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## Letter to the Editor

# Smartphone software update could potentially affect the efficiency of lay first-responders networks in out-of-hospital cardiac arrests

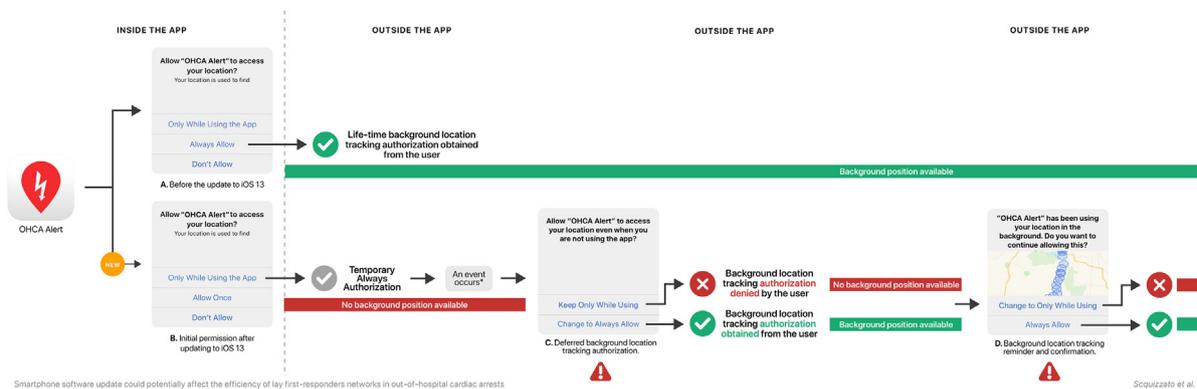


To the Editor,

Smartphone applications involving communities in the response to out-of-hospital cardiac arrest (OHCAs) are improving rates of bystander CPR and survival.<sup>1,2</sup> These apps direct lay first responders (LFRs) to nearby OHCAs for performing CPR or retrieving a defibrillator<sup>3,4</sup> by working in the background and continuously tracking and storing in a database the real-time position of every LFR's device. When an OHCA occurs, LFRs within a defined radius are alerted with a push notification on their smartphone and they can accept or decline to attend.

Currently in beta testing, iOS 13 is the next update for Apple smartphones and will introduce important changes to location permissions, in particular for background tracking where Apple changed how apps will ask permission to users,<sup>5</sup> making it subjected to more misunderstandings. Currently, the first time the app is launched ask users the authorisation (Fig. 1A) to access always real-time location (i.e. in the background) and if granted will be valid until

manually disabled. From iOS 13, there will not be any more the possibility to ask and obtain the authorisation the first time. Instead, there will be the possibility to grant access on a per-use basis (Fig. 1B) to share the location just once or only while using the app, thus, not allowing tracking LFRs location in the background. If the LFRs chooses the latter, a temporary always authorisation is activated but the app still will not be able to update user location in the background. Definitive background authorisation will be automatically asked with a notification (Fig. 1C) in a later and unpredictable moment when a location event occurs (e.g. significant change of location). If users miss this notification or do not understand the reason for the request, LFRs can inadvertently deny it with the consequence that will not receive potential alerts for nearby OHCAs. Moreover, periodic popups (Fig. 1D) with a report of the tracked positions will appear giving the user the option to discontinue background access.



**Fig. 1 – Steps to obtain background position authorisation from the user compared between before and after updating to iOS 13. Before the introduction of iOS 13 users could always allow background tracking (A) the first time the app is launched. With the introduction of iOS 13, there will not be any more this possibility and users can choose between giving access only while the app is in use (visible on the smartphone screen) or one-time access that must be renewed each time a new app session is started (B). If the app needs background tracking and the user allow only while using the app, a temporary “always” authorisation is given and when an event occurs\* (e.g. significant change of location) a notification appears asking for a definitive answer on background tracking (C). Notification to remind apps using background location will appear asking whether to continue or not the background activity (D).**

While we understand that privacy is a huge concern in today's world and these changes give users more control over their data, at the same time this could potentially affect the efficiency of these apps by decreasing the number of localizable LFRs due to the involuntary ungranted background tracking. Moreover, these changes are immediately applied when LFRs upgrades to iOS 13 with all previous authorisations converted to "while in use". In just a few weeks iOS 13 will be released to the public and developers must optimise the user interface and the authorisation process so that LFRs clearly understand how to give consent for background tracking avoiding negatively impacting the most critical links of the chain of survival. LFRs using Android devices will not be affected because Google's next update does not introduce critical changes for the efficiency of these apps.

To conclude, in our opinion companies like Apple should increase awareness in the fight against OHCA by developing ad-hoc processes for position tracking or integrating into their smartphones these systems that are already saving lives every day in many countries.

### Conflict of interest

Federico Semeraro is Past-President Italian Resuscitation Council, BLS SEC Co-Chair European Resuscitation Council, ILCOR BLS Task Force member and ILCOR Digital Communication Working Group. Tommaso Scquizzato, Giovanni Landoni, and Alberto Zangrillo have no conflict of interests.

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Tommaso Scquizzato<sup>a,b,\*</sup>  
Giovanni Landoni<sup>a,b</sup>

<sup>a</sup>Department of Anesthesia and Intensive Care, IRCCS San Raffaele Scientific Institute, Milan, Italy

<sup>b</sup>Vita-Salute San Raffaele University, Milan, Italy

Federico Semeraro  
Department of Anaesthesia, Intensive Care and EMS, Maggiore Hospital, Bologna, Italy

Alberto Zangrillo<sup>a,b</sup>  
<sup>a</sup>Department of Anesthesia and Intensive Care, IRCCS San Raffaele Scientific Institute, Milan, Italy

<sup>b</sup>Vita-Salute San Raffaele University, Milan, Italy

\* Corresponding author at: Department of Anesthesia and Intensive Care, IRCCS San Raffaele Scientific Institute, Via Olgettina, 60-20132 Milan, Italy.  
E-mail address: [scquizzato.tommaso@hsr.it](mailto:scquizzato.tommaso@hsr.it) (T. Scquizzato).

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