Critical Care Management of Patient Confirmed with COVID-19

CCSSA CRITICAL CARE SOCIETY OF SOUTHERN AFRICA

What do we know

SASA COVID-19 UPDATE ENDORSED

- Patients may present with significant hypoxemia in the absence of dyspnoea or radiological abnormalities
- Hypercoagulability is common and manifests with thrombi particularly in the pulmonary vasculature
- A subset of patients develop a dysregulated immune response characterized by excessive cytokine production which in turn drives organ dysfunction
- Initially infiltrates are confined to alveolar walls (low elastance) and if a hyper inflammatory response ensues, the alveolar cavities become fluid filled resulting in a small percentage of patients manifesting with ARDS (high elastance)
- Patients may present primarily with non-pulmonary pathology (strokes, seizures, encephalitis, myocardial infarction, acute kidney injury)

Respiratory Management of Patients unable to maintain a SpO_2 >90% with reservoir bag oxygen mask (15L/min)

- Self proning encouraged
- High flow nasal oxygen cannula (tape into position) under a surgical facemask
- Monitor clinical response and SpO_2
- Not recommended:
  - Venturi mask
  - Nebuliser mask
- Caution with Non-invasive ventilation

Poor Outcomes Noted in:

- Late onset respiratory failure
- Two, or more organ failures
- Elderly patients (especially >65 years)
- Comorbidities (especially diabetes, hypertension or ischemic heart disease)
- Obesity
- Need for dialysis
- Immunocompromised

Investigations

Refer to investigation guideline

Consider Intubation

- Hypoxaemia with severe respiratory distress despite standard O_2 therapy
- Cardiac dysfunction
- Cytokine storm/Hyperinflammatory state

(Refer to separate guideline on how to conduct intubation)

CPR

- Consider CPR if a rapidly reversible aetiology for cardiac arrest
- High risk with BVM
- If BVM:
  - Ensure good seal
  - Use high efficiency particulate filter
  - Hold mask with 2 hands (2 persons)

High risk for viral transmission during

- Intubation
- Bronchoscopy
- Bag mask ventilation (BMV)
- CPR
- Nebulisation
- Transfer

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Respiratory Management

- **Degree of lung elastance will influence ventilation strategy.**
  - **Low elastance (alveoli well aerated so good lung compliance)**
    - Will not significantly benefit from lung recruitment strategies
    - TV 6-8 ml/kg IBW with PEEP (initiate at 10 cm H_2O and titrate)
  - **High elastance (atelectasis and poor lung compliance due to consolidation)**
    - Should benefit from small tidal volumes
    - TV 4-6 ml/kg IBW and lung recruitment strategies with PEEP (initiate at 10 cm H_2O and titrate)
    - Consider Airway Pressure Release Ventilation early (if experienced)
- Limit plateau pressure to 30 cm H_20 and driving pressure to 15cmH_20
- Consider **prone ventilation** early if refractory hypoxemia
- Target SaO_2 of 88-90% and aim to reduce F_iO_2 to<0.6
- Permissive hypercapnia provided stable hemodynamically and pH>7.15
- Role of **ECMO** unclear: Consider V-V ECMO in young patients with single organ failure after discussion with ECMO centre

General Management

- **Judicious fluid therapy:** ensure adequate intravascular volume as patients may be hypovolemic initially. Avoid fluid overload. Calculate daily fluid balance.
  In ARDS patients aim for a neutral to 500ml negative fluid balance.
- Initiate **thromboprophylaxis** in **ALL** patients (if no contraindication): 40-60mg s/c enoxaparin daily
- Use **therapeutic anticoagulation** (1mg/kg enoxaparin s/c 12 hourly - unless contra-indicated or requiring dosage adjustment for renal or hepatic dysfunction) for severely hypoxaemic patients with a hyperinflammatory state and elevated D Dimer (>1)
- Ulcer prophylaxis if at high risk for stress ulcers or unable to feed enterally
- **Vasopressor** use: Low threshold to initiate rather than excessive fluid loading
- Initiate **enteral feeding** if no contraindication
- For all suspected CAP patients: Amoxycilin-Clavulanate + Macrolide + Oseltamavir
- Corticosteroid Rx: Administer daily dexamethasone (*i.v.* 6-8mg) [or hydrocortisone (*i.v.*200mg) or methylprednisone (*i.v.* 30mg) or prednisone (*p.o.* 40mg)] for 10 days.

Unproven but possibly beneficial therapies

- Several agents are currently being explored
- Includes: Remdesivir, Tocilizumab, Colchicine, Immunoglobulins
- There is currently insufficient evidence to support their inclusion as standard therapy.
- If considering these agents: seek expert opinion and use as per MEURI framework
- Additionally, Zinc, vitamin C, vitamin D supplementation may be considered.

* Dual anti-platelet therapy is not recommended

DISCLAIMER: We have made considerable effort to ensure the information contained within this document is correct at the time of publication. Information provided has been sourced from the best available evidence and expert opinion. Please note that these may change as more information becomes available.

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