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## Letter to the editor

## Re. “Early nutritional supplementation in non-critically ill patients hospitalized for the 2019 novel coronavirus disease (COVID-19): rationale and feasibility of a shared pragmatic protocol”



To the Editor:

Caccialanza et al. [1] presented an empirical protocol to promptly and pragmatically implement nutritional care in hospitalized non-intensive care unit (ICU) patients with coronavirus disease 2019 (COVID-19). In the absence of a curative treatment, it is highly valuable to optimize supportive care of these patients. The authors made the choice to detect nutritional risk using a simplified screening procedure. Although we routinely advocate for systematic nutritional risk screening of hospitalized patients, in the particular context of the COVID-19 epidemic, we believe risk screening is not necessary and that nutritional support should be prescribed at admission to all adult patients regardless of baseline nutritional status. Hospital admission of patients with COVID-19 usually occurs after 7 to 10 d of illness, during which anorexia is common, exacerbated by anosmia and ageusia. Although most of the severely ill patients with COVID-19 in industrialized countries are overweight or obese, a specific nutritional support is warranted. First, a majority of obese adults >65 y of age have sarcopenic obesity with loss of lean body mass, aggravated by anorexia and digestive symptoms. Sarcopenia is a predictor of difficult-to-wean and mortality among critically ill patients. Second, obese individuals commonly have low levels of both fat- and water-soluble vitamins, in particular vitamin D. Furthermore severe COVID-19 mostly affects middle-aged to elderly people who are usually vitamin D-deficient. Lung monocytes/macrophages and epithelial cells express the vitamin D receptor and vitamin D deficiency might contribute to the severity of respiratory viral infection by modulating negatively the innate and adaptive immune responses [2]. In a meta-analysis of randomized controlled trials, vitamin D supplementation prevented acute respiratory tract infection [3]. Among severe vitamin D-deficient patients, high-dose vitamin D supplementation in the intensive care unit reduced hospital mortality [4]. Other micronutrients also might affect the immune system. Vitamin C supplementation showed clinical benefit in elderly hospitalized patients with acute respiratory infection [5]. Zinc adjunction to treatment of severe pneumonia reduced mortality [6]. Even if clinical evidence is poor, host nutritional status can influence the host response to the virus, and it is

suitable to prevent and compensate for nutritional deficiencies. Nutritional management should be introduced early at admission. A screening procedure may limit or delay the implementation of treatment. Despite the clinical importance of body weight measurement, it is poorly recorded in hospitalized patients, especially in the context of contact and droplet precautions.

Although we are in agreement with Caccialanza et al.'s [1] proposals, our protocol varies in some respects. Regarding macronutrients, it is advisable not to prescribe any restrictive diet. Sugar- or salt-restricted diets are anorexic and at risk for worsening sarcopenia. A sugar-restricted diet in patients with diabetes is not recommended because hospitalized COVID-19 patients have low spontaneous intake and preventing malnutrition is a greater issue. Oral nutritional supplements should be offered as liquid supplements, which are more easily ingested in case of dyspnea. Artificial nutrition should be initiated as soon as dietary intake becomes insufficient. Like Caccialanza et al. [1], we prefer parenteral nutrition as enteral nutrition is unenforceable in the context of non-invasive ventilation, digestive symptoms, and difficult monitoring of isolated patients. Concerning vitamin D supplementation, although bolus dosing is commonly prescribed, daily dosing might be a better choice because high doses of vitamin D can dysregulate the activity of the enzymes responsible for synthesis and degradation of vitamin D. Martineau et al. [3] showed that patients receiving daily or weekly vitamin D without additional bolus doses experienced the most benefit to prevent acute respiratory tract infections. Other supplementations are implemented in our center according to frequent deficiencies and nutritional requirements of the target population (Table 1). Cobalamin is provided because it is commonly deficient in

**Table 1**  
Nutritional management of COVID-19 in Caen Normandie University Hospital\*

	Nutritional support in conventional hospital wards
Diet	High-protein and high-calorie diet (default meal in COVID-19 units) Restrictive diets are prohibited
Oral nutritional supplement	2–3 drinks /d, according to tolerance
Artificial nutrition	If oral intake <70% daily calorie requirements: Peripheral parenteral nutrition (central if long-term)
Vitamin D	800 IU/d (i.e., total 1200 IU/d taking into account multivitamin complex)
Vitamin B <sub>12</sub> (cobalamin)	1 mg/wk oral
Multivitamin and minerals	1 tablet/d containing: <ul style="list-style-type: none"> <li>• Vitamin A 5200 UI</li> <li>• Vitamin C 240 mg</li> <li>• Zinc 30 mg</li> <li>• Selenium 100 µg</li> <li>• All other vitamins achieving 100% DRI (except vitamin K)</li> </ul>

COVID-19, 2019 novel coronavirus disease; DRI, dietary reference intakes  
\*Prescribed at admission to all adult patients regardless of baseline nutritional status.

malnourished patients or in patients previously treated with metformin or a proton pump inhibitor. The dosage of multivitamins and trace elements has been adapted to reach a sufficient amount of vitamin C [5], higher than the dietary reference intakes, but far from the toxic limit.

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<https://doi.org/10.1016/j.nut.2020.110899>