MATH+®

COVID HOSPITAL TREATMENT

Overview of MATH+ and Key Concepts

The MATH+ protocol was created to treat patients in hospital and intensive care units, based on using therapies such as anti-inflammatory corticosteroids (Methylprednisolone), high-dose intravenous Vitamin C (Ascorbic acid), Vitamin B1 (Thiamine), and an anticoagulant (Heparin), plus co-interventions such as antivirals and supplements (MATH+).

The protocol was developed in late 2020, at a time when nearly all public health agencies and health care societies were recommending "supportive care only," based on an incorrect assumption that COVID-19 represented a viral pneumonia and no anti-coronaviral therapy existed.

The core principle of MATH+ is the use of anti-inflammatory agents to dampen the "cytokine storms," together with anticoagulation to limit the microvascular and macrovascular clotting, and supplemental oxygen to help overcome the hypoxia. Endothelial damage and an imbalance of both innate and adaptive immune responses, with aberrant macrophage activation, plays a central role in the pathogenesis of the severe COVID-19 disease.

COVID is an extraordinarily complex, yet treatable, disease; many of its mysteries are still unravelling. However, a few concepts are key to its management:

- It is critically important to recognize that infection with SARS-CoV-2, the virus that causes COVID-19, progresses through stages. Treatment approaches are therefore highly stage-specific.
- Antiviral therapy is likely to be effective only during the viral replicative phase.
- Anti-inflammatory therapy is expected to be effective during the pulmonary phase and possibly the post-COVID phase.
- The pulmonary phase is characterized by prolonged immune dysregulation, a pulmonary microvascular injury (vasculopathy), with activation of clotting and a procoagulant state together with the characteristics of an organizing pneumonia.
- The pulmonary phase of COVID-19 is a treatable disease; it is inappropriate to limit therapy to "supportive care" alone. As patients progress down the pulmonary cascade the disease becomes more difficult to reverse. Early treatment of the pulmonary phase is ESSENTIAL to a good outcome.
- Treatment in the late pulmonary phase may require escalation of the dose of corticosteroids as well as the use of salvage methods (i.e., plasma exchange). However, patients who present in the late pulmonary phase may have progressed to the irreversible pulmonary fibroproliferative phase.
- Immune dysregulation may last weeks or even months. The early and abrupt termination of anti-inflammatory agents will likely result in rebound inflammation.
- COVID-19 is essentially a clinical diagnosis supported by laboratory tests. At symptom onset, a PCR test will be positive in approximately 60% of patients; maximal positivity rate is on day 8 (post-infection) when 80% of patients will be positive. A PCR test remains positive for at least two weeks.

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About this Protocol

The information in this document is our recommended approach to treating the hospitalized COVID-19 patient, based on the best (and most recent) literature.

It is provided as guidance to healthcare providers worldwide on the early treatment of COVID-19. Patients should always consult with their provider before starting any medical treatment.

New medications may be added and/or changes made to doses of existing medications as further evidence emerges. Please check our website at flccc.net to be sure you are using the latest version of this protocol.

For more information on nutritional therapeutics and how they can help with COVID-19, visit geni.us/COVID_nutrition

For additional information, the rationale behind these guidelines, and other optional treatments, see 'A Guide to Managing the Hospitalized COVID-19 Patient'.

Early treatment is critical and the most important factor in managing this disease.

Disclaimer:

The MATH+: COVID Hospital Treatment is meant solely for educational purposes regarding potentially beneficial treatment approaches for COVID-19.

Never disregard professional medical advice because of something you have read on our website and releases.

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- Patients who progress to the pulmonary phase are usually PCR-positive, despite cessation of viral replication (and are therefore less likely to be infectious). However, due to the imperfect sensitivity of the PCR test, as many as 20% of patients who progress to the pulmonary phase will be PCR-negative (even on repeat testing).
- Symptomatic patients are likely to be infectious during a narrow window starting 2–3 days before the onset of symptoms and to up to 6 days after the onset of symptoms.

Figure 1. The Course of COVID-19 and General Approach to Treatment

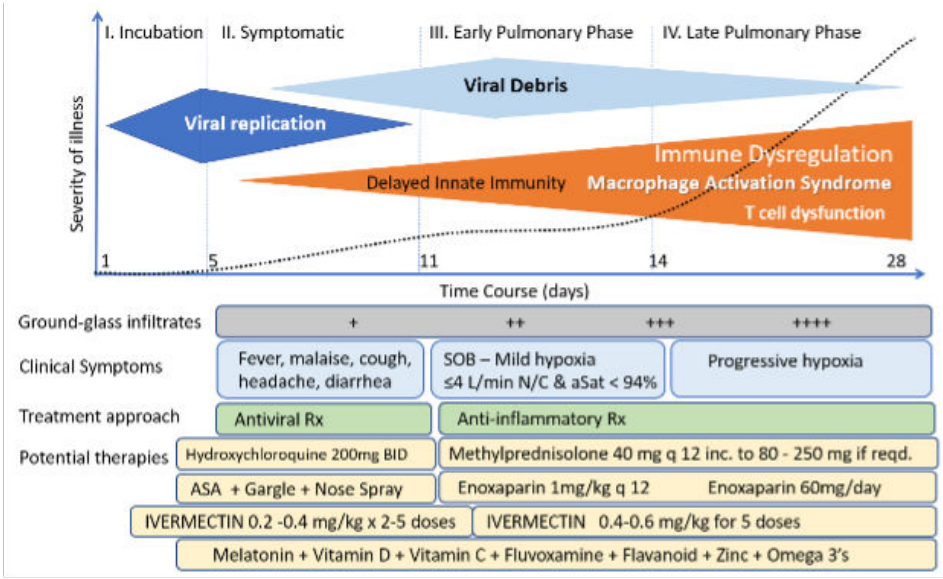
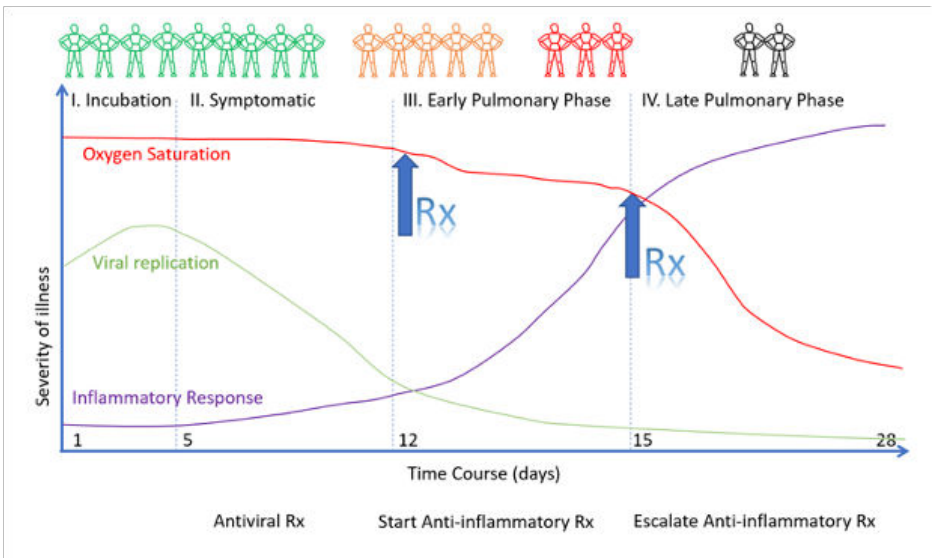


Figure 2. Timing of the Initiation of Anti-Inflammatory Therapy



Treatment for an individual patient is determined by many factors and thus should rely on the judgement of your physician or qualified healthcare provider. Always seek their advice with any questions you may have regarding your medical condition or health.

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