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Commentary: Urgent need for careful holistic assessment post-coronavirus disease 2019 (COVID-19) hospitalization: Crisis after crisis?

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The pandemic storm that has occurred in the last months has taught us that coronavirus disease 2019 (COVID-19) is a severe illness associated with poor outcomes in frail people or those with chronic diseases like diabetes and cardiovascular diseases.¹ General population and, more relevantly, the whole health care system experienced a deep and progressive change of mentality and habits. Social distancing, masks, and traveling limitations became the norm for community-dwelling adults. A thorough reorganization was required, and levels of priority for cardiovascular surgery and mitigation strategies were established.² We stressed on the importance of performing nasal swabs in all patients and having dedicated COVID-19 and COVID-19-free paths with the aim of minimizing the risk of exposure to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

In this issue of *Journal*, Fattouch and colleagues³ reported outcomes of 18 patients who developed COVID-19 after cardiac surgery in a “COVID-19-free” hub for urgent and emergent cardiovascular procedures in Palermo, Italy. Mortality and morbidities were greater than expected.

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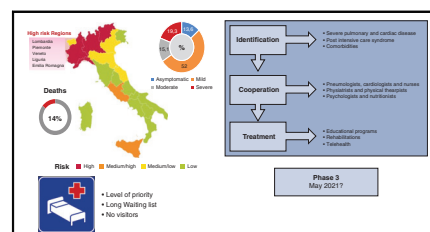
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Crisis after crisis?

CENTRAL MESSAGE

In patients who experienced severe COVID-19, pulmonary fibrosis, chronic pulmonary heart disease, and postintensive care syndrome represent the major problems at follow-up.

Specifically, overall mortality was 16.6% and the rates of acute kidney failure and postoperative atrial fibrillation were 72.2% and 67.2%, respectively. Interestingly, no heart failure was observed. There were 12 care workers infected, of whom 1 developed interstitial chest pneumonia. As result, surgical activity was stopped and patients transferred to dedicated COVID-19 units. The Palermo experience drives the following conclusions:

1. The importance of preoperative nasal swabs, as this was not included as a recommended criterion for COVID-19 screening.
2. The difficulties in identifying infected patients after cardiac surgery, as cardiopulmonary bypass induces inflammation and may mimic some COVID-19-like laboratory findings.
3. The continuous surveillance of health care workers in a COVID-19-free hospital, as they might be asymptomatic carriers of SARS-CoV-2.

On May 18, 2020, Italy moved to Phase 2, with a total of 225,435 infected patients and 31,908 deaths (14.1%). Since then, we have started taking care of post-COVID-19 patients, highlighting the importance of monitoring their vital signs and the need for rehabilitation programs within 12 weeks after COVID-19. More than 4000 patients who required mechanical ventilation for severe disease are now facing some sequelae.³ Impairment of diffusion capacity and restrictive ventilatory defects are the most common abnormalities of lung function.⁴ As a consequence, pulmonary fibrosis and chronic pulmonary heart disease represent the major problems at follow-up associated with these

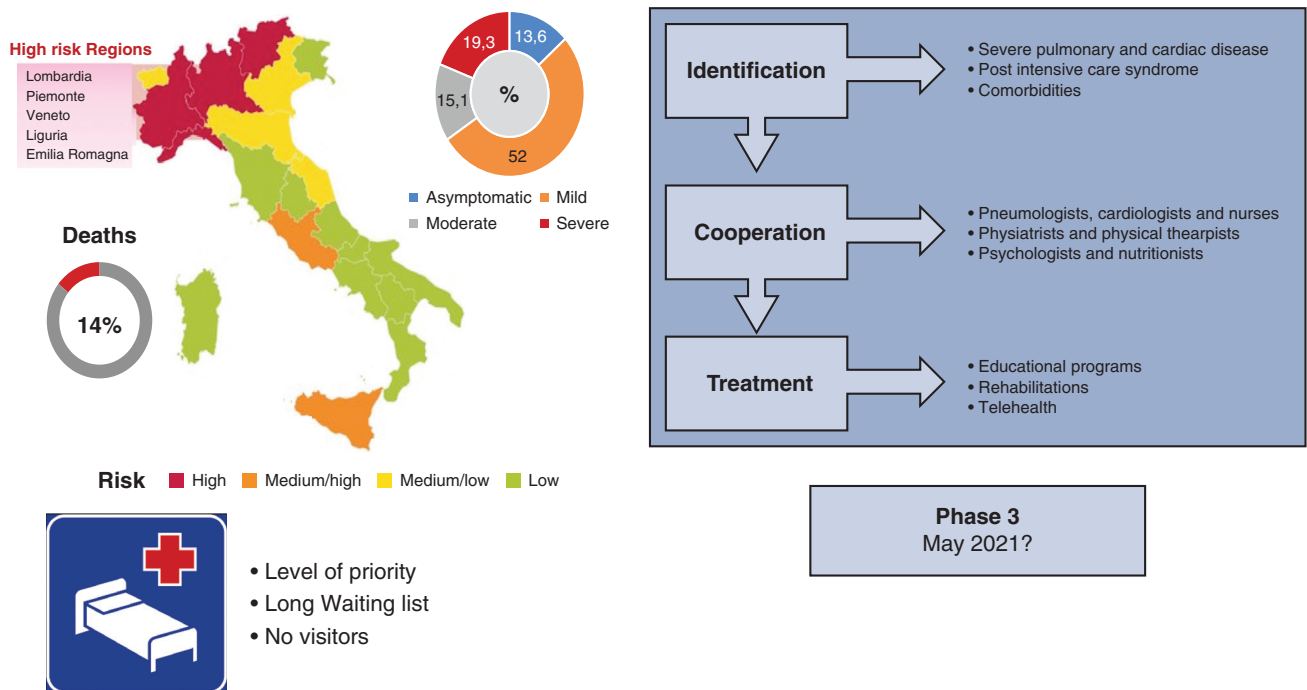


FIGURE 1. Crisis after crisis?

patients. In this regard, the implementation of pulmonary rehabilitation is recommended to improve lung function, exercise tolerance, and reduce fatigue. In addition, long-term intensive care unit stays may cause patients to develop postintensive care syndrome, characterized by sarcopenia-related diminished physical abilities, cognitive decline and mental health disorders such as neuropathy, anxiety, and depression, and post-traumatic stress disorder that can persist for a protracted amount of time.^{5,6} Integrated education and rehabilitation programs are mandatory to reduce the risk of new hospitalization with consequent greater cost for the public health system. Physicians such as physiatrists, pneumologists, and cardiologists as well as physical therapists, psychologists, and nutritionists should work together to (1) create an algorithm that take into account the patients' morbidities integrated with the complications of severe form of disease, and (2) identify some care pathways for a holistic assessment of post-COVID-19 patients. Telehealth consulting and virtual educational programs have been useful during the COVID-19 outbreak and might be helpful in facing this deficiency⁷ (Figure 1). The final result is that Phase 2 should be able to manage a high rate of people with rehabilitation needs associated with a low number of new infected patients. Nevertheless, a

second-wave COVID-19 pandemic is coming, and we hope we stem it. While we wait for a vaccine, we must learn to coexist with SARS-CoV2. Strict surveillance and good organization are the key of success for a "third phase": the return to everyday life.

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