**Critical Care Management of Patient Confirmed with COVID-19**

### What do we know
- ARDS denotes severity of disease.
- Most patients have good lung compliance and acceptable driving pressures.
- Septic shock is not common.
- Myocarditis and elevated troponin noted in patients who die.
- Lymphopaenia common.
- CRP & D-Dimer correlate with severity and used to assess response to therapy.
- PCT is usually normal and if increased, consider a bacterial infection.
- Initial PCR may be negative but repeat after 3 days if clinical suspicion still high.

### Poor Outcomes in Following Patients:
- Late onset respiratory failure
- Two, or more organ failures
- Elderly patients (especially >65 years)
- Comorbidities (especially diabetes, hypertension, or ischemic heart disease)
- Need for dialysis
- Immunocompromised
- No improvement despite 5 days of mechanical ventilation

### Not Recommended
- Non-invasive ventilation
- High flow nasal oxygen

### High risk for viral transmission during
- Intubation
- Bronchoscopy
- Bag mask ventilation (BMV)
- CPR
- Nebulisation
- Transfer

### Intubation
- **When:** Hypoxaemia or severe respiratory distress despite standard O_2_ therapy
  
  Early intubation is preferable
- **How:** Refer to separate intubation guideline.

### CPR
- High risk with BVM
- If BVM:
  - Ensure good seal
  - Use high efficiency particulate filter
  - Hold mask with 2 hands (2 persons)
- Consider mechanical CPR devices

### Investigations
- **Imaging:**
  
  Bedside CXR & lung U/S rather than moving to CT scan
- **Bronchoscopy:**
  
  Not routine because of risk
Management

- Generally similar to respiratory failure attributed to a viral pneumonia
- Lung protective ventilation
  (TV: 4-6mL/kg IBW) with PEEP (initiate at 14 cm H₂O and titrate)
- Target SaO₂ of 88-90% and aim to reduce F₁O₂ to <0.6
- Permissive hypercapnia provided stable hemodynamically and pH > 7.15
- Consider prone ventilation early if refractory hypoxemia and if local experience
  (after adequate PEEP and use of recruitment manoeuvres as atelectasis predominates)
- Consider Airway Pressure Release Ventilation early (if experienced)
- Role of ECMO unclear
  (Consider V-V ECMO in young patients with single organ failure. Discuss with ECMO centre)
- Amoxycilin-Clavulanate + Macrolide + Oseltamavir: For all suspected CAP patients
- Corticosteroids to be used only if septic shock (Not for pure pneumonia)

General Management

- Judicious fluid therapy
  Limit IV fluids; calculate daily fluid balance (including for drug administration)
- Ulcer prophylaxis
  If at high risk for stress ulcers or unable to feed enterally
- Vasopressor use
  Low threshold to initiate rather than fluid loading
- Initiate thromboprophylaxis if no contraindication
- Initiate enteral feeding if no contraindication
- PPE and infection control - refer to separate PPE guideline

Experimental Therapies

- Several agents are currently being explored
- There is currently no evidence to support their inclusion as standard therapy.
- Includes:
  Lopinavir/Ritonavir; Antiviral combinations; Plasmoquine or Chloroquine.
- If considering these agents, seek expert opinion.