



Editorial

Children can save lives

The 2010 European Resuscitation Council (ERC) Guidelines¹ endorsed the recommendation that all citizens should be taught cardiopulmonary resuscitation (CPR), something that the ERC has been committed to since 1992.² Following a lobbying campaign by the ERC, the European Parliament passed a Written Declaration in June 2012 with a majority vote of 396 signatures calling for comprehensive training programmes in CPR and automated external defibrillator (AED) usage across all its member states. The Written Declaration calls for an adjustment of legislation in European Union (EU) member states to ensure national strategies for equal access to high quality CPR and defibrillation.³

There is an increasing body of evidence to support this concept. The success and the rate of survival of out of hospital cardiac arrest depends on several factors: where the arrest takes place, whether bystanders witness the arrest, the bystanders' ability to recognise the arrest, how soon the emergency medical services are called, and most importantly the ability of the bystanders to perform CPR.^{4,5} When bystander CPR is initiated the survival rate is doubled.^{6,7}

Colquhoun reported in May 2012⁸ that CPR tuition should start at an early age, and that it should be a planned part of school education. He correctly stated that school is the perfect environment to capture all future citizens and that this type of learning is popular and effective at that age. Evidence was available from Germany⁹ that concluded that training in schools was practicable and could be provided by existing teaching staff. Indeed, teaching staff are willing to provide this instruction as long as they receive appropriate training.¹⁰ Prior to this, Kanstad et al. had detailed the high motivation of young Norwegians and confirmed that secondary school students should be an important target for efforts to increase the bystander CPR rate.¹¹ It has also been reported that the use of self-instruction manikin-DVD sets can further educate a mean of 2.8 additional people.¹² Norway is one of the few areas in Europe where CPR is a mandatory component of the school curriculum and this is reflected by comparatively better levels of bystander CPR and survival.¹³

In this issue, Plant and Taylor¹⁴ have performed an ambitious yet comprehensive systematic review of how to teach CPR to school children. The authors have taken into account a broad range of evidence covering schoolchild factors (e.g. age and physical maturity) as well as training factors. The latter include effectiveness of CPR training, the role of practical training, delivery of rescue breath training, self-instruction kits, computer based training, brief training effectiveness, retention strategies, trainer type, and AED training.

They conclude that short-term retention of skills and knowledge is possible from a wide range of training strategies. This can

be further enhanced by repeating training at regular intervals and by starting training at an early age. They emphasise that training interventions should be age-appropriate. In other words, younger children can be taught the principles of calling for help and older children can be taught the skills of CPR when they are physically mature enough to perform these skills.

Also in this issue, Swor et al.¹⁵ have analysed all cardiac arrests over a five year period that occurred in K-12 (primary and secondary) schools in a database that covers 40 American EMS systems. Out of 30,603 cases, only 47 (0.15%) occurred in schools. Of these, the majority (66%) involved victims who were not of school age. The arrests occurred predominantly during school hours and the majority received bystander CPR. AEDs were not used in a substantial proportion of incidents but when they were used they had a good outcome. Fifteen patients (31.9%) survived to hospital discharge. The authors conclude that school emergency plans must assure provision of optimal emergency care whenever the school building is occupied.

Whilst the low numbers will come as a disappointment to those lobbying for the mandatory presence of AEDs in schools, this should still be balanced against the bigger picture. There still needs to be tuition for all children about AED usage and this becomes easier if the children can visualise what an AED looks like. Their use need not be confined to the school and their location can still be advertised locally as part of a public access AED programme.

The authors of this editorial recently conducted a survey on behalf of the ERC with a response from 23 of 30 national resuscitation councils. There are official national learning outcomes for primary/secondary schools in 16 of the 23 countries. In four of these 16 countries (25%) the learning outcomes include training in first aid incorporating CPR. In 11 of these 16 countries (68.75%) first aid is included in the curriculum of primary/secondary schools. Only one country teaches the use of an AED. Obstacles to AED training included the cost of AEDs and the minimal public availability, the absence of legislation on the use of an AED by lay people, cooperation problems between Ministries of Health and national resuscitation councils, and the fact that education is a federal rather than a national responsibility in some countries.

The structure of CPR training varies in the four countries that have CPR training in their primary/secondary school curriculum. In three out of four countries it is a once-only training. The duration of the training varies from 3–4 h to 6–8 h. The age of schoolchildren that receive the training varies from 7 to 15 years. A standardised curriculum and a standardised package of education material is used in only one country. No country provides standardised certificates. The instructor/participant ratio varies both within and across

countries from 1 per 10 to 1 per 25 participants. The instructors are schoolteachers in two countries, who may or may not have followed a proper post-graduate course for schoolteachers. In the other two countries the instructors range from qualified rescue instructors to unqualified self-educated individuals.

It is obvious that there is no standardisation in how CPR is taught to schoolchildren—there is significant variability in practise across Europe. Plant and Taylor¹⁴ show that a range of strategies could be effective, although standardisation would help with larger scale evaluation of effectiveness. The challenge is to ensure that widespread training of some description now occurs and this is the basis behind the “Children Can Save Lives” project that the ERC is coordinating. The first and most important objective is to lobby national governments for legislation to ensure provision of CPR and AED training to all children across Europe. Work can then be done to develop the contents of a standardised package of training.

Conflict of interest statement

AL is Vice Chairman of the ERC Educational Advisory Group; MG is Director of External Affairs for the ERC.

References

- Soar J, Mancini ME, Bhanji F, et al. Part 12: education, implementation, and teams: 2010 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Resuscitation* 2010;81:e288–332.
- Basic Life Support Working Party of the European Resuscitation Council. Guidelines for basic life support. *Resuscitation* 1992;24:103–10.
- <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P7-TA-2012-0266+0+DOC+XML+V0//EN&language=EN>
- Handley AJ, Monsieurs KG, Bossaert LL. European Resuscitation Council guidelines. European Resuscitation Council guidelines 2000 for adult basic life support. A statement from the basic life support and Automated External Defibrillation Working Group (1) and approved by the Executive Committee of the European Resuscitation Council. *Resuscitation* 2001;48:199–205.
- Litwin P, Eisenberg M, Hallstrom A, Cummins R. The location of collapse and its effect on survival from cardiac arrest. *Ann Emerg Med* 1987;16:787–91.
- Herlitz J, Engdahl J, Svensson L, Angquist KA, Young M, Holmberg S. Factors associated with an increased chance of survival among patients suffering from an out-of-hospital cardiac arrest in a national perspective in Sweden. *Am Heart J* 2005;149:61–6.
- Holmberg M, Holmberg S, Herlitz J. Effect of bystander cardiopulmonary resuscitation in out-of-hospital cardiac arrest patients in Sweden. *Resuscitation* 2000;47:59–70.
- Colquhoun M. Learning CPR at school—everyone should do it. *Resuscitation* 2012;83:543–4.
- Bohn A, Van Aken HK, Mollhoff T, et al. Teaching resuscitation in schools: annual tuition by trained teachers is effective starting at age 10. A four year prospective cohort study. *Resuscitation* 2012;83:619–25.
- McCluskey D, Moore P, Campbell S, Topping A. Teaching CPR in secondary education: the opinions of head teachers in one region of the UK. *Resuscitation* 2010;81:1601.
- Kanstad BK, Nilsen SA, Fredriksen K. CPR knowledge and attitude to performing bystander CPR among secondary school students in Norway. *Resuscitation* 2011;82:1053–9.
- Lozem T, Steen PA, Wik L. High school students as ambassadors of CPR—a model for reaching the most appropriate target population? *Resuscitation* 2010;81:78–81.
- Lindner TW, Soreide E, Nilsen OB, Torunn MW, Lossius HM. Good outcome in every fourth resuscitation attempt is achievable—an Utstein template report from the Stavanger region. *Resuscitation* 2011;82:1508–13.
- Plant N, Taylor K. How best to teach CPR to schoolchildren: a systematic review. *Resuscitation* 2013;84:415–21.
- Swor R, Grace H, McGovern H, Weiner M, Walton E. Cardiac arrests in schools: assessing use of automated external defibrillators (AED) on school campuses. *Resuscitation* 2013;84:426–9.

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