

“Kids Save Lives”: Educating Schoolchildren in Cardiopulmonary Resuscitation Is a Civic Duty That Needs Support for Implementation

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Sudden out-of-hospital cardiac arrest (OOHCA) is most probably the third leading cause of death in industrialized nations.¹ We expect that up to 400 000 people will die of OOHCA in the United States each year, and the same applies to Europe and many areas of the world.^{2,3} The most important measure to improve survival from cardiac arrest with good neurologic function is the immediate start of cardiopulmonary resuscitation (CPR) procedures by bystanders.⁴ Following cardiocirculatory arrest and no blood flow, the brain can survive for only 3 to 5 minutes without any damage; however, emergency medical service systems anywhere in the world likely will not arrive until more than 6, 8, 10, or more minutes have passed, depending on the country, system configuration, geography, and other factors.⁴ Consequently, in almost all cases, emergency medical services come too late for those with OOHCA.

It is well known and scientifically proven that initiation of CPR by lay bystanders increases survival rates at least 2- to 3-fold.⁴⁻⁶ In this respect, lay CPR is much better and more effective than any other therapeutic intervention following OOHCA.⁴ In most countries, however, lay CPR rates are <30%. In very few countries are lay CPR rates 40% to 60%—or maybe >70%.⁷

If we could achieve lay CPR rates of 60% to 80% all over the world, this would immediately result in 200 000 to 300 000 additional survivors after OOHCA.⁴ There are several effective

ways to increase lay CPR rates, for example, through continuous media activities, dispatcher-assisted “telephone CPR,” CPR education in adults, CPR education in schoolchildren, and first-responder systems.^{4,6} All of these options are recommended in the 2015 CPR guidelines,^{8,9} and all are useful and feasible.

We have seen in several countries that educating schoolchildren in CPR is particularly associated with an



Figure 1. The international “Kids Save Lives” initiative is represented by this logo that was developed by the Italian Resuscitation Council (IRC). The IRC has approved use of this logo at no cost for all Kids Save Lives activities and campaigns. Reproduced with permission from Elsevier.¹⁰

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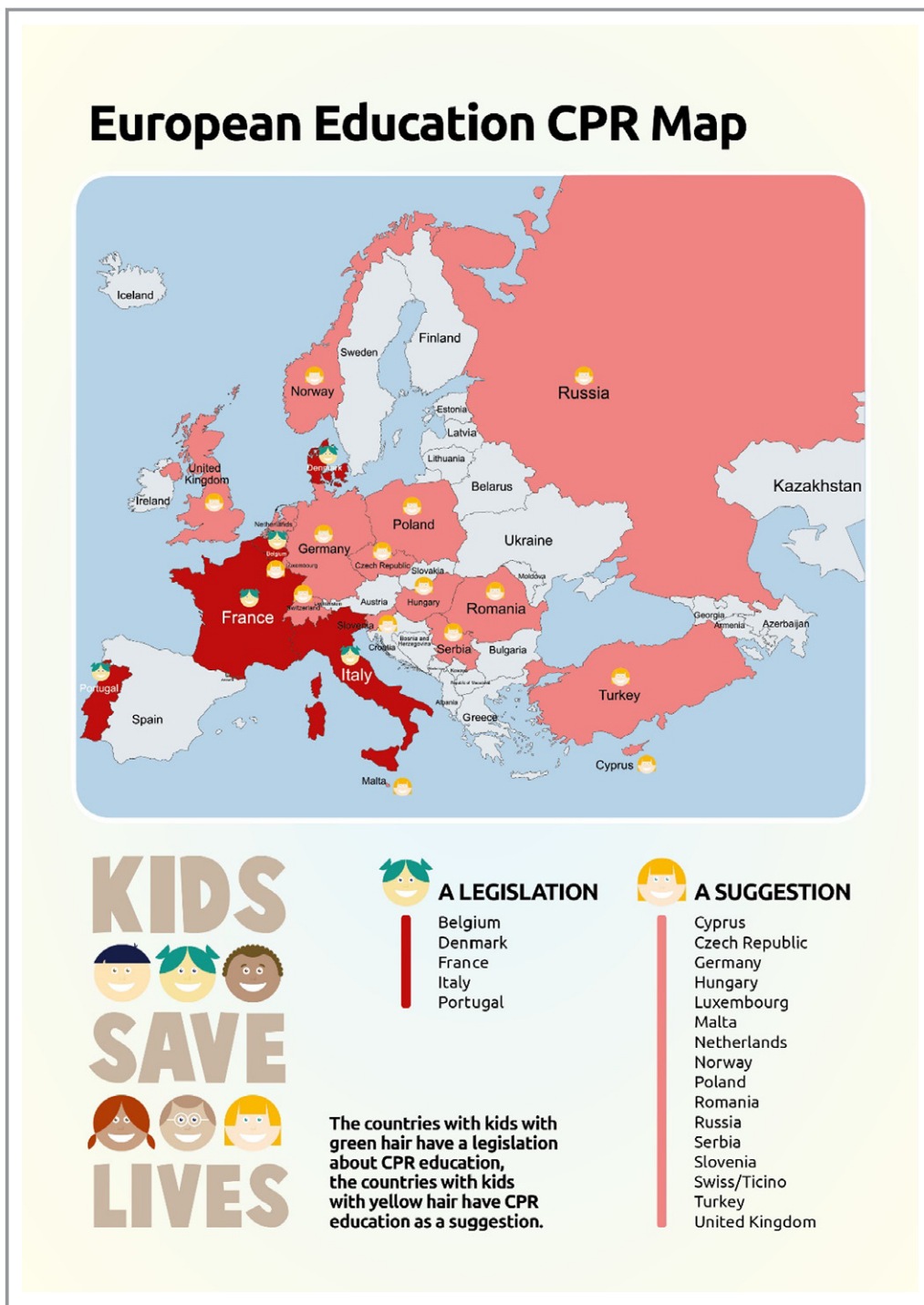


Figure 2. “Kids Save Lives” European map of cardiopulmonary resuscitation (CPR) education. In the countries with green-haired kids, there is legislation about CPR education; in the countries with yellow-haired kids, CPR education is a suggestion. Reproduced with permission from Elsevier.¹⁷

increase in lay CPR rates and survival following OOHCA.^{6,10–12} Training schoolchildren in CPR is easy and cost-effective and has already become a worldwide initiative (Figure 1).¹⁰ We know that such training should start by age ≤ 12 years and should last for at least 2 hours per year as long as children go

to school.^{10–13} Training can be conducted effectively by both medical professionals and educated teachers, and high-fidelity or low-cost manikins and equipment can be used successfully.^{10,14–16} Educating schoolchildren in CPR not only increases their capabilities in CPR but also enhances social

interaction and social competencies and is often a lot of fun for the pupils and the teachers.¹⁰ Following their training, schoolchildren serve as multipliers. A homework assignment could be to show 10 additional people how to do CPR within the next 2 weeks.¹⁰

It is no wonder that several US states, although not all, have started to educate schoolchildren in CPR. In Europe, educating schoolchildren in CPR is mandated by law in 5 countries and recommended in another 16 countries of 34 that took part in a recent survey of the European Resuscitation Council Research Network (Figure 2).¹⁷

This issue of *JAHA* includes a nationwide investigation by Carolina Malta Hansen and coworkers of CPR training in schools 8 years after mandating legislation in Denmark,¹⁸ where a national initiative started in 2001 to increase lay CPR rates throughout the country.⁶ Using a practical approach with media campaigns and many other measures, and with implementing mandatory education of schoolchildren in CPR in 2005, the survival rates following OOHCA increased 3-fold by 2010.⁶

The current article investigates the effectiveness of the Danish law on educating schoolchildren.¹⁸ The results are not as encouraging as hoped. CPR education in schoolchildren is not implemented in many schools in Denmark.¹⁸ There is much room for improvement. Nevertheless, survival rates following OOHCA tripled within a 10-year period following the Danish national initiative.⁶ Additional work to implement nationwide training of schoolchildren in CPR could increase the survival rate following OOHCA even more. The present study also demonstrates that even in a country with engaged medical professionals, politicians, teachers, educators, and pupils and with a strong national initiative, more support is needed to promote education of schoolchildren in CPR in all Danish schools.¹⁸

Denmark is one of the most active countries in furthering the national initiative to increase lay CPR rates.⁶ And it is one of 5 European countries in which legislation for CPR education in schools exists.¹⁷ Despite the fact that, since 2005, legislation has mandated that students should be trained in CPR by the time they graduate from middle school,⁶ CPR training of schoolchildren in Denmark has not been implemented successfully.¹⁸ This situation is likely even worse in other countries. Several factors were associated with completed CPR training in schools in Denmark: belief that other schools were conducting training, awareness of mandating legislation, presence of a school CPR training coordinator, teachers who felt competent to conduct training, and easy access to CPR training material.¹⁸ In addition to legislation, implementation is a key issue to increase the number of schoolchildren educated in CPR. Additional efforts are necessary to successfully implement CPR training in all schools, and the factors listed above should be emphasized for further

improvements. Moreover, teachers should probably be trained in CPR education while at university, as in Norway, and legislation must always include clear sources of adequate funding.¹⁸

Today we know that one of the most effective ways to increase lay CPR rates in a country is by educating schoolchildren in CPR.^{6,10} With such an approach and with schoolchildren as multipliers, lay CPR rates can be increased successfully and rapidly throughout a country.⁶ Such an approach should be mandated by law in all countries around the world, as stated in the interdisciplinary “Kids Save Lives” statement that was endorsed by the World Health Organization in 2015.¹⁹ We can see in Denmark and elsewhere that such a law must be followed and supported by an effective implementation strategy throughout the country.²⁰

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Disclosures

Böttiger is the European Resuscitation Council Board Director of Science and Research; Associate Editor of the *European Journal of Anaesthesiology*; Speakers honorarium from Medupdate, FoMF, Baxalta, Bayer Vital; Chairman, German Resuscitation Council; Board Member, German Society of Interdisciplinary Intensive Care and Emergency Medicine; Associated Editor, Resuscitation. Federico Semeraro is Chairman, Italian Resuscitation Council (IRC). Wingen has no conflicts. Böttiger is member of the Advanced Life Support Task Force of the International Liaison Committee on Resuscitation (ILCOR).

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