specialisations. The staff may have to stay in the hospital.

Recruitment of additional manpower as situation demands and arrangements for it. Staff to be posted as per their competency

**LOGISTICS**: The arrangements for transportation, ambulance, transport of supplies, medicines, water etc to be looked after. Ambulance arrangements and patient transport.

**HOSPITAL PHARMACY**: Continuous supply of medicines according to the needs. Stocke and supply to be planned now.

**HOSPITAL LABORATORY**: Plan for all the investigations required during the epidemic.

Testing facility for COVID 19 also may be required if government directs.

**CONCURRENT EMERGENCIES**; The hospital should also be prepared to deal with other emergencies attending the hospital.

## **ESSENTIAL SUPPORT SERVICES**

1.Food & Nutrition: food for patients, relatives, staff etc to planned. Sufficient stocks to be procured early in case of probable lock down.

2.Security: Security of patients, relatives staff and equipments to be planned.

3.Engineering & Maintenance: The arrangements and modifications to be made in the hospital. Eg. Exhaust fans in rooms to maintain negative pressure.

4. Laundry, Cleaning & waste management: Cleaning of Linen and equipments.

Management of general waste, liquid waste and BMW.

5. Mortuary services:

CONTINUITY OF ESSENTIAL HEALTH CARE SERVICES :Although the hospital is dealing with emergencies essential health care services has to be continued and plan to be prepared.

PSYCHOLOGICAL & SOCIAL SUPPORT SERVICES: Support for patients, relatives, staff, relatives of staff etc to be taken care of

PATIENT MANAGEMENT: Management of patients as per the guidelines provided by the authorities.

SURGE CAPACITY: The maximum intake of the hospital in the scenario of an epidemic. All the planning has to be done as per the surge capacity.

## HOSPITAL INFECTION CONTROL

### ***Goals:***

To reduce transmission of healthcare associated infections and thereby to enhance the safety of all who are present in a hospital, including patients, staff and visitors

To enhance the ability of a hospital to respond to an epidemic

To lower or eliminate the risk of the hospital itself amplifying the epidemic

### ***General principle:***

Infection prevention and control should be an ongoing hospital activity undertaken by all hospital staff and units.

### ***Basic requirements:***

A core infection prevention and control programme whose scope, functions and responsibilities are clearly defined, whose budget is adequate to fund its activities and whose composition includes the following elements:

qualified, dedicated technical infection prevention and control staff aware of their respective responsibilities and functions and trained in the application of infection prevention and control measures;

technical guidelines, adapted to local circumstances, for the management of infection related risks;

infection prevention and control policies for routine measures and for the additional measures needed to address potential threats;

an early-warning epidemic surveillance system linked operationally to the public health surveillance system;

a system for continuous monitoring of the implementation of infection prevention and control measures;

access to a microbiology laboratory using standardized diagnostic and biosafety procedures;

clean water and facilities for ventilation, hand hygiene and isolation of infected patients, and for storage of sterile supplies;

a system for ensuring interoperability with other hospital activities and units, such as waste management, laboratory services, pharmacy, occupational health, and so on

An overall Hospital Emergency Response Plan (and its annexed Epidemic Sub-plan), which is part of the overall Hospital Emergency Risk Management Programme and identifies infection prevention and control as a core function of the hospital

An Incident Command Group to coordinate the hospital's overall emergency response, which includes infection prevention and control activities, and an operational Hospital Emergency Coordination Centre

***Preparedness tasks:***

- Develop the infection prevention and control component of the Hospital Emergency Response Plan (including the Epidemic Sub-plan), based on the hospital's all-hazards

emergency risk assessment.

- For all staff members involved in infection prevention and control prepare Job Action Sheets describing their roles and tasks in an emergency situation.
- Ensure that infection prevention and control staff receive training and participate in regular exercises in order to enhance their ability to fulfil their roles in implementing the hospital's emergency response.
- Define infection control precautions for triage, flow and placement of patients, and early reporting and treatment.
- Establish environmental and engineering controls, such as ensuring effective environmental ventilation and cleaning.
- Identify the minimum supplies and infrastructures needed to implement infection prevention and control measures.

***Response tasks:***

- Ensure that mechanisms are in place to receive response operational directions from, and to coordinate actions with, the Incident Command Group.
- Adapt the infection prevention and control component of the Hospital Emergency Response Plan (including the Epidemic Sub-plan) in order to develop the infection prevention and control component of the hospital's Incident Action Plan, which is tailored to the characteristics of the emergency, as determined by epidemic event risk assessments and evolving situational and needs assessments.
- Assess infection prevention and control staffing needs for the emergency (at the very least, a doctor and a nurse) and work with the human resource department to secure additional staff as required.
- Once an epidemic has started, establish active surveillance of cases (among both incoming patients and patients already admitted).
- Make sure that the hospital's infection prevention and control policies are consistent with the presumed mode of transmission of the epidemic infection and with locally available resources.
- Reinforce standard infection control precautions and establish additional precautions if

required by the specific nature of the epidemic.

- Establish patient flow based on transmission risks and on patients' clinical status.
- Defer or limit procedures that could facilitate spread of the infection.
- Ensure adequate protection of the hospital staff against infection and monitor staff health status continuously.
- Monitor infection prevention and control practices and modify policies as necessary.
- Include in the hospital's risk communication strategy messages aimed at reinforcing infection prevention and control efforts among hospital staff, patients and visitors, and the wider community.

***Recovery tasks:***

- As part of an overall hospital review, assess the hospital's operational performance in implementing infection prevention and control plans and, if necessary, update these plans on the basis of lessons learned.
- Implement measures to address the welfare needs of infection prevention and control staff, such as leave and psychosocial support.
- Replenish stocks of pharmaceutical products to enable the hospital to maintain or restore routine infection prevention and control services.

**COMMUNICATION**

***General principles***

- Inform the community about an epidemic and its likely impact

What is covid 19

How it spreads

What are the risks associated and complications

The symptoms

When to report and where

How to prevent spread and precautions

Clarify the unwanted rumors, to avoid panic situations.

Directions from Govt. and health department

- **s**hould be consistent with information provided by health authorities.

-Information for the media and general public should be communicated through a single source.

Official announcement is only from this communication desk

Material for announcement should be written prior to the release and get approved by the incident command group.

-Communications activities undertaken should be coordinated through the hospital's Incident Command Group and senior hospital staff.

### ***Basic requirements***

An Incident Command Group coordinate the hospital's overall emergency response, which includes communications activities, and an operational Hospital Emergency Coordination Centre

Communication strategy that specifies the means required to communicate with hospital occupants and with the public in non-emergency situations and in an emergency.

An analysis of the likely impact of the emergency and the emergency response on hospital service. Includes:

No. of suspected cases

No. of confirmed cases

Cases in the rooms and ward

No. of cases in the ICU

No. of cases in Ventilator

Deaths if any

No. of cases cured and discharged

An understanding of the type of information to be communicated about the prevention of injury, illness and death, and about the activities required to respond to the emergency.

Protocol to attend the fever clinic

Protocol to attend infected cases in ward and ICU

Priorities in cases of limited resources. ( Beds and ventilators, HR)

Transport of patients In the hospital with minimum insult to others.

( specific root and lifts) can put a red line

### **Preparedness tasks**

#### ***Generic tasks***

Appoint a staff working group

Form an information desk. Consisting

Group head, Announcer 2, Data collection 2

For all staff members involved in communications activities prepare Job Action Sheets describing their roles and tasks in an emergency situation.

Appoint official hospital spokespersons to address the public on behalf of the hospital

Test the hospital's communications equipment to ensure that it is in working condition and adequate, in quantity and quality, for the purposes of communication during an emergency.

### **External communication**

Determine what information the public is likely to need with a view to reducing risks during an emergency.

Announcements

Printed materials

Assign additional spokespersons, as required, in order to organize collaboration with partners and stakeholders in communication of information

Develop strategy needed for dealing with the media.

Information for Govt and Health department.

Includes-

No.of beds allotted for observation, infected less serious patients.

N. of ICU beds, No of ventilators free and occupied, No. of ppe available, Staff requirements and shortage,Ambulance service

Information for the gen. public

Information for the Staff

Internal communication

Develop a plan, for providing information to hospital staff, patients and visitors.

### **Response tasks**

Give the hospital staff:

- the essential information they require about personal and family health and welfare;
- progress reports on the management of the emergency, including actions planned in response to the emergency;

Deliver messages to the public that:

- are short and to the point;
- provide information that is factually correct;
- are reassuring without sacrificing credibility or transparency;
- take into account the fears and emotions raised by the emergency;
- are delivered in a timely manner, at set intervals and through set channel

### ***Recovery tasks***

## HUMAN RESOURCES

### *Goals*

- To ensure that hospitals and associated healthcare facilities, such as alternative care sites, are adequately staffed, with respect to numbers of personnel and required competencies, to deliver quality care and perform other hospital services
- To ensure that hospitals make the necessary arrangements to acquire the staff

needed to respond to the increased demands of an emergency

### ***General principles***

Protecting the health of hospital staff is a priority concern.

- All hospital personnel, including regular employees, volunteers and temporary staff, should enjoy the same level of personal protection from infection and other risks to their safety and the same degree of access to occupational health services.
- A shortage of staff due to a combination of staff absences and the increased demand for services must be anticipated and a plan to cope with this shortage, such as by reallocating staff or securing additional staff, must be developed.
- During an emergency additional personnel—including skilled personnel able to provide specialized care—may be required to meet the likely increase in numbers of patients seeking admission to the hospital, alternative care sites and other healthcare facilities in the community.
- Retired hospital staff, university staff and students from faculties of medicine, nursing and public health, are possible sources of additional staff.
- The quality of care provided by the hospital depends, among other things, on the quality of essential hospital support services provided by non-medical staff as part of the overall hospital response to an emergency.
- Enrolling extra staff, including volunteers, to perform specified roles, involves several essential steps, such as credentialling (i.e. formally certifying a person's qualifications) and ensuring liability protection, on-the-job training, supervision and disease prevention.
- The hospital is liable and accountable for all services performed by both paid and unpaid staff, and also for the health risks to which staff are exposed.
- Community support (e.g. providing assistance with domestic care for children, transportation to and from the hospital and a hospital nursery) can give staff peace of mind and flexibility for working irregular shifts and longer hours.
- Social mobilization and community participation (in providing volunteer staff, for example) are managed as part of the overall national or local response.
- The efficiency and effectiveness of hospital staff may be adversely affected by

circumstances not necessarily or not directly related to the crisis, such as an illness or a conflict between family and work commitments.

- Anxiety among staff confronted with a crisis involving a highly contagious infectious disease is to be expected and requires active management through personal protective procedures and psychosocial support.
- Staff shortages in a crisis situation may occur at different levels of skill and in widely differing but equally essential areas of hospital activity, ranging from technically skilled personnel working in an operating theatre to personnel responsible for cleaning tasks or food preparation.
- Staff assigned to tasks for which they lack specific competence will need to be trained, mentored and closely supervised until they become fully operational.
- Certain resources, such as personal protective equipment, medicines or vaccines, may be in short supply in a crisis situation.

### ***Basic requirements***

- An overall Hospital Emergency Response Plan (and its annexed Epidemic Sub-plan), which is part of the overall Hospital Emergency Risk Management Programme and identifies human resource management as an essential hospital function
- An Incident Command Group to coordinate the hospital's overall emergency response, which includes human resource management activities, and an operational Hospital Emergency Coordination Centre
- A human resource management system that covers the procedures required for establishing conditions of service and for administering staff recruitment and retention, staff inventories, staff shifts, staff development, job briefing and training, payroll issues and occupational health and safety
- A staff illness surveillance system

### ***Preparedness tasks***

- Develop the human resource component of the Hospital's Emergency Response Plan (including the Epidemic Sub-plan), based on the hospital's all-hazards emergency risk

assessment and on an assessment of the extra staff, including extra staff for human resource management, that the hospital as a whole might need during an emergency.

- For all staff members involved in human resource management prepare Job Action Sheets describing their roles and tasks in an emergency situation.
- Determine whether and to what extent mutual aid agreements and synergies with other healthcare facilities, the Ministry of Health, private sector agencies, universities and other organizations could make available additional personnel required within and outside the hospital in order to maintain uninterrupted essential hospital support services.
- Ensure that the conditions of service of hospital staff make provision for emergency situations and cover such issues as staff and family welfare, working hours, overtime payments and compensatory time off once the emergency period has ended.
- Assess the adequacy of the hospital's recall procedures for existing staff.
- Develop and implement a training programme that is based on an assessment of staff roles in an emergency, that takes into account the nature of the epidemic, that covers training in the use of Standard and Additional infection prevention and control precautions, including, among other things, the use of personal protective equipment, and that is consistent with the hospital's human resource management emergency response plan.
- Develop procedures for credentialling newly recruited and volunteer staff and for providing them with training and liability protection in an emergency.
- Ensure that the hospital's occupational medicine programme is fully functional and is running a staff surveillance system able to detect epidemic infection and other health problems.
- Ensure that a roster of experts likely to be needed for treatment of hospital staff is readily available.
- Develop a plan for providing staff with social and psychological support.
- Develop procedures, such as obtaining emergency funds from senior management, for paying staff in an emergency situation and for expanding the payroll to cover newly enrolled staff.

- Train staff in implementing their human resource management roles in emergencies.
- Ensure that human resource management staff participate in regular exercises to test plans and procedures for their applicability in emergency conditions.
- Establish a contingency or surge capacity plan for staff shortages and for increasing numbers of skilled staff required to meet increased demand for human resources services.

### *Response tasks*

- Ensure that mechanisms are in place to receive response operational directions from, and to coordinate actions with, the Incident Command Group.
- Adapt the human resource component of the Hospital Emergency Response Plan (including the Epidemic Sub-plan) in order to develop the human resource component of the hospital's Incident Action Plan, which is tailored to the characteristics of the emergency, as determined by epidemic event risk assessments and evolving situational and needs assessments.
- Review staffing requirements during an emergency, taking into account the need for skilled staff to enhance the hospital's surge capacity and to ensure continuity of essential services.
- Recruit extra staff, expanding recruitment sources to include volunteers, retirees, medical students, and so on, and arrange for appropriate credentialling and training. Activate procedures to recall staff to duty and to enrol additional staff, such as by implementing agreements with public- and private-sector entities and other organizations.
- Brief and train volunteers and extra staff as fully as possible on procedures to be followed in an emergency, security issues, infection control measures, cleaning and sterilization procedures, use of personal protective equipment and access to occupational health services.
- Provide staffing for newly designated hospital areas, such as a new triage area or isolation room.
- Reallocate staff appropriate to their specific skills to meet increased demand for

services in certain areas (e.g. laboratory, kitchen, cleaning, security, emergency department).

- Assign skilled staff to duties appropriate to their specific skills and arrange for supervision and support, as required, for less-skilled staff.
- Supervise and monitor the performance of newly enrolled staff and volunteers and take remedial action where necessary.
- Assign appropriate hospital staff, as required, to ensure rapid training of staff working in alternative care sites.
- Monitor staff illnesses and absences through the staff illness surveillance system and report, through the appropriate channels, any unusual cases or clusters of illness to the Incident Command Group, senior hospital management and health authorities.
- Ensure that hospital staff are aware of the medical, psychosocial and community support services that are available to them and their families to help them maintain physical and mental health, resolve any conflicts between family and work commitments and fulfil the emergency roles that they may have to play over many months.
- Contact community leaders to arrange for community support of hospital staff.

### ***Recovery tasks***

As part of an overall hospital review, assess the hospital's performance in implementing human resource emergency plans and, if necessary, update these plans on the basis of lessons learned.

Follow up staff who were affected mentally or physically by the emergency and who might require continuing psychosocial support, treatment or rehabilitation.

Make arrangements, as required, for staff to take leave after a protracted emergency, especially for staff members who took no leave before or during the emergency



## Hospital Pharmacy

### *Goals*

- To make appropriate medicines and other pharmaceutical products available in the hospital for distribution to individuals affected by an emergency
- To ensure that medicines and other pharmaceutical products continue to be available and distributed to hospital patients during an emergency

### *General principles*

- During an epidemic, essential medicines shall be made readily available for distribution for efficient management of patient overload and to the continuity of hospital services to non-epidemic patients.
- The pharmacy shall provide medicines to the various hospital departments during an emergency, and maintain stocks of medicines and other healthcare necessities (such as vaccines and disinfectants) in readiness for an emergency.
- The need for medicines and protective equipment will be decided on the nature of the emergency and the risks it poses.
- In the case of large-scale disasters, the pharmacy shall also contribute to the management of donated medicines received from local sources.
- Adoption of standardized pharmacy procedures, checklists, forms and log sheets to the safety and efficiency of operations.

### *Basic requirements*

- Hospital Emergency Response Plan (including an Epidemic Sub-plan), which is part of the Hospital Emergency Risk Management Programme and identifies pharmacy services as an essential hospital function

- An Incident Command Group to coordinate the hospital's overall emergency response, which includes pharmacy activities, and an operational Hospital Emergency Coordination Centre
- An updated inventory of essential medicines antibiotics, and supplies, including antipyretics and antiviral drugs
- Policies and procedures that are used for managing routine (i.e. non-emergency) pharmaceutical services which are adaptable to an emergency situation

***Preparedness tasks***

- Develop the pharmacy component of the Hospital's Emergency Response Plan (including Epidemic Sub-plan), based on the hospital's all-hazards emergency risk assessment.
- Prepare Job Action Sheets for all staff members involved in providing pharmacy services, describing their roles and tasks in an emergency situation.
- Ensure that pharmacy staff receive training and participate in regular exercises in order to enhance their ability to fulfil their roles in implementing the hospital's emergency response.
- Determine, in accordance with recommendations of concerned authorities, what medicines and other pharmaceutical products are essential and what quantities need to be stockpiled not only for a response over the first few days of an emergency, such as an epidemic, but also for ensuring continuity of regular pharmacy services throughout the emergency period.
- Develop and implement Standard Operating Procedures and a supply chain for acquiring, stocking and distributing the necessary supplies in the quantities required before and during an emergency and ensure that these procedures are consistent with national policies and national emergency response plans.
- Establish, if required, Memoranda of Understanding with suppliers, local community pharmacies and other healthcare facilities within the local or regional hospital network,

in order to ensure the supply and resupply, as and when required or on short notice, of sufficient quantities of essential pharmaceutical materials.

- Establish and maintain agreements with private sector entities able to provide not only pharmaceutical items of the required quality but also skilled staff available to meet surge capacity needs.
- Develop and test procedures for evacuating the hospital pharmacy, laboratory and blood bank in order to ensure staff safety while assuring continuity of routine hospital services.
- If alternative care sites are identified in the Hospital Emergency Response Plan (including the Epidemic Sub-plan), develop plans for the role of the hospital pharmacy in staffing these sites and in supplying them with pharmaceutical products.
- Develop a plan for the role of the pharmacy in providing medicines to patients receiving outpatient and home-based care.
- Develop a plan for the role of the pharmacy in receiving, storing and sorting donated medicines and other products and in disposing of expired or unneeded items.
- Establish a contingency or surge capacity plan with Human Resources for managing staff shortages and for increasing numbers of skilled staff required to meet increased demand for pharmaceutical services.

#### ***Response tasks***

- Ensure that mechanisms are in place to receive response operational directions from, and to coordinate actions with, the Incident Command Group.
- Adapt the pharmacy component of the Hospital Emergency Response Plan (including the Epidemic Sub-plan) in order to develop the pharmacy component of the hospital's Incident Action Plan, which is tailored to the characteristics of the emergency, as determined by epidemic event risk assessments and evolving situational and needs assessments.

- Assess pharmacy staffing needs for the emergency and work with the human resource department to secure additional staff.
- Implement the Incident Action Plan and Standard Operating Procedures with respect to procurement, acquisition, storage, stock and stockpile monitoring, and distribution of pharmaceutical products to meet the demands of the emergency.
- Update the inventory of essential medicines and supplies, including antibiotics, re-hydration fluids, antipyretics and antiviral drugs.
- Update Standard Operating Procedures to ensure not only that they cover storage and distribution of essential medicines and pharmaceutical supplies but also that they stipulate who should receive these items, according to what criteria and who should make the final decisions regarding their distribution and use.
- Determine how many patients can be treated with the stocks of essential medicines and other items available in the hospital at the time of the emergency and double-check with suppliers as to their ability to provide the required medicines and other supplies.

#### ***Recovery tasks***

- Assess the hospital's operational performance in implementing emergency pharmacy plans and, if necessary, update these plans on the basis of lessons learned.
- Implement measures to address the welfare needs of pharmacy staff, such as leave and psycho-social support.
- Replenish stocks of pharmaceutical products to enable the hospital to maintain or restore routine pharmacy services.

## Hospital laboratory

### *Goals*

- To provide laboratory services in support of the hospital's preparedness and response activities and to do so in a timely, efficient manner
- To create a balance between other routine emergency tests and the epidemic demand.

### *General principles*

- The hospital laboratory will continue to provide critical services for several essential hospital activities.
- A separate team and a dedicated receiving area will be allotted for receiving suspected samples.
- As the laboratory is not equipped with a RT-PCR , samples will be send to the concerned centre and in case of the approval of serological testing for COVID 19 by the government , in house serological testing will be started.
- Laboratory waste management and cleaning will be given high priority among the hospital's activities.
- WHO guidelines for collecting, preserving, and transporting specimens will be strictly adhered to.
- Standardized laboratory procedures, checklists, forms and log sheets will be strictly adhered to, so as to facilitate exchange of information between hospitals.
- An overall Hospital Emergency Response Plan (including an Epidemic Sub-plan), which is part of the overall Hospital Emergency Risk Management Programme and identifies laboratory services as an essential hospital function
- An Incident Command Group to coordinate the hospital's overall emergency response, which includes laboratory activities, and an operational Hospital Emergency Coordination Centre.

- An updated inventory of laboratory equipment, reagents and consumables
- Policies and procedures that are used for managing routine (i.e. non-emergency) laboratory services and are adaptable to an emergency situation
- Guidelines consistent with local policies and laws or issued by WHO on collecting and transporting specimens taken for purposes of infection control and prevention

***Preparedness tasks***

- A Laboratory Emergency response plan will be made available to all staffs.
- Staffs will be divided into different teams and each team will be given their Job Action Sheets describing their roles and tasks in an emergency situation.
- Laboratory staffs will be given training and encouraged to participate in regular exercises in order to enhance their ability to fulfil their roles in implementing the hospital's emergency response.
- At present we have agreements with two NABL Accredited laboratories for outsourcing of facilities in case of emergencies. In order to cope up with increased demands more private laboratories which meets performance standards can be included.
- Separate team will be allotted for timely sharing of essential information with other hospital departments and with health authorities.
- In addition to the present suppliers, an agreement will be established with other healthcare facilities and suppliers to ensure the supply and resupply of sufficient quantities of essential laboratory supplies (and of personal protective equipment) as and when required or on short notice
- Develop and test procedures for evacuating the laboratory in order to ensure staff safety, while assuring continuity of routine laboratory services.
- Regular training on infection prevention and control measures will be ensured.

- Good Housekeeping practices inside the laboratory will be ensured. All cleaning equipment's and disinfectants will be made available.
- A contingency or surge capacity plan will be made with the help of Human Resource department for managing staff shortages and for increasing numbers of skilled staff required to meet increased demand for laboratory services.

***Response tasks***

- Ensure that the laboratory emergency plan is in place and followed as and when required
- Adapt the laboratory component of the Hospital Emergency Response Plan (including the Epidemic Sub-plan) in order to develop the laboratory component of the hospital's Incident Action Plan, which is tailored to the characteristics of the emergency, as determined by epidemic event risk assessments and evolving situational and needs assessments.
- Assess laboratory staffing needs for the emergency and work with the human resource department to secure additional staff as required.
- Update the inventory of essential laboratory equipment and supplies
- Implement the Incident Action Plan, Standard Operating Procedures, protocols and agreements for performing laboratory services in accordance with Ministry of Health directives.
- Double-check with suppliers as to their ability to provide laboratory supplies or additional technical staff.
- Ensure close monitoring of staff health status and follow-up action by the hospital's occupational health services.
- Check that standards are being met for personal protection, infection prevention and control, and for cleaning, disinfection and laboratory waste management.

### *Recovery tasks*

- Assess the hospital's operational performance in implementing laboratory emergency plans and, if necessary, update these plans on the basis of lessons learned
- Implement measures to address the welfare needs of laboratory staff, such as leave and psychosocial support.
- Replenish stocks of laboratory products to enable the hospital to maintain or restore routine laboratory services.

## Concurrent Emergencies

### **AIM:**

This plan is aimed at providing essential health care facilities during another emergency at the same time as coping with an epidemic

### **Types of emergencies:**

#### Natural

Droughts, Floods, earthquake, landslide, fire

#### Man made

Rail, Road, air accidents, Gas, Chemical leakages, Fires, Food poisoning

### **BASIC REQUIRMENTS:**

1. Permanent hospital emergency committee
2. Hospital emergency risk management program
3. An incident action plan developed by incident command group

### **ESTABLISHED RISK MANAGEMENT PLAN**

EMSCH has a plan for dealing any concurrent emergencies. A second sub plan is activated at short notice and to adjust hospital service to respond simultaneously to both emergencies.

A second emergency during an epidemic can seriously disrupt the normal function of the hospital.

### **NOTIFICATION OF AN EMERGENCY:**

- 1) The telephone operator on duty directs the call to the CMO on duty and he or she is responsible for identifying the person giving information and enquire about the nature

and magnitude of the incident, location and possible number of casualties and probable time of arrival.

- 2) The casualty medical officer on duty should immediately inform the medical superintendent, Nodal officer and act as a command officer
- 3) A command nucleus is formed consisting of medical superintendent, administrative manager, CMO, Nodal officer and chief nursing officer formulated near emergency department.
- 4) The CMO stationed in emergency department is responsible for mobilizing additional equipments and man power including RMOs and help in documentation and admission.
- 5) The CMO should also alert other departments like Radiology, laboratory, pharmacy and security office
- 6) All participants who are involved in direct dealing with the patients should wear personal protection equipment
- 7) Alert the command nucleus if epidemic cases are detected among patients affected by the emergency, and immediate measures are taken for the appropriate management of such patients including isolation.
- 8) Security personals are responsible for ensuring adequate security and blocking of all unwanted movements of staffs by coordinating the CMO.

#### **CONTROL ROOM:**

It is essential to coordinate all activities of the disaster management. The Duty Doctor room situated in the ground floor of main hospital building near emergency department triage area will function as control room and will function round the clock and will be responsible for in and out communication( nearest police station, fire and rescue station, other nearby hospitals)

Staffs from medical records department will compile the data under direct supervision of medical superintendent.

**General functions of control room:**

- 1) Compilation of data regarding disaster victims: Full name, age, sex.  
Identification marks  
Address, date and time of admissions, diagnosis.  
Registration number, ward no., treating unit,
- 2) Dissemination of data to higher authorities  
Media briefing, press notes,  
Analysis and application of data  
Inter departmental coordination  
Reporting to be done from pre determined uniform formats
- 3) Arrange for extra beds in ICU and wards.
- 4) Contacting local health care centers for patients who does not require emergency medical care during the disaster
- 5) To consider discharge of medically fit patients after discussing with the concerned specialists.

**SIGN BOARDS:**

As soon as the emergency response plan is initiated sign boards are placed in hospital campus to direct the flow of patients in disaster and others. Sign boards are also placed to maintain other departments temporarily in ED

**JOB ASSIGNMENTS / Role defining:**

Job cards with tags are placed in ED,

staffs from other departments shall take up job cards and report to CNO. Emergency department staffs are assigned to lead in all areas.

### **ARRIVAL AND TRIAGE:**

Patients may arrive in ED by means of ambulances and private vehicles

Triage is the process by which patients are classified according to the severity

During a disaster the area between the front of ED and Ortho OPD side will be taken as triage area

Alert the hospital emergency comity(commant nucleus ) of any epidemic cases in the current emergency

Organizing separate flow of patients from triage area for patients with the current emergency, other medical emergencies and the ongoing epidemic

Usual epidemic cases shall be taken directly to the isolation room in 2<sup>nd</sup> floor without contact with the other patient communities

Medical emergency patients are taken to usual priority one area in ED room and EDICU

Extreme care is taken for not being infected by the epidemic to the disaster patients during triaging.

Epidemic patients in disaster is taken to area in front of EDICU for immediate care before shifting to isolation room.

Triage officers should wear full personal protective equipments The goal of triage is:

To identify the patient in need for immediate attention

To ensure that patients present for treatment only to appropriate forewarned medical specialty as a means of conserving limited personal and supply resources.

### **IDENTIFICATION AND REGISTRATION:**

The medical records department will allot personal to set the documents for identification and registrations of patients who are admitted

Unknown patients are taken up numerical (like- unknown 1, 2 etc)

## **REFERAL PROCESS**

- 1) The CMO on duty directs the patients to the concerned specialties after documentation, concerned department heads are informed immediately.
- 2) The nodal officer and the hospital emergency committee is immediately alerted regarding the shift of epidemic patients in disaster.
- 3) Epidemic patients in disaster are shifted properly with an accompanying staff in PPE and after informing the isolation ward and the adjacent ICU.
- 4) They are shifted only through the lift near emergency department.

## **ACCOMMODATION:**

The ..... has a surge capacity of ..... patients in ED during an external disaster, in order to accommodate a large number of patients in short interval of time, a plan for immediate expansion of indoor facilities at a short notice

Epidemic patients in disaster are taken to ...../..... ward after immediate treatment from ED

Third priority patients are admitted in.....

First and second priority patients are admitted in wards and ICUs accordingly.

Counselling and rehabilitation of bystanders as well as patients is taken up in a separate room by specialists

## **SUPPLIES AND EQUIPMENTS:**

Extra supplies will be obtained from purchasing personnel through runners.

Outside supplies will be ordered by store in charge and brought in to hospital.

### **VALUABLES AND CLOTHING:**

Large paper or plastic bags will be made available in the ED and store room for patients clothing and valuables , and will be properly tagged.

### **MORGUE FACILITIES:**

Patients pronounced DOA(death on arrival) will be tagged with a disaster tag – do not remove personal belonging.

Bodies will be stored in designated place by security personal. They shall remain with bodies until removed by proper authority.

### **PLAN DEVELOPMENT AND MAINTENANCE:**

This disaster plan was developed by hospital emergency committee .

All the departments are responsible for maintaining an up to date hospital risk management manual and notifying the hospital emergency committee This plan will be updated annually or as changes in departments occur.

Mock drill be under taken twice in a year to test the adequacy of the plan this will help the hospital emergency committee to access the utility of the plan and introduce changes as per demand

These mock drill will help to train the staffs and prepare for any further emergencies by reducing potential pitfalls.



## Food and nutritional services

- 1) Maintaining effective food supply during an epidemic is of paramount importance.
- 2) It may be hampered by factors such as increased demand for food and water, disruption of the supply chain and shortage of trained staff. 3) This problem was discussed with canteen people, dieticians and hospital management .
- 4) Menu will be decided by dieticians keeping in mind patient requirements and availability of food items .
- 5) Current canteen will have to be shut to avoid overcrowding during mealtime .
- 6) Food for patient and relatives will be delivered to their room or ward and food for hospital staff will be delivered to their respective areas.
- 6) Logistics of packing and delivery has to be decided by the canteen manager.
- 7) Review existing systems and protocols for managing kitchen stock in order to ensure adequate food supply during an epidemic.
- 8) Make arrangements and agreements with suppliers to ensure continuity of safe food supply for 3 months.
- 9) Measures to prevent disruption of the food supply chain (e.g. by storing foods that withstand long storage times and by ordering stock well in advance).
- 10) Stringent measures to prevent food-borne disease and steps to ensure safe management of food waste has to be implemented.
- 11) Kitchen services can also be affected by shortage of trained staff as already 16 persons working in canteen has returned to their native states in view of covid outbreak .
- 12) Health education of staffs related with handling and delivery of food has to be done with special emphasis on covid .

## Security

- 1) Security is a vital function for the protection of the hospital, its occupants and its lifelines.
- 2) Security is vital for continuity of the hospital's essential services at all times but particularly in the course of an epidemic.
- 3) Security measures are required and may need to be strengthened to reduce the risk of events that may adversely affect: staff, patients and visitors (such as theft of personal belongings or patient records, or violent behaviour); hospital property (such as damage to, or theft of, equipment); critical areas (such as intruders entering triage and exhorting areas).
- 4) Identify major security problems that might arise, rank them in order of importance and draw up an action plan to prevent or resolve them.
- 5) we may have to purchase additional security equipments in consultation with security chief
- 6) Loss of man power due to infection or fear of infection has to be considered
- 7) Educating security staff regarding prevailing situation and safety measures to be taken
- 7) we had an informal discussion with Security head ,may requires further meetings to finalise the decisions.

## Engineering and maintenance

- 1) The maintenance of lifelines (e.g. water, power and communications) and of hospital equipment is essential for the effective functioning of the hospital.
- 2) Engineering staff may be required to establish lifeline services and install equipment in alternative care sites.
- 3) A protracted crisis may call for recruitment and training of additional support service staff. Ensure that adequate maintenance services are available to keep essential hospital equipment in working condition.
- 4) Identify lifelines required on a continuous basis, such as water, heating-ventilation- air- conditioning and electricity, and make arrangements with suppliers who agree to give priority to the hospital in an emergency situation.
- 5) Identify serious maintenance problems that may arise during an emergency situation and rank them in order of importance.
- 6) Draw up an action plan for urgent up-scaling of maintenance capacity, including additional staff and suppliers of equipment and spare parts.
- 7) Determine potential needs for external technical support and make the necessary arrangements with external service providers.

8) Train engineering and maintenance staff in infection prevention and control procedures.

## Cleaning , Housekeeping & Waste management

During an epidemic, cleaning services are likely to experience a sudden increase in workload and to face a number of constraints on coping with the increased pressure, such as:

- 1) The opening of additional hospital areas (triage areas, isolation rooms, etc.) that require cleaning.
- 2) Shortage of trained staff able to work in a high-risk environment and the need for existing staff to work longer hours;
- 3) An unreliable supply and resupply of cleaning materials;
- 4 ) concerns over occupational safety and the need to observe infection prevention protocols to protect patients and staff.
- 5) Assess whether standard environmental control procedures, such as cleaning and disinfection, will be adequate for the current emergency situation.
- 6) Determine the impact of environmental contamination on transmission of the infectious organism causing the current epidemic and identify cleaning and disinfection procedures likely to reduce transmission.
- 7) Review arrangements with laundry suppliers to ensure continuity of supplies in the emergency situation.

# CONTINUITY OF ESSENTIAL SERVICES IN EMS HOSPITAL IN COVID 19

## EPIDEMIC SITUATION

### *Goal*

To ensure that the hospital, as a critical component of the health system, contributes to the continuity of essential health services required by the community, while at the same time providing health services to patients affected by an epidemic or other emergency

### *General principles*

- Communities will continue to experience medical emergencies, such as obstetrical complications, acute heart conditions and life-threatening injuries, which will require hospital care during an epidemic or other emergency.
- Decisions on how to balance the allocation of scarce hospital resources between routine and emergency needs should be ethical and equitable and should take into account the services that the hospital may be contributing to public health programmes.
- Delivery of essential services takes precedence over any other consideration, even when the hospital has to be partly or totally evacuated.
- During an epidemic, the hospital must apply triage criteria with a view to admitting the most critically ill and treatable epidemic patients. In some circumstances, health authorities may require a health facility to focus on providing health services to non-epidemic patients and to refer epidemic patients elsewhere. Exclusion policies may also preclude admission of epidemic patients.
- In conjunction with health authorities, the hospital should identify the essential services that will be continued, the non-essential services that could be deferred

and the criteria for accessing the hospital's services (such as inclusion and exclusion criteria). The criteria will vary according to the severity of the situation, the availability of alternative treatment options (such as community-based care) and the resources available. To mitigate the negative impact of deferring services, a phased approach should be considered.

- Restricting of the number of admissions of epidemic patients to those who will reasonably benefit from hospital-based care is a complex decision and must be made in coordination with other local health services and the relevant health authority (e.g. Ministry of Health).

#### ***Basic requirements***

- An overall Hospital Emergency Response
- An Incident Command Group
- Hospital Emergency Coordination Centre
- Policies, procedures and criteria for admitting patients to the hospital during an epidemic.

#### ***Preparedness tasks***

- Clarify with the Ministry of Health the hospital's role in an epidemic emergency, in particular whether it should admit epidemic patients or refer them to another hospital.
- Establish mechanisms for referral/counter-referral systems, patient follow-up at alternative care sites and home care (for patients not requiring admission to hospital).
- Formulate strategies for referring epidemic patients to healthcare facilities at other health system levels.
- Identify, in consultation with the Ministry of Health, the essential routine services to be maintained during an epidemic, and allocate human and material resources accordingly.
- Determine procedures for management of non-essential services, including referral to other facilities or levels of care, or deferral until a decision is taken to resume non-essential services.

- Estimate the number of epidemic patients the hospital can admit without jeopardizing its ability to ensure continuity of essential services to non-epidemic patients and inform health authorities and other community officials of this estimated number.
- Identify all the services provided by the hospital, both in- and outpatient, as well as services provided to public health programmes.

The plan is to consider two scenarios

1. Small scale epidemic and hospital is admitting COVID 19 patients while continuing all the essential services. The hospital can take up upto 50 Covid 19 patients, out of which 10% can be critically ill. The patients will be treated in 8th floor, observation ward and old neurosurgical ICU.
2. Large scale epidemic and hospital is admitting upto 200 Covid 90 patients . All other operations will have to be shut down, but still we will be able to provide treatment for dare non epidemic emergencies, if the authority permits.

### ***Response tasks***

- Ensure that mechanisms are in place to receive response operational directions from, and to coordinate actions with, the Incident Command Group.
- Assess staffing needs to ensure continuity of essential services during the emergency and work with the human resource department to secure additional staff as required. Determine the critical care needs (intensive care, antibiotic therapy, etc.) of the most Review the hospital's plans for ensuring continuity of selected essential services and revise them to meet the specific circumstances of the current epidemic. Ensure continuous monitoring of the capacity of the hospital to provide the agreed essential healthcare services required by non-epidemic patients and keep the relevant health authorities informed of the extent to which the hospital is succeeding

in this task. Ensure that enough medicines, supplies and staff are available to meet the specific needs of epidemic patients and also the needs of non-epidemic patients.

- In order to reduce the risk of epidemic transmission in the hospital, organize patient traffic flow to avoid contact between patients requiring routine essential care and those affected by the epidemic.

### ***Recovery task***

As part of an overall hospital review, assess the hospital's operational performance in implementing emergency plans to ensure continuity of essential routine services and, if necessary, update these plans on the basis of lessons learned.

## Psychological and social support services

### ***Goal :***

To reduce the adverse psychological and social impact of an emergency situation on hospital patients and staff, and on members of the affected community

### ***Basic Requirements :-***

- An overall Hospital Emergency Response Plan which is part of the overall Hospital Emergency Risk Management Programme, identifies psychosocial services as an essential hospital function
- An Incident Command Group to coordinate the hospital's overall emergency response, which includes psychological and social support activities, and an operational Hospital Emergency Coordination Centre
- A hospital psychosocial support service including the psychiatrist, psychologist and social worker ( if available ) for patients and staff, which is linked to community services and can be adapted to an emergency situation

### ***Preparedness tasks***

- Establish a hospital psychosocial team, (including Psychiatrist, Clinical Psychologist, Psychiatric Nurses, Medical Social worker
- Ensure that psychosocial support team members receive training and participate in regular exercises.
- Liaise and plan with the human resource department and other hospital departments, likely to require psychological and social support.
- Designate hospital areas where psychosocial support services will be provided.

- Ensure that psychosocial support team members are trained in infection prevention and control measures as they may have to visit epidemic patients.

### *Response tasks*

- Ensure that mechanisms are in place to receive response operational directions from, and to coordinate actions with, the Incident Command Group.
- Review existing Standard Operating Procedures and protocols and adapt these to the current emergency situation.
- Liaise with all hospital departments in monitoring the psychological health of staff and in providing psychosocial support services.
- Implement procedures to identify patients, family members and hospital staff members at a high risk of suffering mental distress and other mental problems in an emergency situation.
- Ensure that patients, their families and hospital staff are aware that psychosocial support is available and that they know how to access psychosocial support team members by telephone or at the hospital.
- Ensure that the psychosocial support team provides information that not only dispels fears and confounds rumours but also enhances compliance with infection prevention and control requirements.
- Ensure that when psychosocial support team members visit epidemic-affected patients they comply with infection prevention and control measures, including appropriate use of personal protective equipment.
- Ensure that psychosocial support services are being provided at alternative care sites.

### *Recovery tasks*

- As part of an overall hospital review, assess the hospital's operational performance in implementing emergency plans for psychological and social support activities and, if necessary, update these plans on the basis of lessons learned.
- Monitor patients, hospital staff and community members affected by the epidemic or other emergencies with a view to identifying those requiring follow-up psychosocial support.

## PATIENT MANAGEMENT

### *Goals*

- To ensure that hospital patient management, from admission to discharge, is carried out safely, efficiently and effectively and in such a way as to be beneficial not only to patients but also to hospital staff and the community served by the hospital.
- To ensure that the hospital can achieve safe and effective patient management not only in routine circumstances but also when emergencies make increased demands on hospital resources and capacities.

### *General principles*

- Patient management includes admission or referral, triage, diagnosis, treatment, patient flow and tracking, discharge and follow-up, and also management of support services, pharmacy services, and logistics and supply functions.
- The use of standardized procedures and protocols increases the chances of achieving safe and efficient patient management.
- During major epidemics involving large numbers of infected patients only those patients clearly requiring in-patient care should be admitted to the hospital.
- EMCH's role in providing patient care and in managing epidemic cases should be clearly defined in relation to the overall responsibilities and roles of the community and the public health sector at large.

### *Basic requirements*

- An overall Hospital Emergency Response Plan (including its annexed Epidemic Sub-plan), which is part of the overall Hospital Emergency Risk Management Programme and identifies patient management as an essential hospital function

- An Incident Command Group, to coordinate the hospital's overall emergency response, which includes activities to support patient management, and an operational Hospital  
Emergency Coordination Centre  
National patient management protocols or protocols developed in collaboration with national health authorities and adapted to epidemic or other emergencies
- Functional, sustainable triage criteria, in line with Ministry of Health recommendations, for admitting or referring patients and for organizing the triage process so as to avoid exposure of other hospital patients, visitors and staff to risk of infection
- Standardized measures (such as vaccination, administration of appropriate medications, use of personal protective equipment) for preventing transmission of infection to hospital patients, staff and visitors
- Standardized protocols for the treatment of infected patients

#### *Preparedness tasks*

- Develop the patient management component of the Hospital Emergency Response Plan, based on the hospital's all-hazards emergency risk assessment.
- For all staff members involved in patient management prepare Job Action Sheets describing their roles and tasks in an emergency situation.
- Ensure that staff involved in patient management receive training and participate in regular exercises in order to enhance their ability to fulfil their roles in implementing the hospital's emergency response.
- Ensure that national patient management protocols for epidemic or other emergencies are widely available to relevant staff within and outside the hospital.

- For patients not requiring hospital admission, develop or review mechanisms for referral to other healthcare levels and for subsequent follow-up, thereby contributing to surge capacity and relieving or preventing hospital overload.
- Designate a reception area to be used for epidemic patients and ensure that it can function independently of other hospital areas and activities, such as cleaning of equipment, rooms and hand hygiene stations.
- Designate a suitably equipped and secured triage area for epidemic patients that would ideally be independent of the emergency department.  
Ensure that staff receive training in working in the epidemic triage area, including training in infection prevention and control procedures.
- Designate a special area for treatment of epidemic patients and make wide use of signage (including posters and pamphlets) to direct patients to this treatment area.
- Develop procedures for the management of patient traffic flow within and outside the hospital by creating two separate channels, one for epidemic patients, the other for nonepidemic, patients, in order to prevent at all times any contact between the two categories of patients.
- Develop procedures for the management of out-patient care in such a way as to avoid exposure of uninfected patients to the risk of infection.
- Define triggers, including criteria and thresholds, in line with Ministry of Health recommendations, for implementing protocols adapted to the risks posed by an epidemic and ensure use of these protocols for:
  - triage of communicable disease patients;
  - treatment of suspected or confirmed communicable disease patients;
  - full implementation of infection prevention and control measures, especially to protect hospital staff from infection;
  - supply and resupply of medications and equipment to maintain stocks above a defined level, in coordination with pharmacy and essential support services.

## *Response Tasks*

- Ensure that mechanisms are in place to receive response operational directions from, and to coordinate actions with, the Incident Command Group.
- Adapt the patient management component of the Hospital Emergency Response Plan (including the Epidemic Sub-plan) in order to develop the patient management component of the hospital's Incident Action Plan, which is tailored to the characteristics of the emergency, as determined by epidemic event risk assessments and evolving situational and needs assessments  
Assess staffing needs to ensure adequate patient management activities during the emergency and work with the human resource department to secure additional staff as required.
- Review all patient management protocols and procedures to be used for suspected and confirmed epidemic cases during an epidemic and adapt them to the risks posed by the epidemic.
- In collaboration with health ministry officials, review the criteria and procedures for authorizing access to the hospital by suspected or confirmed epidemic patients and make these criteria and procedures as widely known as possible among other stakeholders, in particular, the staff of the local Emergency Medical Services, dispatch centre, Emergency Operations Centre and Regional Hospital Coordination Centre, as well as private doctors and health centres.
- On arrival of patients at the reception or triage area and in accordance with predefined triggers, implement patient flow protocols for:
  - Triage
  - charting, isolation and treatment of suspected or confirmed epidemic patients;
  - organization and management of healthcare for in- and out-patients;
  - infection prevention and control, particularly prevention of infection of hospital staff attending patients.

- Transfer immediately all incoming referral patients to the hospital's isolation ward.
- Ensure that all patients presenting with epidemic symptoms (and only such patients) go directly to the special triage area.
- As the epidemic evolves and its mode of transmission and treatment options become known, update, disseminate and implement, within the limits of available resources, the patient management protocols received from health authorities.

#### *Recovery Tasks*

- As part of an overall hospital review, assess the hospital's operational performance in implementing patient management protocols and procedures and, if necessary, update these protocols and procedures on the basis of lessons learned.
- Implement measures to address the welfare needs, such as leave and psychosocial support, of staff involved in patient management.
- In accordance with directives from the health authorities and the Incident Command Group, activate procedures for a resumption of routine patient management activities.

## *SURGE CAPACITY*

### *Goal*

To enable the ..... to expand its ability to manage a sudden or rapidly progressive surge in demand for hospital services created by an emergency / Epidemic

### *General principles*

- Surge capacity – The ability of a hospital to meet an increased demand for health services.

It is a cornerstone of the overall approach to managing health emergencies. It has implication for the functioning of the entire hospital

- The principles of surge capacity should be integrated into hospital's preparedness and response capacities for all hospital functions.
- Surge capacity is largely quantitative and calls for an increase in the number or patient load of hospital services. Surge capability, however is qualitative and relates to the ability of the hospital to provide the unusual or specialised health care often needed in an emergency, particularly an epidemic
- Achieving surge capacity calls for a systemic approach that integrated and synchronises public health measures taken by a broad coalition of stakeholders, including first- level care providers community organisations, private- sector service providers and other health care establishments. These stakeholders share responsibility for mitigating or containing a surge in demand that threatens to overwhelm and paralyse hospital services
- Surge capacity entails :
  - Human resource management, especially staffing - Supplies equipment, logistics and resupply mechanisms - Specific expertise for critical areas of care:
  - Overall management of hospital resources such as expanding space and premises

### ***Basic requirements***

- An overall Hospital Emergency Response plan( including its annexed epidemic sub plan) which is part of the overall hospital Emergency Risk Management programmes and identifies surge capacity as a critical hospital prerequisite affecting all hospital functions
- An incident command group to co ordinate the hospital's overall emergency response, which includes activities required to ensure surge capacity-and an operational Hospital Emergency coordination centre

### **Preparedness tasks**

- Establish mechanisms for facilitating mutual support co ordination between hospital and local health care providers to prevent or mitigate hospital overload by the use of referral/ counter – referral systems, patient follow up at alternative care sites and home care (for patients not requiring admission to hospital )
- Ensure that staff receive training and participate in regular exercises in order to enhance their ability to fulfil their roles in contributing to the hospital's surge capacity
- Make or update an inventory of all available resources:
  - organisational (public and private primary secondary and tertiary levels of care )
  - physical (health care establishments, equipment)
  - human (staff)
  - material (supplies)

- Develop strategies and emergency response plans to provide surge capacity in an epidemic or other emergency for :
  - human resources:
  - staffed beds , including intensive care beds.
  - Critical equipment supplies and other resources , including extra quantities of personal protective equipment, vaccines, antiviral medications , medical supplies and ventilators.
- Develop strategies for expanding hospital areas and ward and bed capacity (such as using stretchers in new spaces or converting ward beds into emergency beds) and estimate the additional staff, supplies and related costs incurred by these surge measures
- Make agreements with suppliers to ensure that the hospital receives the necessary supplies and resources early enough and in sufficient quantities to ensure the hospital's self-reliance during the acute phase of an epidemic

### ***Response tasks***

- Adapt the Hospital Emergency Response plan (and the Epidemic sub plan ) including the surge capacity components and develop a surge capacity Action plan which is tailored to the characteristics of the emergency, as determined by epidemic event risk assessments and evolving situational and needs assessments.
- Recruit extra staff expanding recruitment sources to include volunteers retirees medical students, and so on, and arrange for appropriate credentialing and training
- Update the inventory of hospital resources needed to meet the increased demand for services created by the emergency .
- Increase the number of staffed hospital beds and other inpatient resources.

- Adapt admission strategies to include utilisation, as needed, of observation wards and infection stabilisation wards.
- Develop and implement policies for early patient discharge
- Reorganise and adapt triage criteria to release additional capacity and contain hospital over load referring epidemic patients, if need be, to other potential providers, such as district hospitals, Medical colleges or alternate care sites or home care for patients not requiring in- patient services.
- Implement communication strategies, such as hotlines, for hospital staff and other health care workers and the community.

***Recovery task***

As part of an overall hospital review, assess the hospital's operational performance in providing a surge capacity and , if necessary, update these plans on the basis of lessons learned.