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Commentary and concepts

Out of sight – Out of mind? The need for a professional and standardized peri-mission first responder support model

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Abstract

First responders are an essential part of the chain (-mail) of survival as they bridge and reduce the time to first chest compressions and defibrillation substantially. However, in the peri-mission phase before and after being sent to a cardiac arrest, these first responders are in danger of being forgotten and taken for granted, and the potential psychological impact has to be remembered. We propose a standardized first responder support system (FRSS) that needs to ensure that first responders are valued and cared for in terms of psychological safety and continuing motivation. This multi-tiered program should involve tailored education and standardized debriefing, as well as actively seeking contact with the first responders after their missions to facilitate potentially needed professional psychological support.

Keywords: Cardiopulmonary resuscitation, First responders, Automated-external defibrillator, Debriefing, System to save lives, Chainmail of survival, First responder support system

Strengthening first responders before and after missions

Introducing first responders (FR) to provide basic life support (BLS) until professional emergency medical services (EMS) arrive on scene in case of out-of-hospital cardiac arrest (OHCA) are strongly recommended by current evidence and resuscitation guidelines.[1,2] Accordingly, technologies like mobile phone applications with geolocation navigation to activate FRs are increasingly being used in various regions.[1,3] However, there are still considerable knowledge gaps concerning such FR systems, especially about differences between community (or "citizen"; responding to OHCA cases as laypersons, sometimes with and sometimes without having had specific BLS training beforehand, often dispatched via a phone application) vs. professional (responding as part of their professional duty, like police or firefighters dispatched to OHCA events) FRs, or the potential psychological impact of missions on individual FRs.[4,5] Also, there is an under-researched third group: FR who are actually professionals (e.g., members of the police) but are called to a OHCA case in their free time (thus, not bringing equipment and finding themselves in between a community FR and a professional one). A recent questionnaire study by Baldi et al. assessed over three thousand community and professional FRs having participated in OHCA missions in Switzerland, and provides a unique insight about the awareness towards FR systems, specific training needs of FRs, immediate post mission debriefing, and necessary psychologic support[6]; the need for debriefing has also been mentioned in recent literature on Danish FRs.[7]

Therefore, we hereby aimed to propose several improvements or working areas concerning FR wellbeing, which is an essential component of preventing FRs from dropping out of the system due to psychological problems or a lack of motivation.[5] This will be especially important for community FRs as they do not have a professional mission network to fall back on.

- **Awareness:** OHCA bystanders (or professional FRs like police) already on scene often do not know that a community FR is also

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on their way.[6] Arrival of such (additional) FRs without the primary bystanders' knowledge may cause challenges to the resuscitation performance including delays or interruptions in chest compressions or automated external defibrillator (AED) use due to the need of the FRs to first explain themselves. Public awareness campaigns like World Restart A Heart[8] should thus be strongly endorsed and should highlight the advantages of FR systems. Another key factor in promoting FR systems and fostering awareness of their existence would be introducing mandatory cardiopulmonary resuscitation (CPR) training in schools[9] or during first aid courses to acquire a driving license[10] – naturally, with the FR-topic being incorporated. Such endeavours could also be aimed at recruiting future generations of community rescuers and enabling their integration into existing FR systems.

- **Training:** FRs often do not feel well prepared for CPR situations, and, among other problems, a high percentage of difficulties in AED-use has been described.[6,11–13] Standard manikin-based BLS training is most effective in training the overall public[6,11]; however, it seems that this could be not enough to prepare FRs to act properly on potential OHCA sites (additionally with the victim sometimes being in a peri-arrest state rather than cardiac arrest[6] without prior additional education.[5,6] Also, individuals who have never seen a dead or critically ill person before and are not used to the stress of emergency situations might just be overwhelmed.[12,14] In addition, some existing systems also ask first responders to care for relatives of victims once the EMS is on site, which can be psychologically challenging as well.[15] A specific contextualized and tailored education program for new and less exposed FRs on how to better recognize cardiac arrest, to conduct high quality chest compressions with minimized no-flow times, to use different types of AEDs, to interact with dispatchers and EMS-personnel, and how to act in peri-arrest situations (e.g., to regularly check for breathing) might improve performance.[13] Contextualized courses would also have to prepare FRs mentally for the overall situation and impact and outcome of a mission.[13] Such courses could, for instance, be provided by the same organisations that facilitate FR programs in the first place or generally by organizations conducting BLS courses for the public; Government agencies should provide adequate funding. Of note, also all other course providers should strongly consider implementing the FR topic in their educational programs. Overall, this will probably foster self-confidence and self-esteem when acting as a FR.
- **Mission debriefing:** Interestingly, community FRs seem to have a "good collaboration" with EMS personnel less often than professional FRs with a duty to response (like police or fire brigade).[5,6] This interaction has definitively room for improvement, as unprofessional behavior of EMS personnel or a rude questioning of FRs' competences can surely be factors that decrease the willingness to continue to serve as a community FR – Integrating how to best work together with FRs into paramedic training should be considered. Also, supportive debriefing from the acting EMS personnel after the mission was demanded much more often by the community FRs than by the professional ones in the study by Baldi et al.[6] Debriefing for health care teams after CPR is generally recommended,[16,17] and post-mission debriefing of FRs has previously been described.[14,18] However, the optimal approach towards debriefing FRs (or rather a concept consisting of "defusing, discovering and deepening": defusing for venting emotions, discovering for evaluating performance, and deepening for conclude on lessons learned[19] is yet not known, and further research into this seems certainly warranted. A challenge within such a system is the availability of a trained debriefer directly after OHCA missions as EMS personnel will not have sufficient time and are often not respectively trained. Solutions could be on-scene defusing or debriefing by additional personnel (e.g., a field supervisor) who are specially trained for such situations,[20] or remote / virtual debriefing. This again could be a challenge for systems already relying on very few resources, not being able to provide additional staff and time. In such cases, on-site hot debriefings by additionally trained paramedics staying on site after another unit has left to transport the patient to the hospital, electronic surveys sent to all FRs, or simply online information material and contact addresses could serve as substitutes.
- **Post-mission psychological and well-being support:** OHCA FR missions will often end in non-survival of the victims, and the respective emotional burden must not be underestimated as post-traumatic stress disorder has already been described in this regard.[7,12,13,20,21] The sudden change from training on manikins to a life-and-death situation with little to no clinical experience has its impact on FRs – This complex topic is, so far, not well understood and investigated, and even less so how FRs deal with such situations and in which way FR systems need to provide support.[12,13] As mentioned above, cases in which FRs are not engaged in actual CPR but need to deal with very sick peri-arrest patients are completely different than the ones trained for in BLS courses. They may induce even greater emotional stress when the FRs arrive on scene and are suddenly not needed to provide structured CPR but rather complex first aid for critically ill individuals. Thus, a timely and easily accessible on-demand support system from the FR system including psychological help and other means to increase well-being should become standard. Research on how to deliver such support is needed to clarify if FR systems should actively contact the FR or simply schedule meetings after each FR mission. It should also be explored if scripted debriefings or open protocols are better suitable for that purpose, and how standard protocols can be modified, as one size will not fit all FR needs.
- Literature is still unclear on how to best define and differentiate community (citizen) and professional FRs.[1,2,5,6] Of note, there will be systems with a mixture of both, and also ones with purely community or purely professional FRs. Both groups may have to be approached differently and might profit from tailored education, depending on their underlying backgrounds and professions.

A first responder support system (FRSS)

In 2018, Snobelen et al. suggested a "lay responder post-arrest support model", which focused on supporting bystanders after being involved in resuscitation of OHCA victims, and introduced a three tiered concept of engaging, debriefing, and follow-up.[22] We therefore propose an adaptation of that concept, tailored to FRs – a "First Responder Support System" (FRSS; Fig. 1). This FRSS evolves around the peri-mission times of a FR action: In the long term, an adequate identification of eligible FRs must take place (e.g., through a recruiting process), and tailored education should be offered. Shortly after the mission, a defusing / debriefing must be conducted by professionals whenever possible, and data for research can be

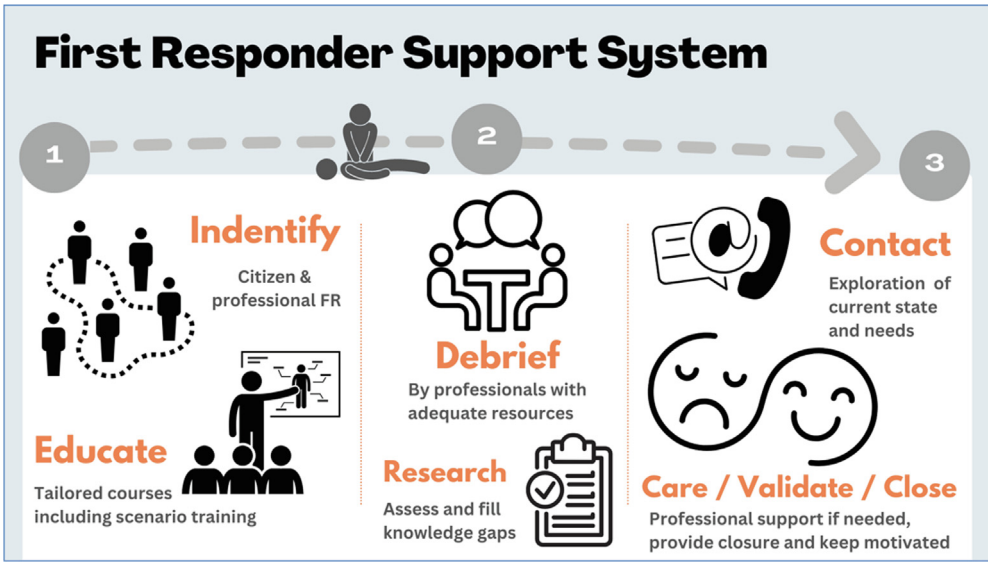

Fig. 1 – A First Responder Support System for community first responders (FR). The three-tiered system includes 1) A pre-mission phase with specific identification and recruitment of FR groups, and education tailored to the needs of the FR, including standard Basic Life Support courses with extended scenario training on different defibrillator types and guidance on peri-arrest situations; 2) An immediate post-mission phase with a hot structured debriefing conducted by a professional with enough time resources. Additional questionnaires or similar data recordings to fill knowledge gaps on FR mission details and FR reactions to such life-threatening situations; 3) A delayed post-mission phase with contact by the first responder system, offering open discussions about the missions and any psychological or well-being issues, as well as the potential need for professional psychological support. Finally, validation of the FRs efforts and the possibility for closure of the whole event are provided. It needs to be investigated thoroughly if such a support system can help FRs to get mentally ready for their next mission and motivate them to continue with their voluntary work. Concept modified from Snobelen et al.[19]

collected. Later on, the FR should be contacted again to explore their current state of mind, and professional support must be facilitated if needed. Validation of the FR's actions can be provided, for instance through an official acknowledgement note. Overall, the FRs may then find closure more easily and stay motivated for a next mission in the future (Fig. 1).

Every FR system needs to start including a program for taking care of the (psychological) burden of its FRs, as their well-being is of utmost importance for their volunteer engagement, which in turn potentially results in more lives saved. A first call to increase the awareness on FR safety was published recently,[23] and FRs are an integral part of the "system to save lives" in the chainmail of survival.[24] Saving lives is not a simple cost/benefit calculation, it is also a question of respect and taking care of everyone involved.

Conclusion

To ensure their continuing voluntary engagement, first responders need to be valued and cared for. A multi-tiered First Responder Support System (FRSS) should involve suitable recruitment, tailored education, professional debriefing on scene if possible, and the opportunity of contacting first responders after their missions to offer psychological support. Proper research needs to accompany such projects to assess its effects and outcomes.

Disclosures

Sebastian Schnaubelt is associated with the International Liaison Committee on Resuscitation (ILCOR), the European Resuscitation Council (ERC), and the Austrian Resuscitation Council (ARC). Simon Orlob is associated with the ARC. Mario Krammel is associated with the Emergency Medical Service Vienna. Kasper G. Lauridsen is associated with ILCOR and the ERC, and is Associate Editor for Resuscitation Plus. Robert Greif is associated with ILCOR and the ERC, and is Editor for Resuscitation Plus.

CRediT authorship contribution statement

Sebastian Schnaubelt: Conceptualization, Investigation, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Simon Orlob:** Investigation, Validation, Writing – review & editing. **Christoph Veigl:** Investigation, Validation, Writing – review & editing. **Patrick Sulzgruber:** Investigation, Validation, Writing – review & editing. **Mario Krammel:** Investigation, Validation, Writing – review & editing. **Kasper G. Lauridsen:** Validation, Writing – review & editing, Supervision. **Robert Greif:** Writing – original draft, Writing – review & editing, Supervision, Project administration.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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