MATH+ HOSPITAL TREATMENT PROTOCOL FOR COVID-19

MATH+ **v7**
2021-01-07

MEDICATION	INDICATION/INITIATION	RECOMMENDED DOSING	TITRATION/DURATION
Methylprednisolone	A. *Mild hypoxemia: requires O_2 via NC to maintain saturation > 92%*	40 mg IV bolus then 20 mg IV twice daily	A1. Once off O_2, then taper with 20 mg daily × 3 days then 10 mg daily × 3 days, monitor CRP response. A2. If FiO_2, or CRP increase move to B.
	B. *Moderate–severe hypoxemia (High Flow O_2, NIPPV, IMV)*	COVID-19 Respiratory Failure protocol (see flccc.net/respiratory-support-c19/) Preferred: 80 mg IV bolus, followed by 80 mg / 240 ml normal saline IV infusion at 10 ml/hr Alternate: 40 mg IV twice daily	B1. Once off IMV, NPPV, or High flow O_2, decrease to 20 mg twice daily. Once off O_2, then taper with 20 mg/day × 3 days then 10 mg/day × 3 days. B2. If no improvement in oxygenation in 2–4 days, double dose to 160 mg/daily. B3. If no improvement and increase in CRP/Ferritin, move to "Pulse Dose" below.
	C. *Refractory Illness/ Cytokine Storm*	"Pulse" dose with 125 mg IV every 6–8 hours	Continue × 3 days then decrease to 80 mg IV/daily dose above (B). If still no response or CRP/Ferritin high/rising, consider "Salvage Therapy" below
Ascorbic Acid	*O_2 < 4 L on hospital ward*	500–1000 mg oral every 6 hours	Until discharge
	O_2 > 4 L or in ICU	1.5–3 g intravenously every 6 hours	Sooner of 7 days or discharge from ICU, then switch to oral dose above
Thiamine	*ICU patients*	200 mg IV twice daily	Sooner of 7 days or discharge from ICU
Heparin (LMWH)	*Hospital ward patients on ≤ 4 L O_2*	0.5 mg/kg twice daily Monitor anti-Xa, target 0.2–0.5 IU/ml	Until discharge then start DOAC at half dose × 4 weeks
	ICU patients or > 4 L O_2	1 mg/kg twice daily Monitor anti-Xa levels, target 0.6–1.1 IU/ml	Later of: discharge from ICU or off oxygen, then decrease to hospital ward dosing above
Ivermectin *(should be considered a core medication)*	*Upon admission to hospital and/or ICU*	0.3 mg/kg per dose – one dose daily, minimum of 2 days	continue daily until recovered (max 5 days)
Vitamin D	*Hospital ward patients on ≤ 4 L O_2*	Calcifediol preferred: 0.532 mg PO day 1, then 0.266 mg PO day 3 and 7 and weekly thereafter Cholecalciferol: 10,000 IU/day PO or 60,000 IU day 1, 30,000 IU days 3 and 7 and then weekly	Until discharge
	ICU patients or on > 4 L O_2	Cholecalciferol 480,000 IU (30 ml) PO on admission, then check Vitamin D level on day 5, if < 20 ng/ml, 90,000 PO IU/day × 5 days	Until discharge from ICU
Atorvastatin	*ICU Patients*	80 mg PO daily	Until discharge
Melatonin	*Hospitalized patients*	6–12 mg PO at night	Until discharge
Zinc	*Hospitalized patients*	75–100 mg PO daily	Until discharge
Famotidine	*Hospitalized Patients*	40–80 PO mg twice daily	Until discharge
Therapeutic Plasma Exchange	*Patients refractory to pulse dose steroids*	5 sessions, every other day	Completion of 5 exchanges

Legend: CRP = C-Reactive Protein, DOAC = direct oral anti-coagulant, FiO_2 = Fraction of inspired oxygen, ICU = Intensive Care Unit, IMV = Invasive Mechanical Ventilation, IU = International units, IV = intravenous, NIPPV = Non-Invasive Positive Pressure Ventilation, O_2 = oxygen, PO (per os) = oral administration

MATH+ HOSPITAL TREATMENT PROTOCOL FOR COVID-19

TO CONTROL INFLAMMATION & EXCESS CLOTTING

In all COVID-19 hospitalized patients, the therapeutic focus must be placed on early intervention utilizing powerful, evidence-based therapies to counteract:

— The overwhelming and damaging inflammatory response
— The systemic and severe hyper-coagulable state causing organ damage

By initiating the protocol soon after a patient meets criteria for oxygen supplementation, the need for mechanical ventilators and ICU beds will decrease dramatically.

TREATMENT OF LOW OXYGEN

— If patient has low oxygen saturation on nasal cannula, initiate heated high flow nasal cannula.
— Do not hesitate to increase flow limits as needed.
— Avoid early intubation that is based solely on oxygen requirements. Allow "permissive hypoxemia" as tolerated.
— Intubate only if patient demonstrates excessive work of breathing.
— Utilize "prone positioning" to help improve oxygen saturation.

ABOUT THE MATH+ HOSPITAL TREATMENT PROTOCOL FOR COVID-19

Our **MATH+** protocol is designed for hospitalized patients, to counter the body's overwhelming inflammatory response to the SARS-CoV-2 virus. The protocol is based on numerous medical journal publications over decades. It is the hyper-inflammation, not the virus itself, that damages the lungs and other organs and ultimately causes death in COVID-19. We have found the **MATH+** protocol to be a highly effective combination therapy in controlling this extreme inflammatory response and we have now added ivermectin as a core component given the profound emerging efficacy data in hospitalized patients reviewed here (www.flccc.net/flccc-ivermectin-review-covid-19).

The steroid **M**ethylprednisolone is a key component, increasing numbers of studies (see https://flccc.net/medical-evidence) show its profound effectiveness in COVID-19, which is made more potent when administered intravenously with high doses of the antioxidant **A**scorbic acid given that the two medicines have multiple synergistic physiologic effects. **T**hiamine is given to optimize cellular oxygen utilization and energy consumption, protecting the heart, brain, and immune system. The anticoagulant **H**eparin is important for preventing and dissolving blood clots that appear with a very high frequency in patients not given blood thinners. The **+** sign indicates several important co-interventions that have strong physiologic rationale and an excellent safety profile. It also indicates that we plan to adapt the protocol as our insights and the published medical evidence evolve.

Timing is a critical factor in the successful treatment of COVID-19. Patients must go to the hospital as soon as they experience difficulty breathing or have a low oxygen level. The **MATH+** protocol then should be administered soon after a patient meets criteria for oxygen supplementation (within the first hours after arrival in the hospital), in order to achieve maximal efficacy as delayed therapy has led to complications such as the need for mechanical ventilation.

If administered early, this formula of FDA-approved, safe, inexpensive, and readily available drugs can eliminate the need for ICU beds and mechanical ventilators and return patients to health.

DISCLAIMER

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HOSPITAL TREATMENT PROTOCOL FOR COVID-19

For updates, references and more information please see

www.flccc.net

MATH+
HOSPITAL TREATMENT PROTOCOL FOR COVID-19

MATH+ **v5**
2020-07-14

TO CONTROL INFLAMMATION & EXCESS CLOTTING

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MATH+ PROTOCOL

[Only for use in hospitals in the treatment of COVID-19]

1. **Methylprednisolone** [Intravenous]
   — A. Mild hypoxia (<4L): 40 mg daily until off oxygen
   — B. Moderate–severe illness: 80 mg bolus, then 20mg q6h IV push for 7 days*
      • Alternate: 40 mg q12h for 7 days*
   — Day 8: Switch to oral prednisone, taper over 6 days
   *Consider higher doses for patients with non-improving ARDS/oxygenation and/or with persistent, rising, or severely elevated inflammatory markers (cytokine storm), i.e. 60–125 mg q6h–q8h, or 1,000 mg/day for 3 days
2. **Ascorbic Acid** [High Dose Infusion]
   — 3 grams / 100 ml – q6h
   — Continue for a total of 7 days or until discharged
3. **Thiamine**
   — 200 mg IV – q12h – until discharged
4. **Heparin** [Low Molecular Weight Heparin / LMWH]
   — A. Stable patient on medical floor/ward: 0.5 mg/kg q12h; if CrCl ≤ 30 ml/min, give once a day
   — B. Critically ill or ICU patient: 1 mg/kg q12h unless contraindicated, dose adjust for CrCl 15–30 ml/min
      • If CrCl ≤ 15 ml/min, use unfractionated heparin [UFH]
      • Monitor antifactor-Xa activity, target range is 0.6–1.1 units/ml
   — Continue until discharged
5. **PLUS** optional co-interventions: Melatonin (6–12 mg at night), Zinc (75–100 mg/day), Vitamin D3

q6h/q8h/q12h = every 6/8/12 hours
1 mg Heparin = 500 int. units (IU)
CrCl = Creatinine Clearance (Cc_r)

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