

Advisory statement of the European Resuscitation Council

31 March 2008

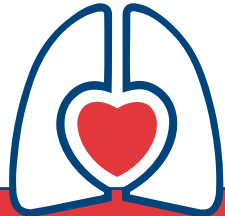
Advisory statement of the European Resuscitation Council on Basic Life Support

R.W. Koster, L.L. Bossaert, J.P. Nolan, D. Zideman, on behalf of the Board of the European Resuscitation Council

Bystanders who have been trained in Basic Life Support (BLS) and who witness a sudden collapse in an adult should immediately initiate rescue actions by providing 30 chest compressions of adequate force and depth at a rate of 100/minute followed by 2 mouth-to-mouth ventilations. The rescuer(s) should ensure that ventilations cause minimal interruption of chest compressions. At the same time, other bystanders should alert the Emergency Medical Services. This sequence of chest compressions and ventilations should be continued until professional help arrives on scene. For lay rescuers who have not been trained in BLS, or who are not willing or unable to give mouth-to-mouth ventilations, an acceptable alternative is to give uninterrupted chest compressions at a rate of 100/minute. For those rescuers without BLS training and who receive telephone instructions for BLS, the preferred instruction is to give uninterrupted chest compressions until professional help arrives.

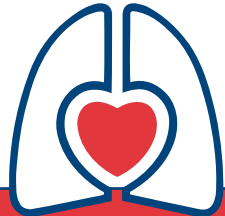
This statement reinforces the recommendations from the European Resuscitation Council Guidelines 2005 that were published in November 2005.⁽¹⁾ These Guidelines are based on an extensive review of scientific data that was published in November 2005.⁽²⁾ This review incorporated all available studies on cardiopulmonary resuscitation (CPR), including delivery of chest compressions, mouth-to-mouth ventilation and the various combinations of chest compressions and ventilations. Most national resuscitation organisations in Europe have adopted these guidelines, translated them into their national language, incorporated them in teaching material and have started a process of training and retraining lay and professional rescuers. This process has not yet been fully completed.

Since 2005, further scientific studies have been published that have investigated the value of mouth-to-mouth ventilation together with chest compressions during CPR.⁽³⁻⁵⁾ These studies suggest that there is no statistically significant additional value for mouth-to-mouth ventilation in combination with chest compressions over chest compression-only CPR (in which chest compressions are not interrupted by ventilations). The disturbingly low proportion of bystanders willing to provide CPR and the low rate of survival from out-of-hospital cardiac arrest has been documented over many years. This fact, and the recently published studies, have prompted the American Heart Association (AHA) to issue a statement recommending that bystanders who witness a sudden collapse in an adult should give chest compressions without ventilations.⁽⁶⁾ With this statement, the AHA hopes to increase the number of bystanders who are willing to take action and initiate CPR and to increase the rate of survival for victims of sudden cardiac arrest.



The European Resuscitation Council has reviewed the available published scientific evidence. The ERC considers this evidence insufficient to alter its guidelines for BLS at this moment. There are several important considerations for this recommendation:

1. The recently published studies are uncontrolled, observational studies of experience, dating from 1990 to 2003. Such studies are generally considered to be insufficient to enable definitive conclusions about the superiority or equivalence of any methods of CPR. The outcomes of these studies are still compatible with the hypothesis that the currently recommended combination of chest compressions combined with mouth-to-mouth ventilations is superior to chest compression-only CPR.
2. At this moment a worldwide science evaluation process has been initiated to review all scientific data on resuscitation. A new consensus on science will be published in 2010 and it is appropriate to await the outcome of this process before new changes in the guidelines are recommended.
3. Following Guidelines 2005, the compression:ventilation ratio has increased from 15:2 to 30:2, already emphasizing the importance of minimally interrupted high-quality chest compressions. Furthermore, unlike the AHA guidelines, the ERC guidelines indicate that 30 compressions are given before attempting ventilation. There have been no studies published in which chest compression-only CPR has been compared with CPR performed according to the Guidelines 2005.
4. The Guidelines 2005 are being implemented throughout Europe. It is not in the interest of the quality of CPR and of teaching to so many hundreds of thousands of potential rescuers, to introduce new changes while the current Guidelines are just being implemented. The resulting confusion will be counterproductive.
5. In Europe, the proportion of resuscitation attempts in which trained lay rescuers perform CPR is already considerable. The percentage is cited between 27% and 67%, considerably higher than generally observed in the USA.(7, 8) Therefore, the need to simplify guidelines, potentially at the expense of quality, to encourage lay rescuers to perform CPR is less compelling as in the USA.
6. Ultimately, even if chest compression-only CPR is recommended, there will be several circumstances, in which ventilation remains critical. Such circumstances are unwitnessed cardiac arrest, cardiac arrest in children, most in-hospital cardiac arrests, cardiac arrest of non-cardiac origin such as drowning or airway obstruction, and during resuscitation attempts lasting more than approximately 4 minutes. This list may not be complete. It is unlikely that lay rescuers will be able to identify with confidence these circumstances and, if taught to give only chest compressions, may provide CPR of insufficient quality to many victims.



The European Resuscitation Council therefore continues to recommend the teaching and administration of high quality, minimally interrupted chest compressions at a rate of 100/minute alternated with two mouth-to-mouth ventilations in a ratio of 30:2. For those rescuers who are unwilling or unable to give mouth-to-mouth ventilations, chest compression-only is much more acceptable than performing no CPR at all.

References.

1. Handley AJ, Koster R, Monsieurs K, Perkins GD, Davies S, Bossaert L. European Resuscitation Council guidelines for resuscitation 2005. Section 2. Adult basic life support and use of automated external defibrillators. *Resuscitation* 2005;67 Suppl 1:S7-S23.
2. International Liaison Committee On Resuscitation. Consensus on Science and Treatment Recommendations. *Resuscitation* 2005;67:181-314.
3. Bohm K, Rosenqvist M, Herlitz J, Hollenberg J, Svensson L. Survival is similar after standard treatment and chest compression only in out-of-hospital bystander cardiopulmonary resuscitation. *Circulation* 2007;116:2908-12.
4. Iwami T, Kawamura T, Hiraide A, Berg RA, Hayashi Y, Nishiuchi T, et al. Effectiveness of bystander-initiated cardiac-only resuscitation for patients with out-of-hospital cardiac arrest. *Circulation* 2007;116:2900-7.
5. Nagao KftS-Ksg. Cardiopulmonary resuscitation by bystanders with chest compression only (SOS-KANTO): an observational study. *Lancet* 2007;369:920-6.
6. <http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.107.189380>
7. Herlitz J, Bahr J, Fischer M, Kuisma M, Lexow K, Thorgeirsson G. Resuscitation in Europe: a tale of five European regions. *Resuscitation* 1999;41:121-31.
8. Waalewijn RA, Tijssen JG, Koster RW. Bystander initiated actions in out-of-hospital cardiopulmonary resuscitation: results from the Amsterdam Resuscitation Study (ARREST). *Resuscitation* 2001;50:273-9.