Care of Critically Ill Adults With COVID-19

Last Updated: February 29, 2024

Summary Recommendations

Hemodynamics

- For adults with COVID-19 and shock, the COVID-19 Treatment Guidelines Panel (the Panel) recommends using dynamic parameters, capillary refill time, and/or lactate levels over static parameters to assess fluid responsiveness **(BIIa)**.
- For acute resuscitation in adults who have COVID-19 and shock, there is insufficient evidence for the Panel to recommend either for or against the use of balanced crystalloids, such as Ringer's lactate solution, over normal saline.
- For acute resuscitation in adults with COVID-19 and shock, the Panel **recommends against** the initial use of **albumin (BI)**.
- For adults with COVID-19 and shock, the Panel recommends **norepinephrine** as the first-choice vasopressor **(AI)**.
- For adults with COVID-19 and shock, the Panel recommends titrating vasoactive agents and targeting a mean arterial pressure (MAP) of 60 to 65 mm Hg over targeting a higher MAP **(BI)**.
- The Panel **recommends against** using hydroxyethyl starches for intravascular volume replacement in adult patients with COVID-19 and sepsis or septic shock **(AI)**.
- As a second-line vasopressor, the Panel recommends adding either **vasopressin** (up to 0.03 units/min) **(BIIa)** or **epinephrine (BIIb)** to norepinephrine to raise MAP to the target or adding **vasopressin** (up to 0.03 units/min) **(BIIa)** to decrease the norepinephrine dose.
- The Panel **recommends against** using **low-dose dopamine** for renal protection **(AI)**.
- The Panel recommends using **dobutamine** in adult patients with COVID-19 who show evidence of cardiac dysfunction and persistent hypoperfusion despite adequate fluid loading and the use of vasopressor agents **(BIII)**.
- The Panel recommends that all adult patients with COVID-19 who require vasopressors have an arterial catheter placed as soon as practical, if resources are available **(BIII)**.
- For adult patients with refractory septic shock who have completed a course of corticosteroids to treat COVID-19, the Panel recommends using low-dose corticosteroid therapy ("shock-reversal") over no corticosteroid therapy **(BIIa)**.

Oxygenation and Ventilation

- For adults with COVID-19 and acute hypoxemic respiratory failure despite conventional oxygen therapy, the Panel recommends starting therapy with high-flow nasal cannula (HFNC) oxygen; if patients fail to respond, noninvasive ventilation or intubation and mechanical ventilation should be initiated **(BIIa)**.
- For adults with COVID-19 and acute hypoxemic respiratory failure despite conventional oxygen therapy who do not have an indication for endotracheal intubation and for whom HFNC oxygen is not available, the Panel recommends performing a closely monitored trial of noninvasive ventilation **(BIIa)**.
- For adults with persistent hypoxemia who require HFNC oxygen and for whom endotracheal intubation is not indicated, the Panel recommends a trial of awake prone positioning **(BIIa)**.
- The Panel **recommends against** the use of awake prone positioning as a rescue therapy for refractory hypoxemia to avoid intubation in patients who otherwise meet the indications for intubation and mechanical ventilation **(AIII)**.
- If intubation becomes necessary, the procedure should be performed by an experienced practitioner in a controlled setting due to the enhanced risk of exposing health care practitioners to SARS-CoV-2 during intubation **(AIII)**.
- For mechanically ventilated adults with COVID-19 and acute respiratory distress syndrome (ARDS):
  - The Panel recommends using low tidal volume (VT) ventilation (VT 4–8 mL/kg of predicted body weight) over higher VT ventilation (VT >8 mL/kg) **(AI)**.
  - The Panel recommends targeting plateau pressures of <30 cm H_2O **(AIIa)**.
  - The Panel recommends using a conservative fluid strategy over a liberal fluid strategy **(BIIa)**.
  - The Panel **recommends against** the routine use of inhaled nitric oxide **(AIIa)**.

Summary Recommendations, continued

- For mechanically ventilated adults with COVID-19 and moderate to severe ARDS:
  - The Panel recommends using a higher positive end-expiratory pressure (PEEP) strategy over a lower PEEP strategy **(BIIa)**.
  - For mechanically ventilated adults with COVID-19 and refractory hypoxemia despite optimized ventilation, the Panel recommends prone ventilation for 12 to 16 hours per day over no prone ventilation **(BIIa)**.
  - The Panel recommends using, as needed, intermittent boluses of neuromuscular blocking agents or a continuous neuromuscular blocking agent infusion to facilitate protective lung ventilation **(BIIa)**.
- For mechanically ventilated adults with COVID-19, severe ARDS, and hypoxemia despite optimized ventilation and other rescue strategies:
  - The Panel recommends using an inhaled pulmonary vasodilator as a rescue therapy; if rapid improvement in oxygenation is not observed, the treatment should be tapered **(CIII)**.
  - The Panel recommends using recruitment maneuvers rather than not using recruitment maneuvers **(CIIa)**.
  - If recruitment maneuvers are used, the Panel **recommends against** the use of staircase (incremental PEEP) recruitment maneuvers **(AIIa)**.

Pharmacologic Interventions

- In the absence of a proven or suspected secondary infection, the Panel **recommends against** the use of empiric broad-spectrum antimicrobials in patients with severe or critical COVID-19 **(BIII)**.
- As with any hospitalized patient, patients with COVID-19 who receive antimicrobials should be reassessed daily to minimize the adverse consequences of unnecessary antimicrobial therapy **(AIII)**.

Extracorporeal Membrane Oxygenation

- There is insufficient evidence for the Panel to recommend either for or against the use of extracorporeal membrane oxygenation in adults with COVID-19–associated ARDS and refractory hypoxemia.

Each recommendation in the Guidelines receives a rating for the strength of the recommendation (A, B, or C) and a rating for the evidence that supports it (I, IIa, IIb, or III). See Guidelines Development for more information.