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Letter to the Editor

Pre-Hospital Trauma Care in the COVID-19 era



Dear Editors:

The first appearance of coronavirus disease 2019 (COVID-19)¹ in Italy was reported on January 30, 2020, with the discovery of 2 positive Chinese tourists in Rome. Less than 1 month later, on February 21st, a new outbreak was reported in Lombardy,² Northern Italy. In the following weeks, there was an exponential surge in the number of patients with respiratory failure who entered the emergency department (ED) and required intensive care unit admission, putting the Italian health system to the test.

In this framework of a health emergency, the prehospital emergency system had to undergo profound changes too, partly because of logistical needs, secondary to the overloading of hospital facilities, and partly caused by the complete subversion of the epidemiology of prehospital emergency cases.

Several authors have dealt with the peculiarities of prehospital management of acute coronary syndromes³ or cardiac arrest in the COVID-19 era, and scientific societies have drawn up dedicated guidelines.⁴ Several observations have been addressed regarding the remodeling of EDs,⁵ which, on the one hand, had to manage a flow of patients with respiratory failure that was enormous and disproportionate to the available resources and, on the other hand, had to ensure the care of patients who normally enter the ED for emergencies of different kinds.⁵

Little has been written about how this pandemic affected the care of trauma patients in the prehospital setting, and this article is the result of the different experiences and consequent considerations that a high-volume trauma system such as Maggiore Hospital Trauma Center has experienced during this period. The first fundamental point is the safety of the health care workers (HCWs) involved in the rescue of a traumatized patient, and this aspect is influenced by several human factors. First of all, we have to take into account the level of stress to which HCWs are subjected during the rescue, which is aggravated by the additional stress caused by the fear of being infected and infecting their families. The management of stress among HCWs is a rather debated topic at the moment.⁷

The obstacles caused by personal protective equipment (PPE) must also be taken into account; the fogging of goggles can impair the view of both the patient and the scene, putting HCWs at risk. Wearing 2 or more pairs of gloves inevitably leads to a loss of sensitivity of the hands, which is crucial during the detection of subcutaneous emphysema or arterial pulse. The limitation in terms of fineness of movement can also be perceived when performing maneuvers such as intubation, finger thoracostomy, or resuscitative endovascular balloon occlusion catheter placement. A further aspect is prostration caused by PPE because of excessive fluid loss through

sweating, which, with the physical effort often required during the rescue of a traumatized patient, is certainly accentuated and is associated with an increased risk of fainting.

When it comes to maneuvers, these add risk factors for HCWs. The 2 maneuvers previously mentioned are certainly the riskiest in terms of contamination. As far as intubation is concerned, the use of a video laryngoscope is recommended,⁸ but in patients with a large amount of blood or vomit in the oral cavity, it may not be usable. Moreover, once intubated, these patients often need to repeat suction through the endotracheal tube because of aspiration even during transport, with consequent multiple disconnections of the respiratory circuit, which, in an emergency context, may not always be performed with all of the appropriate precautions. Decompression or drainage of a tension pneumothorax may involve a leak of pressure air from the pleural cavity; the air comes from lacerations of the pulmonary parenchyma and, therefore, potentially carries a high viral load.

Logistics issues also play an important role in this scenario. The first consideration is that in case of a trauma call, it is difficult for the dispatch center to screen for suspected COVID-19 patients⁹ because the eyewitness often does not know the victim and cannot provide any recent medical history. Then, on the scene, the victims may be multiple, and the need for HCWs to evaluate each one at the same time as an initial triage brings with it risks of contamination, given the impossibility of fully changing PPE during such hectic phases.

The second consideration concerns the professional figures involved on the scene. Together with HCWs, there are firefighters and police officers; very often they are personally involved in the rescue phases when physical distancing is almost impossible. Working hand in hand is a characteristic and also a typical need in the care of trauma victims in the prehospital setting more than in other types of medical emergencies, and, in a historical moment like this, it is certainly risky despite the use of PPEs.

The last logistical aspect is the decontamination of the vehicles; ambulances and helicopters are the final vectors with which these patients will be transported to the ED and need an extensive and treated sanitization that can increase the time to restore the full operation of the vehicle. This may cause delays and missed missions.

Going back to Italy's situation, because of the exponential increase in the number of cases and the high rate of hospitalization among COVID-19 patients, the Italian government imposed a national lockdown on March 9th and then eased restrictions as of the second half of May.

During this period, we have witnessed a vertical collapse of trauma emergency calls,⁶ as already reported by several authors, making trauma management less problematic given the small number of cases. At the moment, we are witnessing an equally sudden increase in cases because of the resumption of the circulation of people, the reopening of workplaces, and sports activities.

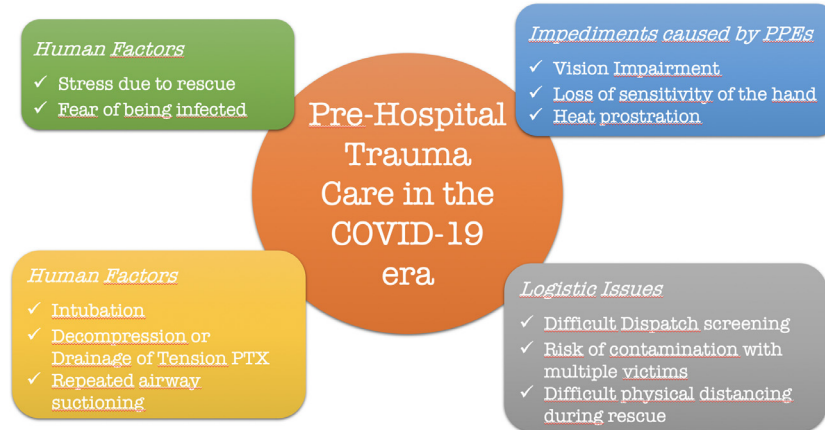


Figure 1. Scheme of new aspects of Pre-Hospital Trauma Care.

No one knows what will happen in the future, whether we will be overwhelmed by a second wave or whether the pandemic will gradually disappear, but this experience has had a profound impact on all aspects of the prehospital management of trauma patients (Fig. 1), which may not be the same from now on.

Carlo Alberto Mazzoli, M.D, Marco Tartaglione, M.D, Lorenzo Gamberini, M.D, Cristian Lupi, M.D, Federico Semeraro, M.D, Valentina Chiarini, M.D, Carlo Coniglio, M.D, Giovanni Gordini, M.D
Department of Anesthesiology, Intensive Care and Pre-Hospital Emergency Services, Maggiore Hospital Carlo Alberto Pizzardi, Bologna, Italy

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