



## Editorial

### Kids save lives – Training school children in cardiopulmonary resuscitation worldwide is now endorsed by the World Health Organization (WHO)



Billions of Euros, Dollars and other currencies are invested in an attempt to reduce deaths from road traffic crashes, yet there are 20 times more deaths following unsuccessful cardiopulmonary resuscitation (CPR). Nevertheless, the amount of money that is spent on research, prevention and treatment of sudden cardiac death and CPR is very limited. There is also considerably less money spent on CPR research in comparison with that invested in diseases such as cancer, myocardial infarction, stroke and heart failure. Less than one out of 10 patients with out-of-hospital cardiac arrest survive in good condition.

Now there is a low-cost and effective way to turn this around. In 1960, Kouwenhoven, Jude and Knickerbocker stated in their initial publication on modern CPR that “Anyone, anywhere, can now initiate cardiac resuscitative procedures. All that is needed is two hands.”

In a few countries, educating school children in CPR is already mandatory, and in many countries, local, regional and national initiatives have been started. The European Resuscitation Council (ERC), the American Heart Association (AHA) and other resuscitation organizations have invested considerable effort and initiative into this approach. In 2013, 400 Members of the European Parliament supported an initiative leading to the ERC “European Restart a Heart Day” ([www.erc.edu](http://www.erc.edu)). Detailed curricula have been developed for CPR education in schools ([www.grc-org.de](http://www.grc-org.de)).

We already know that:

- It is extremely easy and effective to educate school children in CPR.
- Before puberty, children have a very open approach to CPR training.
- Teachers who have been educated can teach CPR; they do it as well and as effectively as healthcare professionals.
- It is sufficient to have 2 h training per year.
- The optimal age to start teaching cardiac compressions is around 12 years.

- It can be helpful to use small manikins.
- Schoolchildren serve as multipliers: at home they teach their brothers and sisters, their parents, their grandparents and many others in their families.
- Educating school children in CPR is fun, and teachers tell us that they seldom have seen their pupils so enthusiastic as during CPR training.
- There are social benefits of enthusiastic and positive young people that result from CPR training: school children learn to help others.
- The proportion of trained and “willing to help” individuals in society will markedly increase with school children training in CPR, leading to an increase in overall lay resuscitation rates.

Inspired by and based on all of this information, the European Patient Safety Foundation (EuPSF), the European Resuscitation Council (ERC), the International Liaison Committee on Resuscitation (ILCOR) and the World Federation of Societies of Anesthesiologists (WFSA) developed and put forth their joint “Kids save lives” statement on training school children in CPR worldwide. We had the opportunity on several occasions to ask the World Health Organization (WHO) to lend their support for this statement.

On January 13, 2015, we received a letter from WHO stating “... that approval has been granted for the World Health Organization (WHO) to endorse the statement on ‘Kids save lives’...”.

It is now a great opportunity and challenge to implement school children training in cardiopulmonary resuscitation (CPR) worldwide. All this will help to save thousands of lives worldwide, thanks to many individuals, colleagues, organizations, initiatives – and the WHO. The Kids Save Lives statement written by Hugo K. Van Aken and Bernd W. Böttiger is reproduced below.

## Kids save lives – Training school children in cardiopulmonary resuscitation worldwide

*A Statement from the European Patient Safety Foundation (EuPSF<sup>a</sup>), the European Resuscitation Council (ERC<sup>b</sup>), the International Liaison Committee on Resuscitation (ILCOR<sup>c</sup>) and the World Federation of Societies of Anesthesiologists (WFSA<sup>d</sup>)*

**This statement has been endorsed by the World Health Organization (WHO)**

### 1. Sudden cardiac death: a public health problem

Sudden cardiac death is one of the major issues in global health care. In Europe and the U.S., at least 700,000 people die each year following sudden cardiac death with unsuccessful out-of-hospital cardiopulmonary resuscitation (CPR).<sup>1,2</sup> This is 2000 deaths every day. The same happens in many other areas of the world. Thus, sudden cardiac death is the third commonest killer after cancer and other cardiovascular diseases in industrialized nations.<sup>3</sup> Teaching CPR to all school children will therefore lead to a marked improvement in global health.

Following sudden cardiac arrest, the brain can only survive for 3–5 min without oxygen. This is much less time than the emergency medical services take to arrive in almost all cases. Therefore, less than 1 out of 10 patients with out-of-hospital cardiac arrest survive today.<sup>4–7</sup> There is sound scientific evidence that immediate initiation of basic life support by lay bystanders improves the survival after out-of-hospital cardiac arrest by a factor of 2–4.<sup>5–7</sup> Out-of-hospital cardiac arrest is witnessed in 60–80%.<sup>5–7</sup> Thus, lay resuscitation can fill the time gap between collapse and the arrival of the emergency medical services in most cases. Today, bystander CPR is delivered in less than 1 in 5 out-of-hospital cardiac arrests.<sup>4</sup> Increasing this rate will save 200,000 additional lives in Europe and in the U.S. every year, and far more worldwide.

While educating the lay public in basic life support is clearly the most important way to increase survival in this area, it is difficult to reach the entire population with the training required, if programs are not obligatory. It is logical therefore to include resuscitation training in school programs. The American Heart Association advocated compulsory resuscitation training in American schools in 2011,<sup>8</sup> and countries in which resuscitation has been integrated into educational programs in schools report significantly higher

resuscitation rates.<sup>4,9</sup> Thus one of the most important steps in increasing the rate of bystander resuscitation and improving survival worldwide is to educate all school children. This can be easily done by educating them – beginning at the age of 12 years – for just 2 h per year.<sup>8–11</sup> School children at a young age have a less inhibited approach to resuscitation training and both medical professionals and teachers achieve success after appropriate training themselves.<sup>11</sup>

### 2. The way to improve survival

We recommend educating school children in resuscitation from the age of 12 years or earlier for 2 h per year. If school children receive such training, they are also likely to teach this to their family at home – and they themselves will never forget. We will see not only an increase in the number of cardiac arrest survivors worldwide, but also the social benefits of enthusiastic and positive young people. They learn to help others. School children and teachers are important “multipliers” in both private and public settings and thus, in the longer term, the proportion of trained individuals in society will markedly increase, leading to an increase in the overall rate of lay resuscitation.

This concept is already very successful in Scandinavia. In Denmark, it was shown that the rate of bystander CPR nearly doubled after five years, with a threefold improvement in survival following out-of-hospital cardiac arrest over ten years.<sup>9</sup> A threefold improvement in survival cannot be achieved solely by improvements in professional medical care in this area.

### 3. Why introduce resuscitation training during school education?

- All groups of society can be reached. To achieve a statistically significant increase in the resuscitation results, it has been estimated that at least 15% of a population need to be trained and such numbers cannot be achieved by offering voluntary courses.
- Access to health-related information is often less adequate in the lower social groups, with the result that more cases of unsuccessfully treated cardiac arrest per capita occur in socially disadvantaged areas.<sup>12</sup>
- A sense of responsibility can be firmly established at an early stage. Social skills – particularly if they are to be effective across social barriers – need to be established at an early point in the course of a child's education.
- Altruism research has shown that schoolchildren have a less inhibited approach to resuscitation training while they are still pre-pubertal. Furthermore, the strongest factor inhibiting the taking of practical action in the real-life situation is a fear of making mistakes. This aspect of implementation can also be communicated much more naturally and easily during school time.
- The response to instruction is easier and better at a younger age. A more favorable attitude to learning is also reflected by the fact

<sup>a</sup> The European Patient Safety Foundation is a multi-disciplinary non-profit foundation composed of medical associations, policy makers, clinicians, healthcare professionals, med-tech industry and patient advocates.

<sup>b</sup> The European Resuscitation Council is an interdisciplinary multi-specialty non-profit organization for resuscitation medicine and emergency medical care. It is the umbrella organization of 33 national resuscitation councils from Europe, Asia and Africa.

<sup>c</sup> The International Liaison Committee on Resuscitation (ILCOR) is a forum for liaison between principal resuscitation organizations worldwide: American Heart Association, Australian and New Zealand Council of Resuscitation, European Resuscitation Council, Heart and Stroke Foundation of Canada, InterAmerican Heart Foundation, Resuscitation Council of South Africa, Resuscitation Council of Asia.

<sup>d</sup> The World Federation of Societies of Anesthesiologists is a global network of 120 national societies of anesthesiologists.

that practical training can be communicated in a more positive way.

- Embedding resuscitation in related school subjects such as biology, sports or health education is meaningful and possible.

#### 4. Conclusion

Sudden cardiac death is one of the most frequent preventable causes of death in the industrialized world. In countries with organized emergency medical services, more lives could be saved by increasing the lay bystander resuscitation rate. Providing resuscitation training in schools has measurable effects, and by a “multiplier effect” it can increase the lay bystander resuscitation rate and the survival rate. The earlier such instruction in resuscitation is started, the more sustainable the training will be. The message to the public is clear: successful CPR is easy to undertake and straightforward to teach. *Lay people cannot do anything wrong – the only wrong thing would be to do nothing.* It can easily be done by everyone, saving hundred thousands of lives each year all over the world.

The supporting organizations have particular expertise in CPR delivery and training and fully endorse this statement.

#### Conflict of interest statement

No conflicts of interest to declare.

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