Are Lay Rescuers Adequately Prepared for Cardiopulmonary Resuscitation and Its Aftermath?

See Article by Mausz et al.

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Nearly 40 patients experience an out-of-hospital cardiac arrest (OHCA) every hour in the United States, and survival rates remain <10%.[1,2] Cardiopulmonary resuscitation (CPR) performed by bystanders (or lay rescuers) can be a life-saving intervention and is known to improve survival by >2-fold.[3] However, the potential benefits of bystander CPR are not fully realized because rates of bystander CPR have remained <40% in the United States.[2] Prior studies have identified several barriers in bystander response, which include fear of injuring the patient, lack of knowledge or physical inability, legal liability, and concern for transmissions of infections, among others.[4] In a highly influential report "Strategies to Improve Cardiac Arrest Survival: Time to Act," the National Academy of Medicine (formerly the Institute of Medicine) emphasized fostering a culture of action through public awareness and training as a key recommendation to improve dismal rates of survival for OHCA.[5]

As a result, public health initiatives have focused on disseminating CPR training to the lay public to ensure bystanders are capable of initiating CPR in a victim of cardiac arrest. A particular emphasis in recent years has been on hands-only CPR, which is simpler to learn and allays the angst of bystanders about delivering rescue breathing. Moreover, the traditional classroom teaching is increasingly making way for innovative training with videos or over the Internet, using mobile technology or social media, with the goal of making CPR training more widely available and at low cost.[6,7] Advertisement campaigns, such as those developed by the British Heart Foundation in collaboration with actor Vinnie Jones, demonstrating the method of hands-only CPR to the tune of "Staying Alive," have become widely popular. Although the above approaches to make CPR training simpler and more accessible are appropriate and necessary, how well such programs prepare a layperson for the physical, emotional, and logistical challenges when confronted with a victim of cardiac arrest remains less clear.

In this issue of *Circulation: Cardiovascular Quality and Outcomes*, Mausz et al[8] address this important knowledge gap. The Peel Regional Paramedic Service—a community-based emergency medical service agency in Ontario, Canada—launched an innovative support program for lay rescuers who were recently involved in a resuscitation response. As part of the program, a community safety specialist (one of the authors) contacted lay rescuers who had either called 911, performed CPR, or used an automated external defibrillator (AED) on a victim of OHCA in the previous 24 hours to provide support and facilitate mental health referrals if needed. Rescuers were also invited to participate in a semistructured interview or a focus group with one of the study authors. In total, 15 lay rescuers participated in the study, and all of the participants had completed CPR training in the past. The researchers categorized participants' experience in the following 3 domains: being called to act, taking action, and making sense of the experience.

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The immediate reaction of lay rescuers when faced with someone collapsing at work (being called to act) was one of panic and disbelief. They were unprepared for the physical manifestations of sudden death (color changes, eyes). However, feelings of panic and uncertainty quickly made way for taking action because the rescuers understood that without intervention, death was imminent. However, several barriers to taking effective action were present. Fear of hurting the victim, liability, or workplace discipline for intervening if they did not have up-to-date training or certification were reported. Often, lay rescuers misinterpreted physical symptoms of cardiac arrest (eg, cyanosis, emesis, and agonal breaths) as manifestations of choking or signs that the victim had achieved return of spontaneous circulation, which led them to delay CPR or stop compressions early. Logistical challenges, such as accessibility to AEDs, familiarity with the available AEDs, how best to properly use the AEDs, and difficulty in following the AED prompts, were also frequently encountered.

After resuscitation, several rescuers struggled to make sense of the experience. Symptoms of distress, flashbacks, trouble sleeping, and emotional withdrawal were common. Many wondered whether their response had been adequate, especially if the victim died, which often led to feelings of guilt. It was interesting to note that many participants reported seeking support beyond that initially offered by the program and that as participants debriefed with the study team, they expressed a feeling of closure and also a readiness to intervene again if needed.

Mausz et al need to be congratulated for conducting this important study. Unlike most previous studies, this study is unique in that it highlights the challenges from the perspective of rescuers who had actually responded to a cardiac arrest victim. When little is known about the experiences of lay rescuers during and after OHCA rescue attempts, qualitative exploratory research is an appropriate choice. Interview or focus groups with a small number of participants allowed the authors to explore lay rescuers' experience in great depth. Quick follow-up minimized recall bias. The authors used constructivist grounded theory methodology and constant comparison to enhance rigor and trustworthiness and achieved theoretical sufficiency before ending data collection. Although only arrests in a public location were included, most interventions occurred in a workplace where the rescuers knew the victims, which may potentially mirror the experience of lay rescuers at a home location.

The study has significant implications for how CPR training should be disseminated. Despite formal training, lay rescuers in this study felt unprepared for providing bystander CPR both on a cognitive and an emotional level. Persistent knowledge gaps in recognizing symptoms of cardiac arrest among previously trained rescuers also highlights the inevitable decline in CPR skills given that the need for performing CPR does not arise often. Formal CPR training methods have evolved to make CPR training simpler, more affordable, and more accessible to a larger section of the public. The primary focus of such training efforts has been on the psychomotor task of teaching how to perform chest compressions, with less emphasis on other tasks (eg, recognition of cardiac arrest) or repetition to practice newly learned skills. While the current study did not compare rescuer preparedness between different CPR training modalities, there is a concern that training may have become oversimplified with the newer methods.

How should CPR training be designed so that rescuers are better prepared for the task of performing CPR? Although it is unrealistic that a one size fits all approach will work for everyone, some generalizable concepts are worthy of discussion. Cardiac arrest is a crisis situation that evolves rapidly in a dynamic environment and requires the performance of a highly technical intervention as a life-saving measure in an emotionally stressful situation. In other similar fields, such as aerospace, hands-on practice in an immersive simulated environment that attempts to recreate real-life scenarios has been highly successful in preparing trainees. Advanced simulation has also been increasingly used to train healthcare professionals in resuscitation.[9] While using simulation for training lay rescuers is impractical because of logistical constraints, findings from the current study suggest an ongoing tension between making CPR training simpler and more widely available and the complexity of the skill that needs to be mastered. Future studies need to evaluate methods, content, and delivery of CPR training to understand the best approaches for teaching this life-saving skill in the most effective way possible.

In addition, CPR trainers should recognize, and develop ways to mitigate, potentially unmet needs of trainees in identification of cardiac arrest, performance of CPR and when to stop, and on proper use of AEDs. Although these topics are covered during training, they likely need additional emphasis. Preparing lay rescuers to face the emotional distress of confronting cardiac arrest would be more challenging. CPR trainers could consider devoting time during the session to share their own experience as a lay rescuer, including their emotional reaction, with trainees. Although these approaches may not entirely mitigate the psychological impact of responding to a victim of cardiac arrest, sharing experiences may be a first step in preparing lay rescuers for a potential event. Additionally, a lay rescuer support program, like that designed by the Peel Regional Emergency Medical Service Agency, is highly innovative and could be a model for other communities to follow. Collectively, addressing the challenges faced by lay rescuers could make them more confident in their knowledge and potentially more willing to intervene.

Some additional points are worthy of discussion. First, the presence of logistical barriers, such as access to AEDs, at work places is concerning. Although how often such barriers are present cannot be determined from this study, employers should ensure that formal processes exist at each work place to make AEDs accessible at all times. Employers may also consider incorporating training in the use of AEDs as part of employee orientation and explicitly dispelling misconceptions, such as fear of repercussions, that may dissuade coworkers from intervening at workplace incidents. Second, although it is appropriate to direct care and attention in an OHCA incident to the victim, healthcare providers need to be aware of the emotional and psychological distress that may be experienced by rescuer family members who may be at the patient bedside. Providing the rescuer family member an opportunity to debrief could allay their distress or identify a need to direct them for additional help.

Performing CPR on a victim of cardiac arrest is an incredibly unique opportunity for an individual to save another's life. But it can also be an agonizing experience. Preparing lay rescuers to overcome the challenges of providing CPR and supporting them afterward could go a long way in ensuring their willingness to act again (and encourage others to do the same).

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FOOTNOTES

Circ Cardiovasc Qual Outcomes is available at http://circoutcomes.ahajournals.org.

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