Clinical Guidelines in Management of COVID-19

Dr. S. Ragunanthanan
Director i/c & Professor
Institute of Internal Medicine
Madras Medical College & RGGGH, Chennai – 600 003.
Outline of my talk

1. Triage: recognize and sort patients with SARI
2. Immediate implementation of appropriate infection prevention and control (IPC) measures
3. Early supportive therapy and monitoring
4. Collection of specimens for laboratory diagnosis
5. Management of hypoxemic respiratory failure and acute respiratory distress syndrome (ARDS)
6. Management of septic shock
7. Prevention of complications
8. Anti-nCoV treatments
• **Triage:** Recognize and sort all patients with SARI at first point of contact with health care system (such as the emergency department). Consider COVID-19 as a possible etiology of SARI under certain conditions. Triage patients and start emergency treatments based on disease severity.
Guidelines from Ministry of Health & Family Welfare, Government of India

- SOP for Categorization of Passengers for COVID 19 coming from China, Democratic Republic of Korea, France, Germany, Spain, Italy, Iran for Airport Screening

- Categorisation for passengers coming from at Health Counters

- Categorise the passengers into A, B, C
Category A (High Risk)

A passenger with

- Fever,
- Cough,
- Shortness of breath with a
- History of travel to or
- Residence in a country/area or territory reporting local transmission of COVID-19 disease during the 14 days prior to Symptom onset

OR

A patient with any acute respiratory illness AND

Having been in contact with a COVID19 case in the last 14 days prior to onset of symptoms;

- **Action:** Segregated from other passengers and sent for Isolation
Category B (Moderate Risk)

- A asymptomatic passenger coming from China, Democratic Republic of Korea, France, Germany, Spain, Italy, Iran and are elderly (above 60 years), Hypertensive, Diabetic, Asthmatic

**Action:** - To be shifted by State Government to a dedicated quarantine facility and monitored daily by State Government for next 14 days. In case, they develop symptoms, they should be isolated.
Category C (Low Risk)

- A asymptomatic passenger coming from any COVID 19 affected country including passengers coming from China, Democratic Republic of Korea, France Germany, Spain, Italy, Iran.

- **Action:** - Kept under Home Quarantine and will be monitored by IDSP network for 14 days, if they develop Fever/ Cough/ Difficulty in breathing within 14 days after return from any COVID 19 affected countries should immediately call at National helpline (011-23978046) for further management.
Triage in Out Patient

- Give the patient a three layer mask
- Maintain one metre distance
- Detailed history including travel history from affected countries, transit destinations, date of arrival, onset of symptoms, comorbid illness, travel after arrival, whether he/she had symptoms before the start of travel.
- Clinical examination -
- Basic investigation if necessary
- Symptomatic treatment
- Counseling – hand wash, cough hygiene, Social distancing, quarantine and
- Call if any symptoms develop.
Definitions of patients with SARI, suspected of 2019-nCoV infection*

• An ARI with history of fever or measured temperature $\geq 38 \degree C$ and cough; onset within the last $\sim 10$ days; and requiring hospitalization. However, the absence of fever does NOT exclude viral infection.
Surveillance case definitions for 2019-nCoV*

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

- A history of travel to or residence in the city of Wuhan, Hubei Province, China in the 14 days prior to symptom onset, or
- Patient is a health care worker who has been working in an environment where severe acute respiratory infections of unknown etiology are being cared for.
Surveillance case definitions for 2019-nCoV*

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

• Close contact with a confirmed or probable case of 2019-nCoV in the 14 days prior to illness onset,

  or

• Visiting or working in a live animal market in Wuhan, Hubei Province, China in the 14 days prior to symptom onset,

  or

• Worked or attended a health care facility in the 14 days prior to onset of symptoms where patients with hospital-associated 2019-nCov infections have been reported.
Clinical syndromes associated with 2019-nCoV infection

Uncomplicated illness:

• Patients with uncomplicated upper respiratory tract viral infection, may have non-specific symptoms such as
  ✓ Fever
  ✓ Cough
  ✓ Sore throat
  ✓ Nasal congestion
  ✓ Malaise
  ✓ Headache
  ✓ Muscle pain or
  ✓ Malaise.

• The elderly and immuno-suppressed may present with atypical symptoms.

• These patients do not have any signs of dehydration, sepsis or shortness of breath.
Clinical syndromes associated with 2019-nCoV infection

• **Mild pneumonia:** Patient with pneumonia and no signs of severe pneumonia.

• **Severe pneumonia:** Adolescent or adult: fever or suspected respiratory infection, plus one of respiratory rate >30 breaths/min, severe respiratory distress, or SpO2 <90% on room air.
Clinical syndromes associated with 2019-nCoV infection

Acute Respiratory Distress Syndrome:

- **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.
Clinical syndromes associated with 2019-nCoV infection

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.
Clinical syndromes associated with 2019-nCoV infection

Septic shock:

- **Adults:** persisting hypotension despite volume resuscitation, requiring vasopressors to maintain MAP $\geq 65$ mmHg and serum lactate level $>2$ mmol/L.
Immediate implementation of appropriate IPC measures in the Isolation Ward

Apply droplet precautions:

- Droplet precautions prevent large droplet transmission of respiratory viruses.

- Use a medical mask if working within 1-2 metres of the patient.

- Place patients in single rooms, or group together those with the same etiological diagnosis.

- If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation.

Contd..
Immediate implementation of appropriate IPC measures in the Isolation Ward

Apply droplet precautions:

• If an etiological diagnosis is not possible, group patients with similar clinical diagnosis and based on epidemiological risk factors, with a spatial separation.

• When providing care in close contact with a patient with respiratory symptoms (e.g. coughing or sneezing), use eye protection (face-mask or goggles), because sprays of secretions may occur.

• Limit patient movement within the institution and ensure that patients wear medical masks when outside their rooms.

Contd..
Immediate implementation of appropriate IPC measures in the Isolation Ward

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 PPE (medical mask, eye protection, gloves and gown) when entering room and remove PPE when leaving.

• If possible, use either disposable or dedicated equipment (e.g. stethoscopes, blood pressure cuffs and thermometers).
Immediate implementation of appropriate IPC measures in the Isolation Ward

Apply contact precautions:

• 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.
Immediate implementation of appropriate IPC measures

Apply airborne precautions when performing an aerosol generating procedure:

• Ensure that healthcare workers performing 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 or equivalent, or higher level of protection). (The scheduled fit test should not be confused with user seal check before each use.)
Immediate implementation of appropriate IPC measures

Apply airborne precautions when performing an aerosol generating procedure:

• 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.
Early supportive therapy and monitoring

• Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia, or shock.

• Use conservative fluid management in patients with SARI when there is no evidence of shock.

• Give empiric antimicrobials to treat all likely pathogens causing SARI. Give antimicrobials within one hour of initial patient assessment for patients with sepsis.
Early supportive therapy and monitoring

• Do not routinely give systemic corticosteroids for treatment of viral pneumonia or ARDS outside of clinical trials unless they are indicated for another reason.

• Closely monitor patients with SARI for signs of clinical deterioration, such as rapidly progressive respiratory failure and sepsis, and apply supportive care interventions immediately.

• Understand the patient’s co-morbid condition(s) to tailor the management of critical illness and appreciate the prognosis. Communicate early with patient and family.
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 from BOTH the upper respiratory tract (URT; nasopharyngeal and oropharyngeal) AND lower respiratory tract (LRT; expectorated sputum, endotracheal aspirate, or bronchoalveolar lavage) for 2019-nCoV testing by RT-PCR.

- Clinicians may elect to collect only LRT samples when these are readily available (for example, in mechanically ventilated patients).
Management of hypoxemic respiratory failure and ARDS

• Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing standard oxygen therapy.

• High-flow nasal oxygen (HFNO) or non-invasive ventilation (NIV) should only be used in selected patients with hypoxemic respiratory failure.

• The risk of treatment failure is high in patients with MERS treated with NIV, and patients treated with either HFNO or NIV should be closely monitored for clinical deterioration.

• Endotracheal intubation should be performed by a trained and experienced provider using airborne precautions.
Management of hypoxemic respiratory failure and ARDS

• Implement mechanical ventilation using lower tidal volumes (4–8 ml/kg predicted body weight, PBW) and lower inspiratory pressures (plateau pressure <30 cmH2O).

• In patients with severe ARDS, prone ventilation for >12 hours per day is recommended.

• 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.
Management of hypoxemic respiratory failure and ARDS

- In patients with moderate-severe ARDS (PaO2/FiO2 <150), neuromuscular blockade by continuous infusion should not be routinely used.

- In settings with access to expertise in extracorporeal life support (ECLS), consider referral of patients with refractory hypoxemia despite lung protective ventilation.

- 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).
Prevention of complications

Reduce days of invasive mechanical ventilation
• Use weaning protocols that include daily assessment for readiness to breathe spontaneously
• Minimize continuous or intermittent sedation, targeting specific titration endpoints (light sedation unless contraindicated) or with daily interruption of continuous sedative infusions

Reduce incidence of ventilator-associated pneumonia
• Oral intubation is preferable to nasal intubation in adolescents and adults
• Keep patient in semi-recumbent position (head of bed elevation 30-45°)
• Use a closed suctioning system; periodically drain and discard condensate in tubing
• Use a new ventilator circuit for each patient; once patient is ventilated, change circuit if it is soiled or damaged but not routinely
• Change heat moisture exchanger when it malfunctions, when soiled, or every 5–7 days
Prevention of complications

Reduce incidence of venous thromboembolism

- 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).

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.
Prevention of complications

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 comorbidities, 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 anti-Novel-CoV treatments and clinical research

• There is no current evidence from RCTs to recommend any specific anti-nCoV treatment.

• Clinical characterization protocols are available, at the WHO 2019 nCoV website: https://www.who.int/emergencies/diseases/novel-coronavirus-2019. WHO has established Global 2019-nCoV Clinical Data Platform, for member countries to contribute. Contact EDCARN@who.int for additional questions.
Medication tried so far

- Tab. Remdesivir
- Tab. Lopinavir / Ritonavir
- Tab. Baricitinib – Janus Kinase Inhibitor
- Tab. Nelfinavir – Protease Inhibitor – 2BD
- Tab. Fapilavir
- Tab. Tamilflu
- Inj. IV IG
- Inj. Methylprednisolone
Lopinavir / Ritonavir combination therapy among symptomatic COVID-19

- 200 mg/50mg – 2 tablets every 12 hours for 14 days or for 7 days after becoming asymptomatic whichever is earlier.

- Side effects:
  - Acute pancreatitis
  - Elevation of ALT
  - Anaphylaxis
Thank You