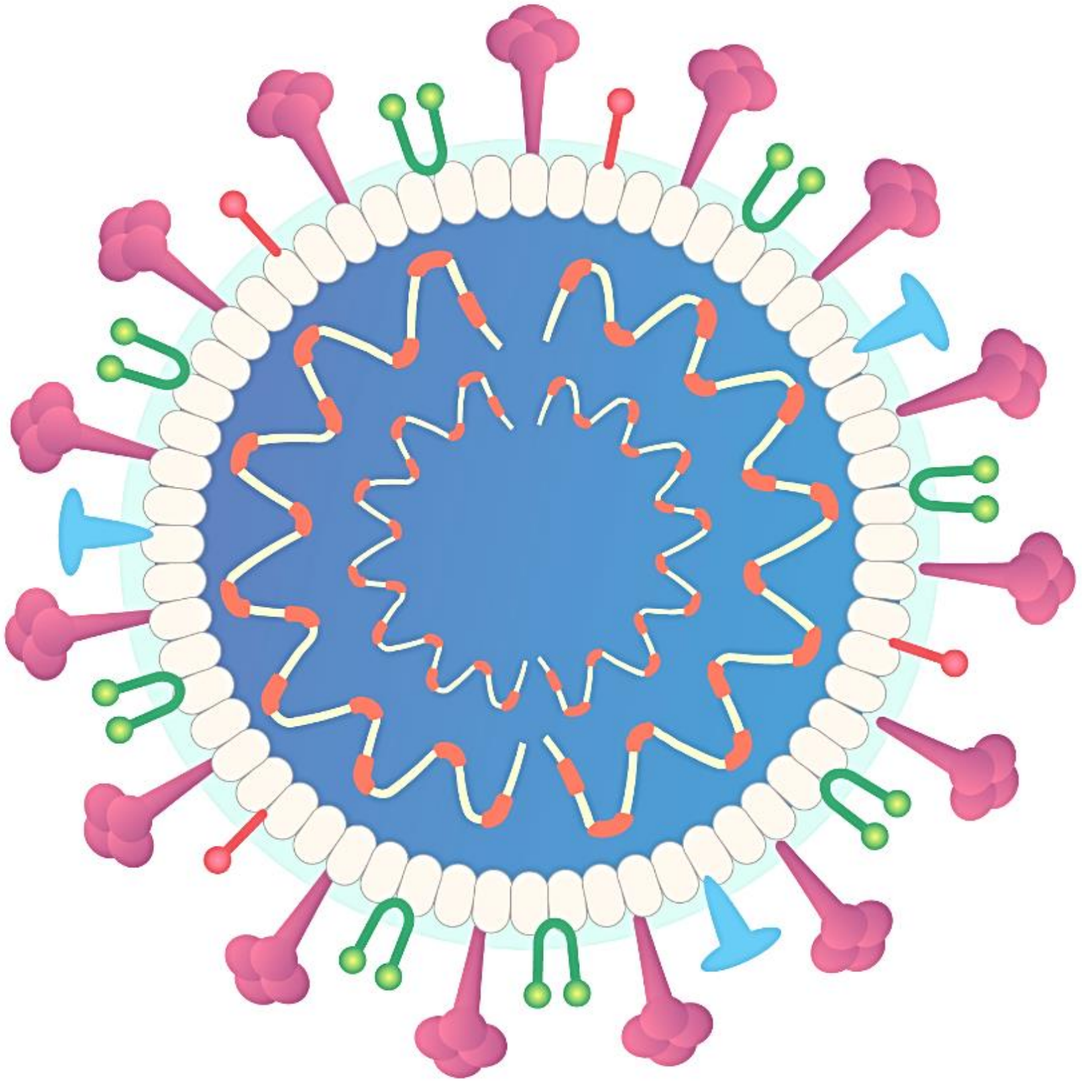
Module 3: Clinical Management of COVID–19

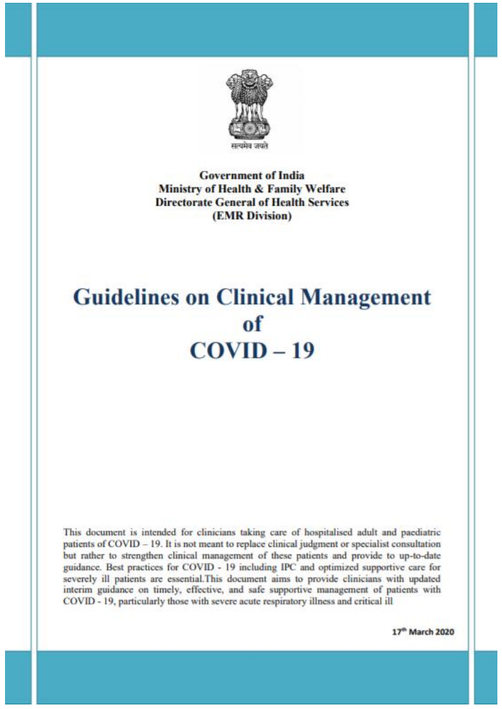


Guidelines on Clinical Management of COVID – 19

On 17th March 2020, the Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India, issued guidelines for the clinical management of COVID 19.

The document is intended

- for clinicians taking care of hospitalised adult and paediatric patients of COVID – 19, to strengthen clinical management and provide to up-to-date guidance
- 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



https://www.mohfw.gov.in/pdf/GuidelinesonClinicalManagementofCOVID1912020.pdf

Definitions of Patients with COVID-19

SARI (Severe Acute Respiratory Illness): An ARI with history of fever or measured temperature ≥38 C° and cough; onset within the last ~10 days; and requiring hospitalization

Surveillance Case Definitions for SARI

1. **SARI** in a person with **no other etiology** that fully explains the clinical presentation (also be alert to possibility of **atypical presentations** in **immune-compromised patients**);

   AND any of the following:

   a) history of **international travel in 14 days** prior to symptom onset

   b) **healthcare 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

   c) the person develops an **unusual or unexpected clinical course**, especially sudden deterioration **despite appropriate treatment**, without regard to place of residence or history of travel, even if another etiology has been identified that fully explains the clinical presentation

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

   a) **close physical contact*** with a confirmed case of COVID - 19 infection, while that patient was symptomatic

   b) **healthcare facility** in a country where hospital-associated COVID- 19 infections have been reported

* Healthcare associated exposure/ working in close proximity/ traveling together in any kind of conveyance/ living in the same household as a COVID-19 patient, occurred within a 14-day period before or after the onset of symptoms

Clinical Syndromes associated with COVID-19 Infection (1)

- COVID–19 may present with **mild, moderate, or severe illness.** Severe illness includes **severe pneumonia, ARDS, sepsis and septic shock**
- Early recognition → timely initiation of IPC
- Early identification of those with severe manifestations → immediate optimized supportive care treatments and safe, rapid admission (or referral) to ICU, according to national protocols
- Mild illness → hospitalization may not be required unless there is concern for rapid deterioration
- All patients discharged for home should be instructed to **return to hospital if they develop any worsening of illness**
- **Clinical Syndromes:**

  - Uncomplicated illness
  - Mild pneumonia
  - Severe pneumonia
  - Acute Respiratory Distress Syndrome (ARDS)
  - Sepsis
  - Septic shock

Clinical Syndromes associated with COVID-19 Infection (2)

Uncomplicated illness	• Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as fever, cough, sore throat, nasal congestion, malaise, headache • Elderly and immunosuppressed may present with atypical symptoms • Do not have any signs of dehydration, sepsis or shortness of breath	
Mild pneumonia	• Patient with pneumonia and no signs of severe pneumonia • Child with non-severe pneumonia has cough or difficulty in breathing/fast breathing: <2 months- ≥60 breaths/min; 2–11 months- ≥50; 1–5 yr- ≥40 and no sign of severe pneumonia	
Severe pneumonia	**Adolescent or adult:** Fever or suspected respiratory infection, plus one of the following: • respiratory rate >30 breaths/min • severe respiratory distress • SpO2 <90% on room air	**Child** with cough or difficulty in breathing, plus at least one of the following: • central cyanosis or SpO2 <90% • severe respiratory distress (e.g. grunting, chest in-drawing) • signs of pneumonia with any of the following warning signs: inability to breastfeed or drink, lethargy or unconsciousness, or convulsions Other signs of pneumonia may be present: chest indrawing, fast breathing (in breaths/min): <2 months ≥60; 2–11 months ≥50; 1–5 years ≥40 The diagnosis is clinical; chest imaging can exclude complications

Clinical Syndromes associated with COVID-19 Infection (3)

Acute Respiratory Distress Syndrome (ARDS)	**Onset:** new or worsening respiratory symptoms within one week of known clinical insult. **Chest imaging (radiograph, CT scan, or lung ultrasound):** bilateral opacities, not fully explained by effusions, lobar or lung collapse, or nodules. **Origin of oedema:** respiratory failure not fully explained by cardiac failure or fluid overload. Need objective assessment (e.g. echocardiography) to exclude hydrostatic cause of oedema if no risk factor present **Oxygenation (adults):** • **Mild** ARDS: 200 mmHg < PaO2/FiO2 ≤ 300 mmHg (with PEEP or CPAP ≥5 cm H2O, or non-ventilated) • **Moderate** ARDS: 100 mmHg < PaO2/FiO2 ≤200 mmHg with PEEP ≥5 cm H2O, or non-ventilated) • **Severe** ARDS: PaO2/FiO2 ≤ 100 mmHg with PEEP ≥5 cm H2O, or non-ventilated) • When PaO2 is not available, SpO2/FiO2 ≤315 suggests ARDS (including in non-ventilated patients) **Oxygenation (children; note OI = Oxygenation Index and OSI = Oxygenation Index using SpO2)** • Bilevel NIV or CPAP ≥5 cm H2O via full face mask: PaO2/FiO2 ≤ 300 mmHg or SpO2/FiO2 ≤264 • **Mild** ARDS (invasively ventilated): 4 ≤ OI < 8 or 5 ≤ OSI < 7.5 • **Moderate** ARDS (invasively ventilated): 8 ≤ OI < 16 or 7.5 ≤ OSI < 12.3

Clinical Syndromes associated with COVID-19 Infection (4)

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

Appropriate IPC Measures (1)

At Triage	**Suspected patient** • Give a triple layer surgical mask • Direct patient to separate area, an isolation room if available • Keep at least 1 meter distance between suspected patients and other patients Instruct **all patients/HCWs to cover nose and mouth during coughing or sneezing** with tissue or flexed elbow for others Perform **hand hygiene** after contact with respiratory secretions
Apply droplet precautions	• **Droplet and contact precautions** prevent direct or indirect transmission from contact with contaminated surfaces or equipment (i.e. contact with contaminated oxygen tubing/interfaces) • Use **Personal Protective Equipment** (**PPE)** when entering room and remove PPE when leaving • 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 • All healthcare workers to **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**

Appropriate IPC Measures (2)

Apply airborne precautions when performing an aerosol generating procedure	**Aerosol-generating procedures-** open suctioning of respiratory tract, intubation, bronchoscopy, cardiopulmonary resuscitation • **Use PPE**, including gloves, long-sleeved gowns, eye protection, and fit-tested particulate respirators (N95) • Do not confuse scheduled fit test 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 presence of unnecessary individuals** in the room • Care for the patient in the **same type of room after mechanical ventilation commences**

Early Supportive Therapy and Monitoring (1)

1. Give **supplemental oxygen therapy** immediately to patients with SARI and respiratory distress, hypoxaemia, or shock
    - Initiate **oxygen therapy at 5 L/min** and titrate flow rates to **reach target SpO2**
        - **Non-pregnant adults:** ≥90%
        - **Pregnant patients:** ≥92-95%
        - **Children:** ≥90%
        - **Children with emergency signs** (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma or convulsions) receiving oxygen therapy during resuscitation: ≥94%

Use contact precautions when handling contaminated oxygen interfaces of patients with COVID-19

Early Supportive Therapy and Monitoring (2)

2. Use conservative **fluid management** in patients with SARI when there is no evidence of shock:
   - Treat patients with SARI cautiously with intravenous fluids
     - aggressive fluid resuscitation may worsen oxygenation, especially in settings where there is limited availability of mechanical ventilation

3. Give **empiric antimicrobials** to treat all likely pathogens causing SARI
   - Although the patient may be suspected COVID-19 patient, **administer appropriate empiric antimicrobials within ONE hour of identification of sepsis**
     - based on the clinical diagnosis (community-acquired pneumonia, healthcare-associated pneumonia or sepsis), local epidemiology and susceptibility data, and treatment guidelines
   - Empirical therapy includes a **neuraminidase inhibitor for treatment of influenza** when there is local circulation or other risk factors, including travel history/exposure to animal influenza viruses
   - De-escalate empirical therapy on the basis of **microbiology results and clinical judgment**

Early Supportive Therapy and Monitoring (3)

4. **Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason:**
   - Based on lack of effectiveness and possible harm, routine corticosteroids should be avoided unless they are indicated for another reason

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

Early Supportive Therapy and Monitoring (4)

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

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

Collection of Specimens for Laboratory Diagnosis (1)

Important Points

- 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 readily available (e.g. in mechanically ventilated patients)
- Use **appropriate PPE** for specimen collection
  - **Droplet and contact precautions for URT** specimens; **airborne precautions for LRT specimens**
  - When collecting URT samples, use **viral swabs** (sterile Dacron or rayon, not cotton) and **viral transport media**. Do not sample nostrils or tonsils
  - **Sputum induction should be avoided** due to increased risk of increasing aerosol transmission
  - Additional URT and LRT samples are recommended, in suspected case of COVID-

Specimen Collection, Packaging and Transport Guidelines

https://www.mohfw.gov.in/pdf/5Sample%20collection_packaging%20%202019-nCoV.pdf

Collection of Specimens for Laboratory Diagnosis (2)

Important Points

- **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
- For hospitalized confirmed COVID-19 patients, **collect and repeat test URT samples to demonstrate viral clearance**
  - **Frequency** of specimen collection: At least **every 2 to 4 days** until there are **2 consecutive negative results** (of URT samples) in a clinically recovered patient at least 24 hours apart.

Specimen Collection, Packaging and Transport Guidelines

https://www.mohfw.gov.in/pdf/5Sample%20collection_packaging%20%202019-nCoV.pdf

Management of Hypoxemic Respiratory Failure and ARDS (1)

- 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
  - Commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation

High-flow nasal catheter oxygenation (HFNO) or Non-invasive Mechanical Ventilation (NIV)-

Consider when respiratory distress and/or hypoxemia cannot be alleviated after standard oxygen therapy

If conditions do not improve or even worsen within a short time (1- 2 hr), **use tracheal intubation and invasive mechanical ventilation**, in a timely manner. Ensure a monitored setting and cared for by experienced personnel capable of endotracheal intubation in case patient acutely deteriorates/does not improve after a short trial (about 1 hr)

Management of Hypoxemic Respiratory Failure and ARDS (2)

- **High-flow nasal catheter oxygenation (HFNO) or Non-invasive Mechanical Ventilation (NIV)-Contd.**:
  - Patients with hypercapnia (exacerbation of obstructive lung disease, cardiogenic pulmonary oedema), hemodynamic instability, multi-organ failure, or abnormal mental status **should generally not receive HFNO**
  - 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** (SARS and pandemic influenza). Limited data suggest a **high failure rate when MERS patients received NIV**
  - **Risks** include delayed intubation, large tidal volumes, and injurious transpulmonary pressures
  - Patients with hemodynamic instability, multi-organ failure, or abnormal mental status **should not receive NIV**

Newer HFNO and NIV systems with good interface fitting may be associated with **low risk of airborne transmission**, as they do not create widespread dispersion of exhaled air

Management of Hypoxemic Respiratory Failure and ARDS (3)

- **Endotracheal Intubation**
  - Should be performed by a **trained and experienced provider using airborne precautions**
  - Patients with ARDS, especially young children or those who are obese or pregnant, may de-saturate quickly during intubation. **Pre-oxygenate** with 100% FiO2 for 5 minutes, via a face mask with reservoir bag, bag-valve mask, HFNO, or NIV
  - **Rapid sequence intubation** is appropriate after an airway assessment that identifies no signs of difficult intubation
- **Mechanical Ventilation**
  - **Implement mechanical ventilation using lower tidal volumes** (4–8 ml/kg Predicted Body Weight- PBW) and lower inspiratory pressures (plateau pressure <30 cmH2O). This is a strong recommendation from a clinical guideline for patients with ARDS, and suggested for patients with sepsis-induced respiratory failure
  - 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
  - Use of **deep sedation** may be required to control respiratory drive and achieve tidal volume targets

Management of Hypoxemic Respiratory Failure and ARDS (4)

- **Prone Ventilation:**
  - Prone ventilation for >12 hours per day is recommended in patients with severe ARDS
  - Strongly recommended for adult and paediatric patients with severe ARDS but requires sufficient human resources and expertise to be performed safely
- Use a **conservative fluid management strategy** for ARDS patients **without tissue hypoperfusion**
- **Recruitment Maneuvers (RMs) PEEP Titration:**
  - **Higher PEEP instead of lower PEEP** is suggested in patients with moderate or severe ARDS
  - PEEP titration requires **consideration of benefits vs. risks**. Tables are available to guide PEEP titration based on the FiO2 required to maintain SpO2.
  - Related intervention of Recruitment Manoeuvres (RMs) is delivered as episodic periods of high continuous positive airway pressure [30–40 cm H2O], progressive incremental increases in PEEP with constant driving pressure, or high driving pressure; similar considerations of benefits vs. risks
  - Higher PEEP and RMs were both **conditionally recommended in a clinical practice guideline**.

Management of Hypoxemic Respiratory Failure and ARDS (5)

- **Extracorporeal Life Support (ECLS):**
  - In settings with access to expertise in ECLS, consider **referral of patients with refractory hypoxemia despite lung protective ventilation**
  - ECLS should only be offered in expert centres with a sufficient case volume to maintain expertise and that can apply the IPC measures required for COVID-19 patients
- **Avoid disconnecting the patient from the ventilator**, which results in loss of PEEP and atelectasis. Use in-line catheters for airway suctioning and clamp endotracheal tube when disconnection is required (for example, transfer to a transport ventilator)

Septic Shock Management (1)

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

Septic Shock Management (2)

- **Standard care** includes early recognition and the following treatments within 1 hour of recognition:
  - antimicrobial therapy and fluid loading and vasopressors for hypotension
  - use of central venous and arterial catheters should be based on resource availability and individual patient needs
- **Resuscitation from septic shock in adults:** give at least 30 ml/kg of isotonic crystalloid in adults in the first 3 hours
- **Resuscitation from septic shock in children** in well-resourced settings: give 20 ml/kg as a rapid bolus and up to 40-60 ml/kg in the first 1 hr. Do not use hypotonic crystalloids, starches, or gelatins for resuscitation
- **Fluid resuscitation** may lead to volume overload, including respiratory failure.
  - No response to fluid loading and signs of volume overload appear (e.g. jugular venous distension, crackles on lung auscultation, pulmonary oedema on imaging, or hepatomegaly in children) → reduce or discontinue fluid administration. Particularly important where mechanical ventilation is not available
  - **Alternate fluid regimens** are suggested when caring for children in resource-limited settings

Septic Shock Management (3)

- **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. Indices include passive leg raises, fluid challenges with serial stroke volume measurements, or variations in systolic pressure, pulse pressure, inferior vena cava size, or stroke volume in response to changes in intrathoracic pressure during mechanical ventilation

Septic Shock Management (4)

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

Other Therapeutic Measures

- **Glucocorticoids:**
  - 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**
  - A **larger dose** of glucocorticoid **will delay the removal of coronavirus** due to immunosuppressive effects
- **For pregnant severe and critical cases**, pregnancy should be preferably terminated. Consultations with obstetric, neonatal, and intensive care specialists (depending on the condition of the mother) are essential
- Patients often suffer from anxiety and fear and they should be **supported by psychological counselling**

Prevention of Complications (1)

Interventions to Prevent Complications Associated with Critical Illness

Anticipated Outcome	Interventions
Reduce days of invasive mechanical ventilation	• Use weaning protocols with daily assessment for readiness to breathe spontaneously • Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions
Reduce incidence of ventilator associated pneumonia	• Oral intubation is preferable over nasal intubation in adolescents and adults • Keep patient in semi-recumbent position (head of bed elevation 30-45º) • Use a closed suctioning system; periodically drain and discard condensate in tubing • Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely • Change heat moisture exchanger when it malfunctions, is soiled, or every 5–7 days
Reduce incidence of venous thromboembolism	• For adolescents and adults without contraindications: Use pharmacological prophylaxis (low molecular weight heparin [preferred, if available] or heparin 5000 units subcutaneously twice daily) • With contraindications: Use mechanical prophylaxis (intermittent pneumatic compression devices)

Prevention of Complications (2)

Interventions to Prevent Complications Associated with Critical Illness Contd.

Anticipated Outcome	Interventions
Reduce incidence of catheter related bloodstream infection	• Use a checklist with completion verified by a real-time observer as reminder of each step needed for sterile insertion and as a daily reminder to remove catheter if no longer needed
Reduce incidence of pressure ulcers	• Turn patient every two hours
Reduce incidence of stress ulcers and gastrointestinal bleeding	• Give early enteral nutrition (within 24–48 hours of admission) • Administer histamine-2 receptor blockers or proton-pump inhibitors in patients with risk factors for GI bleeding. Risk factors for gastrointestinal bleeding include mechanical ventilation for ≥48 hours, coagulopathy, renal replacement therapy, liver disease, multiple co-morbidities, and higher organ failure score
Reduce incidence of ICU-related weakness	• Actively mobilize the patient early in the course of illness when safe to do so

Specific Treatment and Clinical Research for COVID-19 (1)

- No current evidence from RCTs to recommend any specific treatment for suspected or confirmed patients with COVID-19
- **No specific anti–virals** are recommended due to lack of adequate evidence from literature.
- **Lopinavir/ Ritonavir**
  - Use of Lopinavir/ Ritonavir in PEP regimens for HIV (4 weeks) is also associated with significant adverse events which many a times leads to discontinuation of therapy.
  - Lopinavir/ Ritonavir should ONLY be used with proper informed expressed consent on a case to case basis for severe cases, within the given framework (next slide) along with supportive treatment as per need

Specific Treatment and Clinical Research for COVID-19 (2)

Framework for Lopinavir/ Ritonavir Administration

Considered in lab confirmed cases of COVID-19 when the following criteria are met:

Criteria: Symptomatic patients with any of the following

1. Hypoxia

2. Hypotension

3. New Onset Organ Dysfunction

- Increase in creatinine by 50% from baseline, GFR reduction by >25% from baseline or urine output of <0.5 ml/kg for 6 hours.
- Reduction of GCS by 2 or more
- Any other organ dysfunction

4. High Risk Groups

- Age> 60 yrs
- Diabetes Mellitus, Renal Failure, Chronic Lung disease
- Immuno-compromised persons

Dosage:

I. Lopinavir/ Ritonavir (200 mg/ 50 mg) – 2 tablets twice daily

II. If unable to take medications by mouth: Lopinavir 400mg/ Ritonavir 100 mg – 5ml suspension twice daily

Duration: 14 days or for 7 days after becoming asymptomatic

Specific Treatment and Clinical Research for COVID-19 (3)

Support to Treating Physicians

- AIIMS, New Delhi is running a **24x7 helpline** to provide support to the treating physicians on clinical management

- **Helpline number: 9971876591**

Discharge Policy

Suspected Case

Send clinical samples for testing of COVID-19
Keep patient in isolation at health facility till the time of receipt of laboratory results

Sample result **Negative**

- The discharge will be governed by patient's provisional/ confirmed diagnosis and it is up to the treating physician to take a decision
- Patient shall be monitored for 14 days after last contact with a confirmed COVID-19 case

Sample result **Positive**

Confirmed cases management protocol

Discharge after chest radiograph has cleared and two specimens turn negative within 24 hours

Reference and Resource Documents:

1. Guidelines on Clinical Management of COVID – 19 by Directorate General of Health Services, MoHFW, GoI

- https://www.mohfw.gov.in/pdf/GuidelinesonClinicalManagementofCOVID1912020.pdf

2. Specimen Collection, Packaging and Transport Guidelines by ICMR, MoHFW, GoI

- https://www.mohfw.gov.in/pdf/5Sample%20collection_packaging%20%202019-nCoV.pdf

3. Discharge Policy of nCoV Case

- https://www.mohfw.gov.in/pdf/Corona%20Discharge-Policy.pdf

Completed:

Clinical Management of COVID–19

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- Anurag Goel, Maulana Azad Medical College, 4th Semester
- Chirag Sharma, Ch. Brahm Prakash Govt. Eng. College, 6th Semester
- Vasishtha Avadhani Upadrasta, Maulana Azad Medical College, 8th Semester
- Ritik Soni, G.B. Pant Govt. Engineering College, 4th Semester
- Dr Vijay Tadia, Senior Resident, All India Institute of Medical Sciences, New Delhi

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