

Teaching Children to Resuscitate: An Old Idea Made Reality

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In this issue of the Journal, Van Aken et al¹ make an impassioned plea for teaching school-aged children cardiopulmonary resuscitation (CPR). Interestingly, almost 60 years ago it already was demonstrated that children can perform this life-saving technique.

In the 1950s, Dr Peter Safar published a series of studies, reporting experiments that, as critically important as they were, would never be approved by any institutional review board today. Safar paralyzed healthy volunteers and demonstrated that after a head tilt and chin lift, mouth-to-mouth resuscitation had greater “ventilatory efficiency” than established techniques and could maintain oxygenation in an apneic patient.²⁻⁴ Amazingly, he also demonstrated that even untrained rescuers, including children (“2 firefighters, 6 policemen, 4 soldiers, 16 Red Cross workers, 23 doctors, 8 nurses, 36 medical students, 6 housewives, and 6 Boy Scouts⁴”), could perform effective mouth-to-mouth resuscitation. He combined his findings regarding the importance of airway patency (A) and effective mouth-to-mouth breathing (B) with novel ideas regarding chest compression (C) into the book *ABC of Resuscitation*, which he published in 1957 and which established the basis for modern CPR. After the death of his daughter in 1966, Safar became convinced that lay people had to be involved in resuscitation if lives were to be saved. He helped establish the Freedom House Enterprise Ambulance Service, one of the first pre-hospital emergency medical services in the United States.⁵ As a result of his numerous contributions, Safar was nominated for the Nobel prize for medicine 3 times.

What is very important for us to remember in 2017 is that Safar was, first and foremost, an anesthesiologist! Indeed, we write about Safar’s many accomplishments within the context of teaching children CPR to remind us all that we need not restrict our practice to the care of patients undergoing surgery. Put simply, if we are to avoid being considered a small medical subspecialty with a limited scope

of practice in the future, we must embrace a meaningful presence in all of medicine. If we are to continue to shape the future of medicine, we will not do so by restricting our clinical practices and our participation. As Mark Warner argued during the Rovenstine lecture in 2005, “It is crucial for us to be so broadly involved in patient care and health care systems that we add great value. We must be judged to be invaluable and irreplaceable. We must embrace every opportunity to expand our sphere of influence and participation in health care.”⁶

In this issue of *Anesthesia & Analgesia*, Van Aken et al¹ remind us of the impact that anesthesiologists can have outside of the perioperative period.¹ It will surprise many to learn that the Guinness World Record for the largest CPR resuscitation training session ever held (12,000 students in Münster, Germany, on September 17, 2013) was led not by an emergency physician nor a cardiologist, but by a team of anesthesiologists. Is it worthwhile and practical to ask anesthesiologists in other countries to follow the authors’ lead and take an active role in the training of bystander CPR?

At first glance, it is hard to find anything wrong with the concept of teaching children CPR. The concept is entirely logical, and it would be a good place for our specialty to make itself visible outside of the hospital environment. However, it would take a large and sustained effort, and it is therefore important at least to consider the cost-benefit picture, that is, the value proposition. This is also relevant because it will prevent exaggerated expectations of outcome improvements after out-of-hospital cardiac arrest.

First, as to cost: it is always important to realize that the amount of time in the school curriculum is fixed: anything added requires something else to be removed. Van Aken et al¹ estimate that 2 hours per child per year would be needed, an amount that should be easy to incorporate. Education of teachers will also be necessary but should not take prohibitive amounts of time. Thus, although the effort required for systematic implementation would be substantial, the cost is acceptable.

It is somewhat more difficult to assess the expected benefit. The recently published EuReCa One trial⁷ provides detailed data on resuscitation rates and outcomes after out-of-hospital cardiac arrest in a number of European countries. This study showed that in 54% of cases, the collapse was witnessed by a bystander, and in 48% of cases, CPR was initiated by a bystander. Those numbers suggest that only minor improvements are possible in the bystander CPR rate—at least overall in the countries participating in EuReCa One. Survival rates were poor: only 10% of patients

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Accepted for publication December 13, 2016.

Funding: None.

The authors declare no conflicts of interest.

Reprints will not be available from the authors.

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DOI: 10.1213/ANE.0000000000001889

in whom CPR was started survived until hospital discharge or 30 days. This indicates that even if improvements in CPR rates were achieved, it is unlikely that these would lead to major changes in outcomes.

However, it should be noted that variability in rates of bystander CPR between countries is remarkably high (rates from <10% to 70% have been reported),⁸ and the CPR success rate also differs substantially. In the EuReCa trial, rates of return of spontaneous circulation ranged between 10% and 50% among countries. This strongly suggests that in some locales, little benefit will accrue from teaching children CPR, whereas in other areas, it may be critical to improving bystander CPR rates and outcomes. Therefore, if at all possible, resources should be channeled selectively to areas where most benefit can be expected. In summary, costs of this program would be relatively modest, and benefits likely would vary fairly substantially from country to country. Overall value, therefore, is likely to depend very much on the setting and this should be taken into consideration when decisions on funding allocation are made.

However, despite these considerations, and realizing that large outcome improvements may not suddenly appear in all places, teaching school children CPR is a wonderful idea and a practical implementation of Safar's findings 60 years ago. Having 100% of the population able to provide bystander CPR is a laudable goal, and systematically teaching children to become comfortable in performing these simple, yet life-saving, techniques is a great step in that direction. After all, when the moment comes,

nothing can be greater than for a child to be able to say: "I helped save a life!" ■

DISCLOSURES

Name: Edward C. Nemergut, MD.

Contribution: This author helped write the manuscript.

Name: Marcel E. Durieux, MD, PhD.

Contribution: This author helped write the manuscript.

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