Resuscitation Council UK

Guidelines: Education and implementation of resuscitation

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1. The guideline process

The process used to produce the Resuscitation Council UK Guidelines 2015 has been accredited by the National Institute for Health and Care Excellence. The guidelines process includes:

- Systematic reviews with grading of the quality of evidence and strength of recommendations. This led to the 2015 International Liaison Committee on Resuscitation (ILCOR) Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. [1,2]

- The involvement of stakeholders from around the world including members of the public and cardiac arrest survivors.

- Details of the guidelines development process can be found in the Resuscitation Council UK Guidelines Development Process Manual.

- These Resuscitation Council UK Guidelines have been peer reviewed by the Executive Committee of Resuscitation Council UK, which comprises 25 individuals and includes lay representation and representation of the key stakeholder groups.

2. Summary of recommendations in education and implementation and teams

Training

- All school children should be taught how to perform CPR and should be made aware of how to use an automated external defibrillator (AED).
- Ambulance Services should have access to a national database of AEDs and their dispatchers should have specific training in how to provide clear and effective instructions to rescuers over the telephone.
- We suggest frequent 'low-dose' training may be a beneficial method for providing CPR/AED retraining.
- The outcomes for candidates attending an e-ALS course are the same as those attending a conventional 2-day ALS course.
- High-fidelity manikins are not essential for life support courses.
- Life support courses should incorporate training in non-technical skills (e.g. leadership, team behaviour and communication) into their curricula.

Implementation

- Healthcare systems should evaluate their processes to ensure those with a cardiac arrest have the best outcomes.
- There may be a role for regional cardiac arrest centres, although further work is needed to identify which specific aspects of care are beneficial.
- Teams who manage patients in cardiac arrest should use data-driven performance-focused debriefing.
- Social media and innovative technology have vital roles to play in improving outcomes from cardiac arrest.

3. Introduction

The Mission Statement of Resuscitation Council UK states that it exists to promote high quality, scientific, resuscitation guidelines that are applicable to everybody, and to contribute to saving life through education, training, research and collaboration. The theme of 'Training people, saving lives' demonstrates the importance of education in the pursuit of improved outcomes from cardiac arrest.

Similarly, the 'Formula for Survival' builds upon the 'Chain of Survival' to emphasise the importance of education and also implementation.[3,4] The clinical guidelines tell us what we should be doing according to the latest evidence available to us. The next challenge is to convey this knowledge cost effectively.

For this reason, the structure and efficacy of resuscitation courses and other innovative vectors for delivery of education have been subjected to the same rigorous evaluation process as the clinical guidelines.

Finally, healthcare systems at all levels need to be able to implement these new guidelines. It has been stated, "it takes a system to save lives" (www.resuscitationacademy.com). With this in mind, policy makers at local, regional and national levels have a vital role to play in enabling us to train people with these new guidelines and ultimately save lives.

4. Basic life support training

Who to train

Swift bystander CPR and rapid access to defibrillation are vital for successful outcomes from cardiac arrest. Evidence from overseas has shown that training all school children in CPR can dramatically improve bystander CPR rates and survival.[5] This model has the benefit that all members of society, in time, are primed with these essential life saving skills. It has the added benefit that both school children and teachers have been shown to further cascade their learning to family members and friends.[6]

The basic concepts of recognition of a person in cardiac arrest and calling for help can be taught to primary school children. Once children reach secondary school, they are physically able to perform CPR and this is therefore an ideal age to teach them these skills. Finally, school children can be educated about the benefit of AEDs as there is a need to improve awareness of their existence and use.[7]

The ambulance services also have a vital role to play in achieving improved bystander CPR rates and rapid use of defibrillators. They should have access to a national database of AEDs and their dispatchers should have specific training in how to provide clear and effective instructions to rescuers over the telephone. This should include emphasis on the identification of agonal breathing and also the importance of seizures as an aspect of cardiac arrest.[8]

How to train

Training must be tailored to the requirements of the learner and kept as simple

as possible. Traditional training packages for both lay and healthcare rescuers have focused on face-to-face training with an instructor, although evidence is emerging that the use of self-directed learning and digital media may be as effective either as a replacement or with reduced face-to-face time.[9-11] Those who are expected to perform CPR regularly will also benefit from training in non-technical skills (e.g. communication and team behaviours).[12,13]

The optimal intervals for CPR/AED retraining are not known and will differ according to the characteristics of the learner (e.g. lay or healthcare). It is widely accepted that skills decay within three to six months after initial training.[14] Frequent "low-dose" training may improve CPR skills compared with conventional training strategies.[15]

5. Advanced level training

Life support courses cover the knowledge, skills and attitudes needed for membership and/or leadership of a resuscitation team. There are a variety of courses covering newborn, paediatric, and adult cardiac arrest as well as courses focusing upon trauma, obstetrics, and specified skills such as ultrasound. There are courses designed to train instructors in the various provider courses. These courses are constantly evaluated and updated.

The Immediate Life Support (ILS) course provides training in the prevention and management of adult cardiac arrest. It is primarily targeted at first responders. Its implementation has been associated with a reduction in the number of in-hospital cardiac arrests and unsuccessful CPR attempts.[16]

The Advanced Life Support (ALS) course is designed for healthcare professionals who would be expected to apply the skills as part of their clinical duties as a member or leader of a resuscitation team. Many components of the course have been formally evaluated (e.g. testing scenarios, pre-course learning, non-technical skill teaching).[17-19] There is good evidence that a blended learning course comprising e-learning and reduced face-to-face time (e-ALS) has equally good outcomes as the traditional two-day ALS course.[20]

Whilst high-fidelity manikins provide greater physical realism and are popular with learners, they are expensive and their use is not essential for life support courses. Their use may deliver slight improvements in training outcome on skill performance at the end of courses, but there is otherwise no proven benefit.[21]

All life support courses should include training in non-technical skills. These include situational awareness, communication, team behaviours and leadership skills. These are all vital elements to the successful approach to cardiac resuscitation.[12,19]

6. Implementation

Systems

All healthcare systems should evaluate their processes to ensure that they are achieving the best possible outcomes from cardiac arrest. The National Cardiac Arrest Audit (NCAA) provides valuable data for participating organisations to benchmark their performance.[22] An out-of-hospital registry is being developed to enable ambulance services to evaluate their performance as well.

Healthcare organisations have an obligation to provide a high quality resuscitation service, and to ensure that staff are trained and updated sufficiently regularly to ensure that they are proficient in resuscitation in relation to their expected role (see Resuscitation Council UK Quality Standards for CPR practice and training).

Similarly, national policy makers have a responsibility to critically analyse models of care involving multiple organisations that may improve survival. For example, there is an association with increased survival and improved neurological outcome in patients treated in cardiac arrest centres.[23,24] More work is needed to identify the components of care specifically linked with these benefits (see Post-resuscitation care Guidelines).

Debriefing following resuscitation in the clinical setting

Teams who manage patients in cardiac arrest should use data-driven performance-focused debriefing, as its use has been shown to improve performance.[25-27]

Social media and innovative technology

Social media has a vital role to play in improving the outcomes from cardiac arrest. It can be used to disseminate awareness and education of the subject to vast audiences. Social media is also a powerful tool for effecting change. It can be used to engage support for concepts that can then be used to lobby decision makers.

Innovative technology falls into several categories:

1. Simple delivery of information – apps that display resuscitation algorithms (e.g. iResus).
2. Interactive delivery of information – apps that use the geolocation of the user to display the location of the nearest AED.
3. Interactive delivery of education – apps that engage with the user and create an immersive and interactive means of educating the user (e.g. Lifesaver).
4. Feedback devices – real time use of the accelerometer to improve rate, depth of compressions as well as recording data for debriefing.[28]
5. Notification and activation of bystander schemes – if individuals are willing and able to provide basic life support in a community, the use of these systems may lead to faster response times when compared with emergency service attendance.[29,30]

The use of technology for the implementation of resuscitation guidelines is constantly evolving. Its development should be encouraged and analysed.

7. Acknowledgements

8. Accreditation of the 2015 Guidelines

NICE has accredited the process used by Resuscitation Council UK to produce its Guidelines development Process Manual. Accreditation is valid for 5 years from March 2015. More information on accreditation can be viewed at https://www.nice.org.uk/about/what-we-do/accreditation.

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