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Letter to the Editor

Out-of-hospital cardiac arrest during the COVID-19 era in Bologna: System response to preserve performances



Dear Sir,

The spread of the severe acute respiratory syndrome coronavirus (SARS-CoV-2) emerged in China at the end of 2019 is actually challenging most of the health systems worldwide. Several researchers started to collect and analyze data regarding the incidence of infection and its correlation with the increase in out-of-hospital cardiac arrest (OHCA)¹ and several guidelines were produced in order to help resuscitation providers to safely perform basic and advanced cardiopulmonary resuscitation.² Recent reports highlight that SARS-CoV-2 was circulating on Italian soil by end-January 2020, and the Italian National Institute of Health recently produced a document integrating the COVID-19 epidemiological data and the mortality data collected in Italy from 7357 municipalities (out of a total of 7904, 93%) from January 1st to May 31st 2020.³ The Bologna area (Bologna, Casalecchio di Reno, San Lazzaro di Savena) data showed, at the peak of the contagion upon April 2020, an increase of 67% in global mortality compared to the average value of the previous five years. In [Table 1](#), we reported the OHCA data analysis comparing

the first semester 2020 with the first semester 2019 extracted from the “Systems Saving Lives” study database (NCT04510480). Several specific analyses (e.g. survival rate per rhythm, Utstein comparator data, etc.) are included in the Supplementary materials. Overall, we observed a small and non-significant trend towards a reduced rate of resuscitation attempts, however, we could not demonstrate any difference in terms of bystander CPR, time needed from EMS vehicles to reach the scene, proportion of shockable rhythms and outcomes in our population. Immediately after the COVID-19 outbreak, along with the immediate measures to face the increase in EMS calls,⁴ we modified the approach to on-field cardiac arrest accordingly with the European Resuscitation Council (ERC) COVID19 guidelines²: chest compression only and passive oxygenation for basic life support for ambulance crew; full-protection with personal protective equipment (PPE); modification of advanced manoeuvres with rapid intubation approach. Moreover, we chose not to limit the functionality of the “DAE RespondER” App⁵ for first responders’ activation in the COVID-19

Table 1 – Comparison of OHCA and EMS system performance between 1st January and 30th June 2020 and the same period in 2019 in Bologna area (Bologna, Casalecchio di Reno, San Lazzaro di Savena).

	January–June 2019 (n = 563) ^a	January–June 2020 (n = 624) ^a	p
Age — years (IQR)	84 (73–91)	84 (73–91)	0.907
Sex — male — no (%)	284 (50.4%)	318 (51.0%)	0.859
Resuscitation attempted — no (%)	110 (19.5%)	95 (15.2%)	0.099
Resuscitation details	n = 110	n = 95	p
Age — years (IQR)	73 (59–80)	71 (53–81)	0.205
Sex — male — no (%)	74 (67.3%)	65 (68.4%)	0.861
Time to first EMS vehicle arrival — min (IQR)	9 (7–13)	9 (7–12)	0.891
Suspected medical etiology — no (%)	99 (90%)	89 (94%)	0.490
Bystander CPR — no (%)	29 (26.4%)	30 (31.6%)	0.411
Initial shockable rhythm — no (%)	34 (30.9%)	33 (34.7%)	0.560
Return of Spontaneous Circulation (ROSC) — no (%)	54 (49.1%)	38 (40.0%)	0.192
Survival at hospital admission — no (%)	42 (38.2%)	31 (32.6%)	0.408
Survival at hospital discharge — no (%)	22 (20%)	23 (24.2%)	0.577

Note: Mann–Whitney U test was used for non-normally distributed variables, Chi square test for nominal variables.

^a Population referred to total EMS activations for OHCA considering both attempted resuscitations and resuscitations not attempted.

era, however, the level of intervention in 2020 semester was lower in comparison to 2019. Despite the time needed for PPE dressing, we did not observe an increase in terms of time to arrival on scene for the EMS. This is probably due to a compensation related to less road traffic caused by lockdown measures. With the limit of this data sample, we could not demonstrate that in our area there was a decrease in terms of EMS's performances in response to OHCA when resuscitation was attempted. It will be essential to analyze the quality of the data in order to measure the "real" impact of COVID19 on cardiac arrest incidence. This could be another "mission" for EuReCa network under the umbrella of European Resuscitation Council Research NET.

Conflict-of-interest statement

No relationship exists between any of the authors and any commercial entity or product mentioned in this manuscript that might represent a conflict of interest. No inducements have been made by any commercial entity to submit the manuscript for publication. All within 3 years of beginning the work submitted.

FS is Science and Education Committee BLS co-Chair of the European Resuscitation Council, BLS Task Force member of the ILCOR, Scientific Committee member of the Italian Resuscitation Council. LG is Scientific Committee member of the Italian Resuscitation Council. MT, BI, CD, CP, GG have no conflicts of interest.

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We want to thank all the members of our "System" that worked hard in the last six months and have continued to save lives from the field to the intensive care without fear.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.resuscitation.2020.09.032>.

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Federico Semeraro*
Lorenzo Gamberini
Marco Tartaglione
Bruno Iarussi

Department of Anaesthesia, Intensive Care and Emergency Medical Services, Ospedale Maggiore, Bologna, Italy

Carlo Descovich
Department of Clinical Governance and Quality, Bologna Local Healthcare Authority, Bologna, Italy

Cosimo Picoco
Giovanni Gordini
Department of Anaesthesia, Intensive Care and Emergency Medical Services, Ospedale Maggiore, Bologna, Italy

* Corresponding author.

E-mail address: federicofsemeraro@gmail.com (F. Semeraro).

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