Front Line COVID-19 Critical Care Working Group

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Front Line COVID-19 Critical Care Working Group
Urges Immediate Adoption of "MATH+"—Early Intervention Protocol for Any ER or Hospitalized Patient Developing Breathing Difficulty

A Treatment Strategy Directed at Suppressing
Hyper-Inflammation to Reduce the Need for Ventilators & Save Lives

Intravenous Methylprednisolone • High Dose Intravenous Ascorbic Acid (Vitamin C)
• Full Dose Low Molecular Weight Heparin • PLUS optional Treatment components

NEW YORK, NY: Leading critical care specialists at five academic or major hospitals who together have formed the ***Front Line COVID-19 Critical Care Working Group***, have released **MATH+** —a protocol for treating patients who arrive in hospitals with COVID-19.

MATH+
COVID-19 Early Intervention Protocol

Based on available research, the experience in China reflected by the Shanghai expert commission, and their decades-long professional experiences in Intensive Care Units around the country, the five experts strongly urge fellow physicians to immediately adopt a change in strategy by using **MATH+**; delivering powerful therapies earlier in the disease course, prior to admission to the ICU or the need for a mechanical ventilator.

Based on early experiences with this more aggressive approach, they predict that early adoption of **MATH+** will reduce ICU admissions, obviate the need for mechanical ventilators, and most importantly, save many lives.

"If you can administer intravenous corticosteroids and ascorbic acid starting in the Emergency Room and every 6 hours thereafter while in the hospital, the mortality rate of this disease and the need for mechanical ventilators will likely be *greatly* reduced," says Dr. Pierre Kory, the Medical Director of the Trauma and Life Support Center and Chief of the Critical Care Service at the University of Wisconsin in Madison.

NOTE: The opinions expressed in this release do not necessarily represent the official positions of any institutions with which the quoted physicians are affiliated.

He explains that *it is the severe inflammation sparked by the Coronavirus, not the virus itself, that kills patients.* The hyper-inflammation triggered by COVID-19, also known as "cytokine storm" requires use of corticosteroids to prevent deterioration into a very severe form of Acute Respiratory Distress Syndrome (ARDS), a condition which causes the lungs to fail.

Further, the inflammation appears to cause high rates of blood clotting in multiple organs necessitating the use of blood thinners.

The typical treatment for ARDS is to put patients on a mechanical ventilator, but Dr. Paul E. Marik, of the Eastern Virginia Medical School, says that should be the very last resort. Of the 30-40 COVID-19 patients Dr. Marik has treated with this protocol in the ICU, all but 2 survived, and both of those were over 80 with serious co-morbidiites; that is, they died from their underlying disease rather than COVID-19.

Of the 40 seriously ill COVID-19 patients Dr. Joseph Varon has treated with this protocol in Houston's United Memorial Medical Center, 30 have already gone home, including a 90-year-old woman with a history of colon cancer and sepsis. None of his patients has died. Dr. Varon and the other members of the critical care working group caution that it's unreasonable to expect a 100% cure rate with any treatment, but that has been Dr. Varon's experience with the **MATH+** protocol to date.

The experts all emphasize that early intervention is critical in preventing the deterioration and death that has been described across the world once patients enter the ICU. After observing minimal improvements or recoveries in the first of New York's Northwell Health Care system's many dozens of patients, Northwell's critical care specialists found that by changing their therapeutic strategy by initiating the combination of corticosteroids and high-dose intravenous ascorbic acid earlier in the disease course, the need for mechanical ventilation has been reduced. Doctors at Mount Sinai West also reported that soon after seeing poor responses to an initial supportive care strategy, they quickly switched to a strategy of earlier use of corticosteroids, often in combination with tocilizumab and also are seeing improved outcomes of fewer intubations and deaths than in other hospitals in the city.

Some doctors may question the introduction of corticosteroids in the treatment of a severe viral syndrome. However, the two largest studies involving more than 7,000 patients with SARS or H1N1 pneumonia demonstrated a significant reduction in mortality. Dr. G. Umberto Meduri, Professor of Medicine at the University of Tennessee Health Science Center in Memphis, says corticosteroids are critical for controlling the inflammatory storm caused by this novel virus. Ten randomized studies have proven safety and efficacy in non-viral acute respiratory distress syndrome (ARDS). Corticosteroid treatment was associated with a seven-day reduction in duration of mechanical ventilation and a 30% reduction in mortality.

Positive results in treating COVID-19 are reported from China. Guidelines for China, Korea, and Italy include corticosteroid treatment. Dr. Meduri adds, "There is no justification based on available evidence and professional ethics to categorically deny the use of corticosteroid treatment in the severe life-threatening 'cytokine storm' associated with COVID-19."

New York internist, Dr. Keith Berkowitz says, "Given the dire circumstances in New York State, with almost 263,000 confirmed cases of COVID-19 and 14,740 deaths (as of April 24, 2020), it is imperative that every hospital immediately adopt this safe, low-cost, and highly effective treatment protocol, but they must implement it BEFORE the ICU, not after they reach the ICU because, in this disease, the organ damage caused by the uncontrolled inflammation tends to be so severe that patients rarely recover at that point."

Dr. Howard Kornfeld, who has been a Board-Certified Emergency Physician for 35 years, adds, "This protocol will not only save patients' lives, it will also lessen the danger to the doctors and nurses who treat them by decreasing the need for mechanical ventilators."

The physicians agreed that while a randomized controlled trial (RCT), in normal circumstances, might be considered, the early provision of **MATH+,** which must be given within hours of critical illness, would inevitably be delayed by such a study design rendering the validity of the RCT questionable. Furthermore, while the results of an RCT would not be available for months or more, well-designed observational studies of the protocol could yield timely feedback, during this pandemic, to improve the treatment process much more quickly.

Dr. José Iglesias from the Department of Critical Care, Community Medical Center, Toms River, New Jersey, advocates for early intravenous ascorbic acid (IVAA) as well as corticosteroids in COVID-19 hypoxemic pneumonia and comments, based on his recently published randomized controlled trial of 137 patients (*Chest,* in press) that "IVAA in sepsis, which shares cytokine storm with COVID-19, significantly reduced the time to the resolution of shock."

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Version 2020-04-24. For updated versions of this release and the video featuring our critical care doctors, go to: https://covid19criticalcare.com

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MATH+
COVID-19 Early Intervention Protocol

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 within 6 hours of presentation in the emergency room, the need for mechanical ventilators and ICU beds will decrease dramatically.

MATH+ Protocol

1. Intravenous Methylprednisolone
   - Mild Hypoxia (<4L): 40mg daily until off oxygen
   - Moderate-Severe Illness: 80 mg bolus then 20mg q6h IV push for 7 days
   - Alternate: 80mg daily for 7 days
   - Day 8: Switch to oral prednisone, taper over 6 days
2. High Dose Intravenous Ascorbic Acid (Vitamin C)
   - 3 grams/100 ml every 6 hours
   - Continue for a total of 7 days or until discharged
3. Full Dose Low Molecular Weight Heparin
   - Mild Illness: 40-60mg daily
   - Moderate-Mild Illness: 40-60mg daily
   - Continue until discharged
4. PLUS optional treatment components: Thiamine, Zinc, and Vitamin D

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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

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