

Critical Care COVID-19 Management Protocol

(updated 5-4-2020)

Prophylaxis

While there is very limited data (and none specific for COVID-19), the following “cocktail” may have a role in the prevention/mitigation of COVID-19 disease.

- Vitamin C 500 mg BID and Quercetin 250-500 mg BID
- Zinc 75-100 mg/day
- Melatonin (slow release): Begin with 0.3mg and increase as tolerated to 2 mg at night
- Vitamin D3 1000-4000 u/day

Mildly Symptomatic patients (at home):

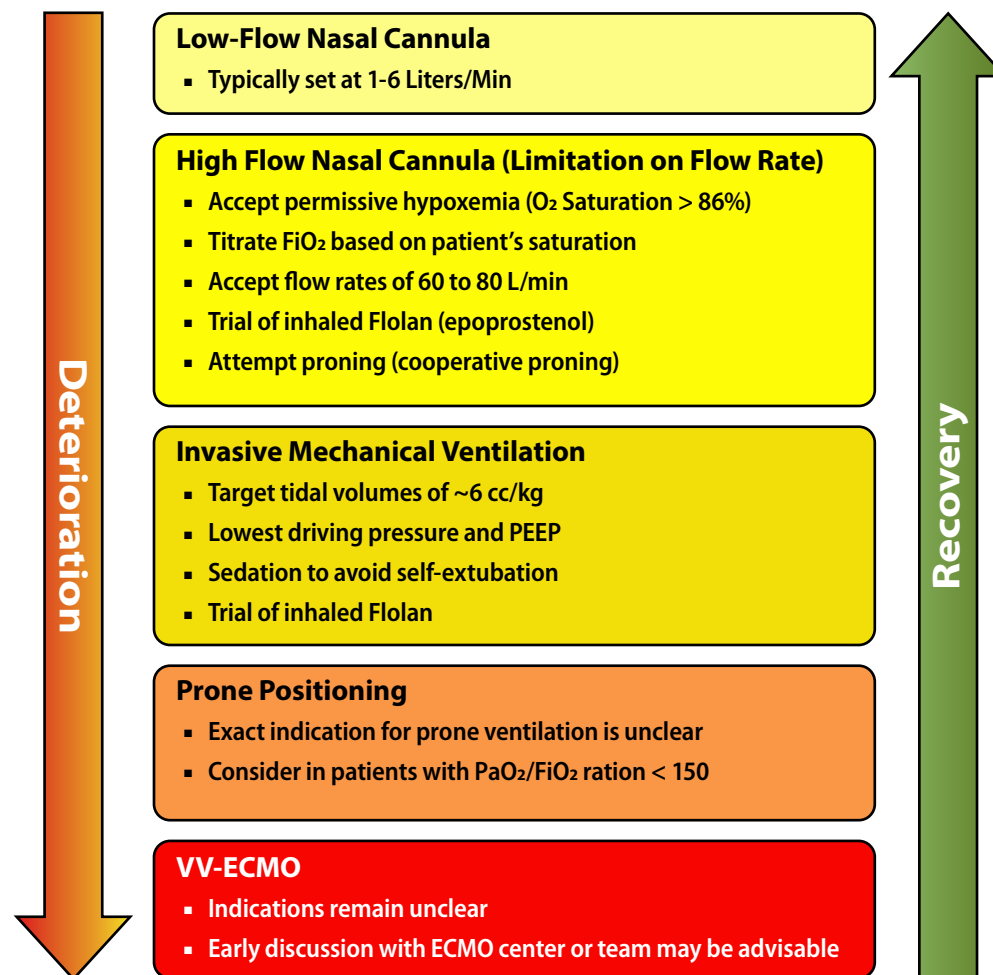
- Vitamin C 500mg BID and Quercetin 250-500 mg BID
- Zinc 75-100 mg/day
- Melatonin 6-12 mg at night (the optimal dose is unknown)
- Vitamin D3 1000-4000 u/day
- *Optional:* Hydroxychloroquine 400mg BID day 1 followed by 200mg BID for 4 days
- *Optional:* ASA 81/325mg/day
- *Optional:* In highly symptomatic patients, monitoring with home pulse oximetry is recommended

Mildly Symptomatic patients (on floor):

- Vitamin C 500mg PO q 6 hourly and Quercetin 250-500 mg BID (if available)
- Zinc 75-100 mg/day
- Melatonin 6-12 mg at night (the optimal dose is unknown)
- Vitamin D3 1000-4000 u/day
- Enoxaparin 60 mg daily
- Methylprednisolone 40 mg daily; increase to 40mg q 12 if poor response
- *Optional:* Hydroxychloroquine 400mg BID day 1 followed by 200mg BID for 4 days
- *Optional:* Remdesivir (if available)
- N/C 2L /min if required (max 4 L/min; consider early t/f to ICU for escalation of care).
- T/f EARLY to the ICU for increasing respiratory signs/symptoms and arterial desaturations.

General schema for respiratory support in patients with COVID-19

TRY TO AVOID INTUBATION IF POSSIBLE



Respiratory symptoms (SOB; hypoxia- requiring N/C \geq 4 L min: admit to ICU):

Essential Treatment (dampening the STORM)

1. Methylprednisolone 80 mg loading dose then 40mg q 12 hourly for at least 7 days and until transferred out of ICU. Alternative approach: Hydrocortisone 50 mg q 6 hourly.

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2. Ascorbic acid (Vitamin C) 3g IV q 6 hourly for at least 7 days and/or until transferred out of ICU. Note caution with POC glucose testing.
3. Full anticoagulation: Unless contraindicated we suggest FULL anticoagulation (on admission to the ICU) with enoxaparin, i.e 1 mg/kg s/c q 12 hourly (dose adjust with CrCl < 30mls/min). Heparin is suggested with CrCl < 15 ml/min.

Note: Early termination of ascorbic acid and corticosteroids will likely result in a rebound effect.

Additional Treatment Components (the Full Monty)

4. Melatonin 6-12 mg at night (the optimal dose is unknown).
5. Magnesium: 2 g stat IV. Keep Mg between 2.0 and 2.4 mmol/l. Prevent hypomagnesemia (which increases the cytokine storm and prolongs Qtc).
6. Optional: Azithromycin 500 mg day 1 then 250 mg for 4 days
7. Optional: Atorvastatin 40-80 mg/day.
8. Broad-spectrum antibiotics if superadded bacterial pneumonia is suspected based on procalcitonin levels and resp. culture (no bronchoscopy).
9. Maintain EUVOLEMIA
10. Early norepinephrine for hypotension.
11. Escalation of respiratory support; See Graphic.
12. Treatment of Macrophage Activation Syndrome (MAS)
 - A sub-group of patients will develop MAS. A ferritin > 4400 ng/ml is considered diagnostic of MAS. Other diagnostic features include increasing AST/ALT and increasing CRP.
 - Methylprednisolone 120 mg q 8 hourly for at least 3 days, then wean according to Ferritin, CRP, AST/ALT (see Figure 6). Ferritin should decrease by at least 15% before weaning corticosteroids.

13. Monitoring: Daily: PCT, CRP, IL-6, BNP, Troponins, Ferritin, Neutrophil-Lymphocyte ratio, D-dimer and Mg. CRP, IL-6 and Ferritin track disease severity closely. Thromboelastogram (TEG) on admission and repeated as indicated.
14. Post ICU management
 - a. Enoxaparin 40-60 mg s/c daily
 - b. Methylprednisone 40 mg day, then wean slowly
 - c. Vitamin C 500 mg PO BID
 - d. Melatonin 3-6 mg at night