



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



## An international perspective of out-of-hospital cardiac arrest and cardiopulmonary resuscitation during the COVID-19 pandemic



### Out-of-hospital cardiac arrest during the COVID-19 era: the critical role of bystander CPR

We greatly appreciate the authors' correspondence and feedback regarding our piece on out-of-hospital cardiac arrest (OHCA) and resuscitation during COVID-19 [1]. The performance of bystander cardiopulmonary resuscitation (CPR) has been significantly impacted as a result of COVID-19. This public health issue is likely to reverberate well past the end of the global pandemic. We agree that there need to be meaningful measures taken to address public concern related to performing CPR. Some of our authors are in the midst of writing an article based on a survey where one of the primary questions we posed to providers was, "What can be implemented to improve enthusiasm for CPR during the pandemic?" A brief literature review reveals that some of the barriers to bystander CPR: a lack of public access to automated external defibrillators (AEDs), a shortage of personal protective equipment (PPE), and fewer people present in public spaces due to lockdowns [2]. Perhaps most significant is the public's fear of contracting COVID-19 when engaging in an endeavor, albeit life-saving, that contradicts guidance related to masking and social distancing. The case of the 60-year-old Chinese man in Sydney [3] is an instance that highlights and contextualizes this point. This is unlikely a singular occurrence and will likely persist for some time.

There are public health measures and future directions that can be adopted to combat apprehension associated with resuscitation during this and future pandemics. Some of the simpler measures include broader distribution of information and use of social media campaigns, as the authors have alluded to, that accurately represent chest compressions as low-risk of infection to rescuers with high-utility, and potentially life-saving measures for victims. Studies demonstrate that chest compression-only model is effective and can be implemented on a large scale [4], though formal CPR training will need to continue emphasizing the "chest compressions-airway-breathing" (CAB) approach perhaps with more deliberate explanations of the low risk for aerosolization. As the authors mentioned, these campaigns must not only target incoming learners of CPR, but also individuals who already have BLS training. Additionally, public AED stations need to remain available, either by relocation to accessible outdoor booths or by allowing continued access to AEDs during periods of lockdown. Previous studies show that compression-only CPR bears better patient outcomes than standard CPR with rescue breaths for witnessed OHCA events with AED access [5]. Highlighting these studies and the application of "evidence-based practice" is crucial in these information campaigns. Another barrier to rescuers who are willing to perform bystander CPR is the lack of available

personal protective equipment (PPE). This is perhaps less of a problem at this stage of the pandemic, but nonetheless a barrier for an individual who desires PPE before initiating CPR. We propose that public use PPE stations be incorporated into city planning, with provisions for N95 respirators, gloves, gowns, and face shields. PPE can also be incorporated into AED stations or kits making them a "one-stop shop" for field resuscitation.

While all these measures can be implemented to address public fears and misperceptions, it is also important to recognize that public fears related to CPR will linger. An individual with strong convictions against any type of respiratory exposure will unlikely be phased by social media campaigns, or the presence of additional public-use PPE. However, as the authors point out, the most important takeaway from this discussion is the unnecessary loss of life due to public reluctance to perform CPR during the pandemic. We each have a duty to correct misperceptions and advocate for change, be it in academia, clinical settings, or on the streets where theory meets practice. We once again thank the authors for their comments and insights and agree with the goal of restoring the bystander CPR network.

### Financial support

This is a non-funded study, with no compensation or honoraria for conducting the study.

### Declaration of Competing Interest

The authors do not have a financial interest or relationship to disclose regarding this research project.

### References

- [1] Ong J, O'Connell F, Mazer-Amirshahi M, Pourmand A. An international perspective of out-of-hospital cardiac arrest and cardiopulmonary resuscitation during the COVID-19 pandemic. *Am J Emerg Med*. 2021;47:192–7. <https://doi.org/10.1016/j.ajem.2021.04.033>.
- [2] Jost D, Derkenne C, Kedzierewicz R, et al. The need to adapt the rescue chain for out-of-hospital cardiac arrest during the COVID-19 pandemic: experience from the Paris Fire Brigade Basic Life Support and Advanced Life Support teams. *Resuscitation*. 2020;153:56–7. <https://doi.org/10.1016/j.resuscitation.2020.06.005>.
- [3] Squizzato T, Olasveengen TM, Ristagno G, Semeraro F. The other side of novel coronavirus outbreak: fear of performing cardiopulmonary resuscitation. *Resuscitation*. 2020;150:92–3. <https://doi.org/10.1016/j.resuscitation.2020.03.019>.
- [4] Andelius L, Oving I, Folke F, et al. Management of first responder programmes for out-of-hospital cardiac arrest during the COVID-19 pandemic in Europe. *Resusc Plus*. 2021;5:100075. <https://doi.org/10.1016/j.resplu.2020.100075>.
- [5] Iwami T, Kitamura T, Kawamura T, et al. Chest compression-only cardiopulmonary resuscitation for out-of-hospital cardiac arrest with public-access defibrillation: a nationwide cohort study. *Circulation*. 2012;126(24):2844–51. <https://doi.org/10.1161/CIRCULATIONAHA.112.109504>.

Justin Ong BS

Department of Emergency Medicine, George Washington University School of Medicine and Health Sciences, Washington, DC, United States

Ali Pourmand MD, MPH

Department of Emergency Medicine, George Washington University School  
of Medicine and Health Sciences, Washington, DC, United States  
E-mail address: [pourmand@gwu.edu](mailto:pourmand@gwu.edu)

Francis O'Connell MD

Department of Emergency Medicine, George Washington University School  
of Medicine and Health Sciences, Washington, DC, United States

29 May 2021