



Letter to editor

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How to organize an emergency department during the COVID-19 pandemic

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At the beginning of the COVID-19 pandemic in Italy, the City Hospital of Lugo (covering an area of over 100,000 people) started to change the organization of its entire Emergency Department. To tackle the COVID-19 emergency, the Local Health Authority chose our hospital to be one of the designated COVID-19 hospitals in Italy. In fact, the medical organization was completely modified, and entire departments (i.e., Physical Medicine and Rehabilitation) were moved to other hospitals in the region, while the remaining departments were reorganized.¹

In this Letter to the Editor, we wish to share our clinical experience of how to organize an emergency room (ER) during the COVID-19 pandemic.

The workflow and organization of the ER were modified, and a pretriage tent was set up outside the hospital building to allow for the identification of infected patients, according to regional and national guidelines,² as follows:

- Fever and/or dyspnoea and/or influenza-like symptoms (including gastrointestinal symptoms);
- Epidemiological risk factors: contact with a confirmed positive case.

Under this system, staff at the admissions desk are responsible for eliciting key details when patients arrive at the hospital. Patients who, at the point of registration, are suspected of having a COVID-19 infection are not immediately allowed into the ER. Instead, they are led into the medical screening tent, housed just outside the ER, where they undergo triage assessment and various examinations to officially confirm (or disprove) the suspicion. The tests include a blood pressure test, blood gas analysis (BGA), ECG, blood samples, 6-min walking test (if possible), and a nasopharyngeal swab test for SARS-CoV-2 RNA. Patients are only allowed into the hospital's ER after all these

assessments have been carried out (with test results still pending as the turnaround for these is 18–24 h). Patients who, upon arrival, are unlikely to be COVID-19-positive or who are demonstrably negative are immediately sent to the ER.

To conduct all medical tasks safely and, importantly, to prevent transmission and possible contagion among patients, we set up two different pathways in the ER, as follows:

- The “positive” pathway: Patients arriving from the aforementioned screening tent with a suspected COVID-19 infection are guided to this area within the ER. Here, while waiting for the laboratory results of some of the tests carried out in the screening tent, a chest scan and/or high-resolution computed tomography (HRCT) of the lungs are performed.
- The “negative” pathway: Immediately after the initial vetting and registration, patients with other kinds of diseases, but who are not suspected of being COVID-19-positive, enter a separate area of the ER. Although these patients are presumed to be “low risk,” they have not yet been into the screening tent and might still prove to be positive, so they are also tested for a COVID-19 infection to make sure that the initial diagnosis is correct. In addition to the usual triage assessment, patients undergo all the necessary general and/or special medical examinations and tests.

The two pathways have separate restrooms.

All patients, regardless of their pathway, receive surgical masks and must wash and disinfect their hands properly. No relatives of patients are allowed into the ER, with the exception of underage patients. Healthcare operators are provided with personal protective equipment and gear as well as different sets of devices appropriate for either area.

Patients with a suspected COVID-19 infection who do not require clinical treatment and who do not suffer from respiratory insufficiency (defined by the following parameters: respiratory rate <22 breaths/min, $\text{SatO}_2 >95\%$, $\text{PaO}_2/\text{FiO}_2$ ratio >450) are instructed on how to properly self-isolate and are then sent back home. Their medical needs are, however, attended to by their General Physician (GP) and the *Public Health Department*. In addition, these patients must undergo hydroxychloroquine therapy (a dosage of 400 mg twice a day for the first day, then 200 mg twice a day for 5–9 days based on clinical assessment).³ Patients with clinical signs of acute respiratory distress syndrome are treated with orotracheal intubation and are admitted to the Intensive Care Unit (ICU).⁴

The usual healthcare procedures are followed for time-dependent diseases (IMAs, strokes, or traumas), in accordance with local guidelines. Patients with a suspected COVID-19 infection who have moderate respiratory failure (BGA: $\text{PaO}_2 > 60$ mmHg, $\text{SatO}_2 < 95\%$) with clinical and radiological signs indicating pneumonia and patients with moderate-to-severe respiratory failure (BGA: $\text{PaO}_2 > 60$ mmHg) are admitted to the Department of Emergency Medicine.⁵

The Department of Emergency Medicine in our hospital has eight rooms altogether, with a maximum capacity of 16 beds. Due to the COVID-19 pandemic, the department has been divided into two sectors:

- The subintensive area: two double rooms for patients with a confirmed COVID-19 infection who need noninvasive ventilation delivered by helmet;
- The filtering area: six single rooms for patients whose SARS-CoV-2 RNA test results have not yet arrived but who are likely to be positive.

The department medical workforce has been increased (one extra day-shift nurse, two extra

night-shift nurses, and one extra night-shift doctor) to properly and professionally handle the turnover of patients in the filtering area. A separate dressing room for healthcare operators has been set up, and the entire department has been negatively pressurized.

If the test results for a patient waiting in the filtering area are positive, but the patient does not require artificial respiration,⁶ he or she is immediately transferred to the hospital's COVID-19 department. If the test results are negative and other clinical and radiological data do not indicate a COVID-19 infection, but the patient has a medical condition requiring further treatment or investigation, he or she is transferred to another hospital.

People who already know that they are COVID-19-positive and have admitted themselves to hospital because their health is deteriorating and who might, therefore, require professional assistance are immediately sent to the “positive pathway” of the ER and then to the appropriate department.⁷ As they are already aware of their infection status, they obviously do not need to go to the filtering area. If they do not need ventilatory support, they are admitted to the “COVID-19 Department of Internal Medicine”; otherwise, they are either sent to the ICU or to the aforementioned Department of Emergency Medicine, depending on the kind of ventilation they need (invasive or noninvasive).⁶ Some patients may also be transferred to the Department of Cardiology.

Through this letter, we aim to share our clinical experience with the readership of your esteemed journal. During the last 3 weeks, we have been able to treat 110 patients in the “filtering area.” Since we set up this facility at the end of February, we have treated a total of 273 patients.

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

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None.

COMPLIANCE WITH ETHICAL STANDARDS

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