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Parenteral Fish-Oil Emulsions in Critically Ill COVID-19 Emulsions

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Given the gravity of the present situation concerning the coronavirus disease 2019 (COVID-19) pandemic, I would like to propose that a trial of a clinically approved parenteral fish-oil emulsion providing 4–6 g/d of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) combined be considered in a randomized clinical trial for the management of the hyperinflammatory state or "cytokine storm" found in some critically ill patients infected with COVID-19. Obesity, which appears to be a common predisposing factor to poorer outcomes in this condition, leads to higher serum levels of fatty acids, many of which are proinflammatory with the usual American diet. Although lesser amounts of EPA and DHA of about 1 g/d, which can be achieved with substantial dietary intake of cold-water fish or found in some enteral feeding formulas, can have modest anti-inflammatory effects, larger amounts in the 4–6 g/d range, which are only achievable by supplemental intake, have much more potent effects on cytokine secretion[1] and the inflammatory response.[1,2] Parenteral administration by continuous infusion achieves a rapid and sustainable increase in blood levels of EPA and DHA and can be delivered in a small volume, which can be an important consideration in patients suffering from the acute respiratory distress syndrome complicating COVID-19 with the need often for fluid restriction. Parenteral fish-oil emulsions containing substantial amounts of EPA and DHA have an excellent safety record in both critically ill adults[3] and children,[4] making them an appropriate candidate for off-label usage in what would appear to be a unique clinical trial.[5]

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