EUROPEAN RESUSCITATION COUNCIL

ERC Quality standards for cardiopulmonary resuscitation practice and training

2019

Disclaimer: This document is based on the original document of RC UK.

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Contents

1 Introduction and scope

Healthcare organisations have an obligation to provide a high-quality resuscitation service, and to ensure that staff are trained and updated regularly to a level of proficiency appropriate to each individual's expected role.

This document provides quality standards for cardiopulmonary resuscitation practice and training in the acute care setting. Acute care refers to acute hospitals that provide inpatient and/or day-case medical and/or surgical care to adults, children or both.

Each section of this document contains the quality standards, supporting information and supporting tools for a specific aspect of cardiopulmonary resuscitation in acute care.

The appendix provides a list of suggested measures to assess adherence to the standards specified in each section.

The core standards for the provision of cardiopulmonary resuscitation across all healthcare settings are described in the document:

2 | Resuscitation Committee

Standards

1. Healthcare organisations admitting acutely ill patients must have a Resuscitation Committee with clearly defined terms of reference.

2. The Resuscitation Committee must be part of the organisation's management structure (e.g. clinical governance, clinical risk, quality improvement, education committees).

3. The Resuscitation Committee must include representatives from stakeholder groups (e.g. doctors, nurses, resuscitation officers, pharmacists, management, patient/lay representative), and appropriate specialties (e.g. ambulance service, anaesthesia, cardiology, dentistry, emergency medicine, general practice, intensive care medicine, mental health, neonatology, obstetrics, paediatrics). The exact composition of the committee will depend on local needs and arrangements.

4. The chair of the Resuscitation Committee must be a senior clinician with an active and credible involvement in resuscitation. This individual would be expected to have the authority to drive and implement change.

5. The Resuscitation Committee must have administrative support.

6. The Resuscitation Committee is responsible for implementing operational policies governing cardiopulmonary resuscitation, practice and training.

7. In the absence of other organisational arrangements, the Resuscitation Committee must also be responsible for implementing operational policies governing the prevention of cardiac arrest.

8. The Resuscitation Committee must determine the level of resuscitation training required by staff members.

9. At least twice-yearly meetings of the Resuscitation Committee are recommended.

10. Responsibilities of the Resuscitation Committee include:

    - ensuring implementation and adherence to national resuscitation guidelines and standards;

    - defining the role and composition of the resuscitation team;

    - ensuring that resuscitation equipment for clinical use is available and ready for use;

    - ensuring that appropriate resuscitation drugs (including those for peri-arrest situations) are available and ready for use;

    - planning adequate provision of training in resuscitation;

    - determining requirements for and choice of resuscitation training equipment;

- preparing and implementing policies relating to resuscitation and treatment of anaphylaxis;

- preparing and implementing policies relating to prevention of cardiac arrest;

- preparing and implementing a policy on resuscitation decisions, (e.g. DNACPR decisions), and advanced care planning (always according to local legislation);

- quality improvement – action plans based on audits.

- recording and reporting of patient safety incidents in relation to resuscitation.

11. The Resuscitation Committee must ensure that there is defined financial support for the resuscitation service.

3 Resuscitation Officers

Standards

1. Every organisation must have at least one person, the Resuscitation Officer (RO) or resuscitation lead, resuscitation services manager, who is responsible for co-ordinating the teaching and training of staff in resuscitation.

2. This person will have additional important responsibilities (e.g. quality improvement, incident review).

3. One whole-time-equivalent RO is recommended for every 750 members of clinical staff – see below for further details. Depending on the size and geographical distribution of the organisation, more than one RO may be needed to fulfill training requirements and additional responsibilities relating to resuscitation.

4. Smaller organisations must appoint a resuscitation lead who may have other roles within their working environment.

5. Resuscitation officers must possess a current Advanced Life Support (ALS) provider certificate (or equivalent) as a minimum standard; ideally ALS instructor qualification is recommended. Where appropriate, the organisation must ensure that ROs possess certified resuscitation training certificates in other specialist areas (e.g. paediatrics, the newborn, obstetrics and trauma). For example, ROs in acute settings which treat children must have EPALS provider status as a minimum.

6. The RO must have access to a designated training room(s) of adequate size. The room(s) should comfortably accommodate instructors, trainees and all the training equipment required for any teaching session.

7. The RO must have access to suitable electronic teaching aids and projection facilities. There must be adequate space for storing equipment. It is

recommended that separate office space, with a desk, computer facilities, and filing cabinets, is available.

8. The RO must have adequate administrative assistance.

9. Equipment for training will vary according to local needs. Adult, paediatric and newborn manikins, airway management trainers, an ECG monitor and rhythm simulator, and at least one defibrillator dedicated for training, must be available. To ensure appropriate clinical use, equipment for training (especially defibrillators) must ideally be the same model as that used in actual clinical practice.

10. It is recommended that the RO is responsible for ensuring that there are systems in place for maintaining resuscitation equipment in good working order. This will usually mean delegation of routine checking of equipment to other members of staff.

11. It is recommended that the RO is involved in data collection and audit of cardiac arrest.

12. In order to maintain standards and clinical credibility, it is recommended that responding to and participating in cardiac arrest management is an integral part of the RO's clinical responsibility on a week-to-week basis. ROs with a clinical role must have appropriate clinical supervision and support.

13. The RO has a responsibility to maintain his/her own education in resuscitation.

Supporting tools

This is an example calculation to support the statement that, 'One whole-time-equivalent RO is recommended for every 750 members of clinical staff':

1. 750 staff to be trained equates to 75 per month over a 10-month period. This is based on an RO working for a total of 10 out of every 12 months, allowing for annual leave, study leave, teaching elsewhere etc.

2. Each training session lasts approximately 2 hours.

3. Each session has 6 attendees.

4. If all 6 people attend then 12.5 sessions per month are required.

5. If only 4 people attend then 18.75 sessions per month are required.

6. Therefore to provide enough sessions over the year allowing for peaks and troughs about 15 sessions per month are required.

7. 15 sessions per month at 2 hours each provides 30 hours of basic training.

8. This is "classroom" time and does not include set up/set down time, preparation, administration etc.

9. The above calculation also does not include accredited courses or other training such as ward-based scenario or other types of sessions.

10. Most ROs spend at least 50% of their time involved in training activities when all the different types of training and preparation are taken into account.

11. The remainder of an RO's time includes other responsibilities such as audit, governance, DNACPR, clinical commitments, attending cardiac arrest calls, planning, finance, equipment checks, etc.

QUALITY STANDARDS
ACUTE CARE

4 Training of staff

Standards

1. All healthcare staff must undergo resuscitation training at induction and at regular intervals thereafter to maintain knowledge and skills.

2. Training must be to a level appropriate for the individual's expected clinical responsibilities.

3. Training must ideally include the identification of the deteriorating patient.

4. According to NICE Clinical Guideline 50 (2007), staff caring for patients in any acute hospital setting must have competencies in monitoring, measurement, and interpretation of vital signs. They must have the knowledge to recognise deteriorating health and respond effectively to acutely ill patients, appropriate to the level of care they are providing.

5. Training and facilities must ensure that, when cardiorespiratory arrest occurs, as a minimum all clinical staff can:

   - recognise cardiorespiratory arrest;

   - summon help;

   - start CPR;

   - attempt defibrillation within 3 minutes of collapse using an automated external defibrillator or manual defibrillator.

6. Clinical staff should have at least annual updates.

7. Training and updates that include an asessment are recommended for clinical staff.

8. All staff must know how to summon help and be aware of the use of a standard telephone number within the organisation. We recommend that this should be the common European number 2222.

9. A system must be in place for identifying resuscitation equipment for which staff require special training, such as defibrillators and emergency suction equipment.

10. All new members of staff must have resuscitation training as part of their induction programme. Even those who have current training require resuscitation training on induction to ensure that they are familiar with local policies and equipment.

11. Organisations must recognise and make provision for staff to have enough time to train in resuscitation skills as part of their employment.

12. Specific training for cardiorespiratory arrests in special circumstances (e.g. children, newborn, pregnancy and trauma) must be provided for medical, nursing and other clinical staff in the relevant specialties.

13. All clinical staff must receive training in the recognition, monitoring and management of the deteriorating patient.

QUALITY STANDARDS FOR CARDIOPULMONARY RESUSCITATION
PRACTICE AND TRAINING

7

14. All training must be recorded (e.g. in the organisation's training database).

15. Members of the resuscitation team with a regular involvement in resuscitation, particularly team leaders, require a level of training beyond that provided by the local RO. These individuals must be encouraged and supported to attend national courses such as the Advanced Life Support (ALS) course, the European Paediatric Advanced Life Support (EPALS) course, the Newborn Life Support (NLS) course, European Trauma Course (ETC), and or other equivalent course.

Supporting information

1. Competencies for Recognising and Responding to Acutely Ill Patients in Hospital. Department of Health. 2009.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_096989

2. Establishing a standard crash call telephone number in hospitals. Patient Safety Alert 02. London: National Patient Safety Agency; 2004.

3. National Early Warning Score (NEWS). Standardising the assessment of acute-illness severity in the NHS. Royal College of Physicians. Report of a working Party. July 2012.
http://www.rcplondon.ac.uk/resources/national-early-warning-score-news

4. National Institute for Health and Clinical Excellence. Acutely ill patients in hospital: recognition of and response to acute illness in adults in hospital 2007 (NICE Guideline 50).

5. National Outreach Forum (2012). Operational standards and competencies for critical care outreach services.
http://www.norf.org.uk

6. Resuscitation Guidelines 2015. Resuscitation Council (UK).
https://www.resus.org.uk/resuscitation-guidelines/

7. Finn JC, Bhanji F, Lockey A, Monsieurs K, Frengley R, Iwami T, Lang E, Huei-Ming Ma M, Mancini ME, McNeil MA, Greif R, Billi JE, Nadkarni VM, Bigham B; Part 8: Education, implementation, and teams. 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 95 (2015) e203–e224.

8. Greif R, Lockey AS, Conaghan P, Lippert A,Vries W, Monsieurs KG; European Resuscitation Council Guidelines for Resuscitation 2015. Section 10. Education and implementation of resuscitation. Resuscitation 95 (2015) 288-301.

Supporting tools

1. iResus application available on iTunes:
https://itunes.apple.com/gb/app/iresus/id335355440?mt=8

2. Lifesaver. An interactive film by Martin Percy. 2013:
http://www.life-saver.org.uk

3. Paediatric Early Warning Scoring (PEWS) charts are available for downlad at:
http://www.institute.nhs.uk/safer_care/paediatric_safer_care/pews_charts.html

4. Resuscitation Training for Anaesthetists in Raising the Standard: A compendium of audit recipes for continuous quality improvement in anaesthesia.
http://www.rcoa.ac.uk/news-and-bulletin/rcoa-news-and-statements/the-audit-recipe-book-3rd-edition-2012

5. Subject 11: Resuscitation. UK Core Skills Training Framework. Subject Guide. Skills for Health 2013.

6. User Guide for UK Core Skills Training Framework. Skills for Health. 2013.

5 Prevention of cardiorespiratory arrest

Standards

1. The use of the 'Chain of Prevention' concept as a basis for the structuring of the organisation's responses to patient deterioration and the prevention of cardiorespiratory arrest is recommended.

2. The organisation must have an education programme that is focused on the prevention of patient deterioration, for ward staff and responding clinical personnel.

3. The organisation must have a clear policy for the monitoring of patients' vital signs.

4. An early warning scoring system must be in place to identify patients who are critically ill and therefore at risk of cardiorespiratory arrest. An example is the National Early Warning Score (NEWS), or a paediatric early warning score for children.

5. The organisation must have a patient charting system that facilitates the regular measurement and recording of early warning scores.

6. The organisation must have a clear, universally known and understood, mandated, unambiguous, graded, activation protocol for escalating monitoring or summoning a response to a deteriorating patient. This should be standardised across the organisation.

7. The use of a standardised method for communicating information about a deteriorating patient (e.g. SBAR, RSVP) between staff members is recommended.

8. A designated outreach service or rapid response team (e.g. Medical Emergency Team [MET]), capable of responding to acute clinical crises identified by clinical triggers or other indicators, is recommended. This may include members of the resuscitation team.

9. The organisation must have a clear and specific policy that requires a clinical response to 'calling criteria' or early warning systems ('track and trigger'). This must include the specific responsibilities of senior medical and nursing staff, including consultants and identify the maximum response times.

Supporting information

1. Competencies for Recognising and Responding to Acutely Ill Patients in Hospital. Department of Health. 2009.
    http://webarchive.nationalarchives.gov.uk/20130123195821/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_096989

2. European Resuscitation Council Guidelines – http://www.cprguidelines.eu

3. International Liason Committee on Resuscitation Consensus on Science with Treatment Recommendations – http://www.ilcor.org

4. National Early Warning Score (NEWS). Standardising the assessment of acute-illness severity in the NHS. Royal College of Physicians. Report of a working Party. July 2012.
    http://www.rcplondon.ac.uk/resources/national-early-warning-score-news

5. National Outreach Forum (2012). Operational standards and competencies for critical care outreach services.
    http://www.norf.org.uk

6. NICE clinical guideline 50 Acutely ill patients in hospital: recognition of and response to acute illness in adults in hospital. London: National Institute for Health and Clinical Excellence; 2007.

7. Smith GB. In-hospital cardiac arrest: Is it time for an in-hospital 'chain of prevention'? Resuscitation 2010.

8. Soar, J. Smith GB. Prevention of in-hospital cardiac arrest and decisions about cardiopulmonary resuscitation. Resuscitation Guidelines 2010. Resuscitation Council (UK). http://www.resus.org.uk/pages/poihca.pdf

9. Time to Intervene? A review of patients who underwent cardiopulmonary resuscitation as a result of an in-hospital cardiorespiratory arrest. A report by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD). 2012. http://www.ncepod.org.uk

Supporting tools

1. Prevention of cardiac arrest in Raising the Standard: A compendium of audit recipes for continuous quality improvement in anaesthesia.
    http://www.rcoa.ac.uk/news-and-bulletin/rcoa-news-and-statements/the-audit-recipe-book-3rd-edition-2012

6 The resuscitation team

Standards

1. The Resuscitation Committee must determine the composition of the resuscitation team.

2. The exact composition of the team will vary between organisations, but overall the team that responds immediately must have the following **minimum skills**:

   - basic airway interventions, including the use of a supraglottic airway in adults;

   - intravenous cannulation, and intraosseous access (essential in children);

   - defibrillation (automated external defibrillation and manual defibrillation);

   - drug administration;

   - skills required for immediate post-resuscitation care.

3. It is recommended that each hospital ensures that there is an agreed plan for airway management during cardiac arrest. This may involve bag-mask ventilation for cardiac arrests of short duration, tracheal intubation if this is within the competence of members of the team responding to the cardiac arrest or use of supraglottic airway devices.

4. In addition to the resuscitation team, access to individuals with the following skills when needed is recommended:

   - tracheal intubation;

   - cardioversion and external pacing;

   - central venous access;

   - focused ultrasound/echocardiography.

5. The team should be activated in response to a cardiorespiratory arrest. Certain clinical areas (e.g. emergency departments, intensive care units) have individuals with the necessary resuscitation skills within their own staff, and may therefore not always call the hospital resuscitation team.

6. Activation of the team may also be part of the local escalation plan for the deteriorating patient.

7. The resuscitation team is responsible for the management of relatives (who may or may not wish to be present at a cardiorespiratory arrest), post-resuscitation transfer, and debriefing.

8. Consideration must be given to allowing relatives to be present during a resuscitation attempt. An experienced member of staff who can explain what is going on should be delegated to stay with them and liaise with the team on their behalf.

9. Team members often change daily or more frequently, especially when shift working is used. Members may not know each other or the skill mix of the team members. A Resuscitation Team meeting at the beginning of members' period on duty is recommended to:

- introduce team members to each other; communication is much easier and more effective if people can be referred to by their name;

- identify everyone's skills and experience;

- allocate the team leader role; skill and experience takes precedence over seniority;

- allocate responsibilities; if key skills are lacking (e.g. nobody skilled in tracheal intubation) the team must work out and agree how this deficit can be managed;

- review any patients who have been identified as 'at risk' during the previous duty period.

10. Team debriefings involving resuscitation team members are recommended – the exact mechanism (e.g. end of each event, end of each shift, weekly) must be determined locally.

11. The resuscitation team must be summoned to all cardiorespiratory arrests by the use of a common telephone number. ERC has recommended that this number should be 2222.

12. The organisation must ensure that the resuscitation team is activated within 30 seconds of the call for help. This system must be tested daily. Responses to test calls must be monitored and where there is a failure to respond this must be followed up and remedied immediately.

13. The organisation must have a policy for staff and telephone operators for dealing with cardiac arrest calls from remote parts of a hospital site (e.g. car parks, office buildings). In some settings this may include calling an ambulance in addition to the resuscitation team.

14. The role of team leader in a resuscitation team must be undertaken by an individual who is a current Advanced Life Support Provider or has equivalent training. If the patient is a child, the team leader must have equivalent paediatric life support qualifications. Although the team leader at a resuscitation attempt will usually be a doctor on the resuscitation team, the role must be allocated at each individual event, based on clinical knowledge, skills and experience.

15. The team leader is responsible for:

- directing and co-ordinating the resuscitation attempt;

- ensuring that current guidelines are followed;

- ensuring the safety of those present;

- ending the resuscitation attempt when indicated;

- documentation (including audit forms);

- communication with relatives;

- handover of care to other clinical teams;

- diagnosis and documentation of death if appropriate.

16. The organisation must ensure that a complete and detailed record of the cardiorespiratory arrest is retained within the patient's clinical record. Collection of data for audit at the time of arrest is recommended.

Supporting information

1. Soar J, Callaway CW, Aibiki M, Böttiger BW, Brooks SC, Deakin CD, Donnino MW, Drajer S, Kloeck W, Morley PT, Morrison LJ, Neumar RW, Nicholson TC, Nolan JP, Okada K, O'Neil BJ, Paiva EF, Parr MJ, Wang TL, Witt J; Part 4: Advanced life support. 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 95 (2015) e71–e120

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3. Edelson DP, Litzinger B, Arora V, et al. Improving in-hospital cardiac arrest process and outcomes with performance debriefing. Arch Intern Med 2008;168:1063-9.

4. Establishing a standard crash call telephone number in hospitals. Patient Safety Alert 02. London: National Patient Safety Agency; 2004.

5. Time to Intervene? A review of patients who underwent cardiopulmonary resuscitation as a result of an in-hospital cardiorespiratory arrest. A report by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD). 2012. http://www.ncepod.org.uk

6. Establishing a standard "Cardiac Arrest Call" telephone number for all hospitals in Europe – 2222. Whitaker DK DOI: http://dx.doi.org/10.1016/j.resuscitation.2016.05.011

7. Implementing a standard internal telephone number 2222 for cardiac arrest calls in all hospitals in Europe. Whitaker DK, Nolan JP, Castrén M, Abela C, Goldik Z. Resuscitation. 2017 Jun;115:A14-A15

7 Resuscitation of children and the newborn

Standards

1. Most paediatric cardiac arrests are secondary events. Thererefore, specific paediatric early warning scoring systems with a 'Track and Trigger' should be used to prevent cardiac arrest.

2. Timely review by appropriately trained clinicians in response to clinical triggers or other indicators reduces mortality in children. It is recommended that a formal provision be made to provide this reponse. This may be realised by members of an outreach service, rapid response team or similar service. The nature of this team will vary according to local need and resources and should be determined locally.

3. When attempting the resuscitation of a child in cardiorespiratory arrest, as a minimum the team leader must be someone with expertise and training in the resuscitation of children and the newborn. Special knowledge of the equipment, techniques and doses of drugs required for children and the newborn, together with an understanding of the differences in causes and treatment of cardiorespiratory arrest, are essential.

4. Familiarity with their expected roles and experience in the resuscitation of children is recommended for all team members.

5. Ideally, organisations should have a separate paediatric resuscitation team. At least one member of a resuscitation team that may be expected to resuscitate children must have completed a national paediatric resuscitation course (EPALS) successfully. In addition, all staff with regular involvement in paediatric resuscitation must be encouraged to attend national paediatric resuscitation courses (e.g. EPALS, NLS).

6. When resuscitating a child, particular consideration must be given to allowing the presence of relatives during the resuscitation attempt. An experienced member of staff who can explain what is going on should be delegated to stay with them and liaise with the team on their behalf.

7. The use of paediatric resuscitation charts and drug dosing aides is essential. In circumstances where the weight is not known (such as in the emergency department) a method of calculating drug dosages from length or age is useful.

8. Where appropriate, a separate DNACPR form and/or Emergency Healthcare Plan (EHP) is recommended for children.

9. The British Association of Perinatal Medicine (www.bapm.org) provides standards for hospitals providing neonatal care.

Supporting information

1. Maconochie IK; Bingham R, Eich C, López-Herce J, Rodríguez-Nú˜nez A, Rajka T, Van de Voorde P, Zideman DA, Biarent D; European Resuscitation Council Guidelines for Resuscitation 2015Section 6. Paediatric life support. Resuscitation. 2015 Oct;95, p. 233-248.

2. Bradman K, Maconochie I. Can paediatric early warning score be used as a triage tool in paediatric accident and emergency? Eur J Emerg Med. 2008;15:359-60

3. British Association of Perinatal Medicine. Service Standards for Hospitals Providing Neonatal Care. Third Edition. August 2010. http://www.bapm.org/publications/documents/guidelines/BAPM_Standards_Final_Aug2010.pdf

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6. Intercollegiate Committee for Standards for Children and Young People in Emergency Care Settings. Standards for Children and Young People in Emergency Care Settings. 2012. http://www.rcpch.ac.uk/emergencycare

7. Paediatric Early Warning Scores – National Institute for Innovation and Improvement: http://www.institute.nhs.uk/safer_care/paediatric_safer_care/pews.html

8. Parshuram CS, Duncan HP, Joffe AR et al. Multicentre validation of the bedside paediatric early warning system score: a severity of illness score to detect evolving critical illness in hospitalised children. Crit Care 2011;15:R184

9. Wyllie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B; European Resuscitation Council Guidelines for Resuscitation 2015 Section 7. Resuscitation and support of transition of babies at birth. Resuscitation. 2015 Oct;95, p. 249-263.

10. The Royal College of Paediatrics and Child Health. Withholding and Withdrawing Life Sustaining Treatment in Children: A Framework for Practice, 2nd edn. London: RCPCH, 2004:

11. Tibballs J, Kinney S. Reduction of hospital mortality and of preventable cardiac arrest and death on introduction of a pediatric medical emergency team.Pediatr Crit Care Med 2009;10:306–12.

12. Maconochie IK, de Caen AR, Aickin R, Atkins DL, Biarent D, Guerguerian AM, Kleinman ME, Kloeck DA, Meaney PA, Nadkarni VM, Ng KC, Nuthall G, Reis AG, Shimizu N, Tibballs J, Pintos RV; Part 6: Pediatric basic life support and pediatric advanced life support. 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 95 (2015) e147–e168

Supporting tools

1. Paediatric Early Warning Scoring (PEWS) charts are available for download at: http://www.institute.nhs.uk/safer_care/paediatric_safer_care/pews_charts.html

2. Paediatric resuscitation in Raising the Standard: A compendium of audit recipes for continuous quality improvement in anaesthesia.
http://www.rcoa.ac.uk/news-and-bulletin/rcoa-news-and-statements/the-audit-recipe-book-3rd-edition-2012

8 Resuscitation in special circumstances

Standards

1. Organisations must have policies and procedures in place for resuscitation in special circumstances (e.g. trauma, obstetrics, patients with tracheostomies).

Supporting information

1. Maternal Collapse in Pregnancy and the Puerperium (Green-top 56). Royal College of Obstetricians and Gynaecologists. 2011.

2. National Tracheostomy Safety Project – http://www.tracheostomy.org.uk

3. Regional Networks for Major Trauma NHS Clinical Advisory Groups Report. September 2010

4.

5. Truhlǎˇr A, Deakin CD, Soar J, Khalifa GEA, Alfonzo A, Bierens JJLM, Brattebø G, Brugger H, Dunning J, Hunyadi-Antiˇceviˊc S, Koster RW, Lockey DJ, Lott C, Paal P, Perkins GD, Sandroni C, Thies KC, Zideman DA, Nolan JP; European Resuscitation Council Guidelines for Resuscitation 2015. Section 4. Cardiac arrest in special circumstances. Resuscitation. 2015 Oct;95, p. 148-201

9 Patient transfer

After successful resuscitation, patients may need transfer to another part of the hospital (e.g. cardiac/coronary care unit, intensive care unit, catheter laboratory, operating room) or to another hospital.

Standards

1. Standards for patient transfer must be based on guidance from relevant local or European scientific organizations.

Supporting information

1. Association of Anaesthetists of Great Britain and Ireland (AABBI) Safety Guideline – Interhospital Transfer. 2009. http://www.aagbi.org/

2. Intensive Care Society. Guidelines for the transport of the critically ill adult (3rd Edition 2011). http://www.ics.ac.uk/

3. Paediatric Intensive Care Society. Standards for the care of critically ill children. 4th Edition, version 2. June 2010. http://www.ukpics.org.uk/documents/PICS_standards.pdf

10 Post-cardiac-arrest care

Standards

1. It is recommended that hospitals use a local protocol for post-cardiac-arrest care that includes the use of targeted temperature control. This should be based on current guidelines.

2. Guidance on the post-cardiac-arrest care of children and babies can be found in the European Paediatric Life Support / Advanced Paediatric Life Support and Newborn Life Support manuals.

3. Patients may require transport to other units/hospitals. See Section 9 for Patient Transfer standards

Supporting information

1. Advanced Life Support Group, Advanced Paediatric Life Support, 6th Edition, 2016, Wiley-Blackwell.

2. Maconochie IK; Bingham R, Eich C, López-Herce J, Rodríguez-Nú~nez A, Rajka T, Van de Voorde P, Zideman DA, Biarent D; European Resuscitation Council Guidelines for Resuscitation 2015Section 6. Paediatric life support. Resuscitation. 2015 Oct;95, p. 233-248.

3. Maconochie IK, de Caen AR, Aickin R, Atkins DL, Biarent D, Guerguerian AM, Kleinman ME, Kloeck DA, Meaney PA, Nadkarni VM, Ng KC, Nuthall G, Reis AG, Shimizu N, Tibballs J, Pintos RV; Part 6: Pediatric basic life support and pediatric advanced life support. 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 95 (2015) e147–e168

4. Soar J, Callaway CW, Aibiki M, Böttiger BW, Brooks SC, Deakin CD, Donnino MW, Drajer S, Kloeck W, Morley PT, Morrison LJ, Neumar RW, Nicholson TC, Nolan JP, Okada K, O'Neil BJ, Paiva EF, Parr MJ, Wang TL, Witt J; Part 4: Advanced life support. 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation 95 (2015) e71–e120

5. Soar J, Nolan JP, Böttiger BW, Perkins GD, Lott C, Carli P, Pellis T, Sandroni C, Skrifvars MB, Smith GB, Sunde K, Deakin CD; European Resuscitation Council Guidelines for Resuscitation 2010 Section 3. Adult advanced life support. Resuscitation. 2015 Oct;95, p. 100-147.

6. Resuscitation Council (UK). European Paediatric Life Support. Third Edition, 2011.

7. Wyllie J, Bruinenberg J, Roehr CC, Rüdiger M, Trevisanuto D, Urlesberger B; European Resuscitation Council Guidelines for Resuscitation 2015 Section 7. Resuscitation and support of transition of babies at birth. Resuscitation. 2015 Oct;95, p. 249-263.

8. Wyllie J, Perlman JM, Kattwinkel J, Wyckoff MH, Aziz K, Guinsburg R, Kim HS, Liley HG, Mildenhall L, Simon WM, Szyld E, Tamura M, Velaphi S; Part 7: Neonatal resuscitation. 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with TreatmentRecommendations. Resuscitation 95 (2015) e169–e201

11 Resuscitation equipment

Standards

Equipment lists for specific healthcare settings are contained in the separate document section:

Minimum equipment and drug lists for cardiopulmonary resuscitation

Supporting tools

1. Resuscitation equipment checks in Raising the Standard: A compendium of audit recipes for continuous quality improvement in anaesthesia.
    http://www.rcoa.ac.uk/news-and-bulletin/rcoa-news-and-statements/the-audit-recipe-book-3rd-edition-2012

12 Decisions relating to cardiopulmonary resuscitation

Standards

1. Healthcare professionals must be familiar with and follow published guidance from the ERC or from their National Resuscitation Council.

2. Healthcare professionals must be familiar with and must comply with their country legislation related to decisions about CPR. There are some differences in the law among countries. Healthcare provider organisations must ensure that their staff receive appropriate information and training regarding these laws.

3. Healthcare professionals involved in making decisions about CPR must have received appropriate training and competency in so doing, and similarly those who undertake the sensitive discussions with patients and those close to patients must have appropriate training and competency in so doing. Healthcare provider organisations must ensure that they have sufficient staff trained and competent in performing these functions, and that staff have adequate time and facilities to perform them properly.

4. It is recommended that decisions about CPR are recorded on a form that is easily recognised and has a standard content and format, to allow healthcare professionals to recognise it and assess its content and validity immediately.

5. Healthcare organisations must have policies about CPR decisions and documents that are recognised by the other organisations so that decisions about CPR continue across organisational and geographic boundaries when patients are transferred from one setting to another. In particular this should include the ambulance service, so that these decisions are respected during transfer.

6. Healthcare organisations must ensure that healthcare staff have access to appropriate stationery or electronic media for recording, accessing and reviewing decisions about CPR.

7. Healthcare organisations must ensure that patients and those close to patients have ample opportunities to discuss resuscitation and decisions about CPR should they wish to, but that such discussions are not forced upon those who do not want them. Written information about resuscitation decisions, or information in other media (e.g. DVD or "podcast") should be made readily available for patients and those close to them, but should not be used as an attempted substitute for sensitive, face-to-face discussion with a suitably trained and competent healthcare professional.

Supporting information

1. Do not attempt resuscitation (DNAR) decisions in the perioperative period, Association of Anaesthetists of Great Britain and Ireland, May 2009.
http://www.aagbi.org/sites/default/files/dnar_09_0.pdf

2. Bossaert LL, Perkins GD, Askitopoulou H, Raffay VI, Greif R, Haywood KL, Mentzelopoulos SD, Nolan JP, Van de Voorde P, Xanthos TT; European Resuscitation Council Guidelines for Resuscitation 2015Section 11. The ethics of resuscitation and end-of-life decisions. Resuscitation 95 (2015) 302–311

13 Audit and reporting

Standards

1. It is recommended that every CPR attempt is reported through the organisation's patient safety incident reporting system. This information must be reported to the organisation's Board on a regular basis.

2. All CPR attempts must be reviewed. When appropriate, a root cause analysis must be undertaken and the action plan implemented. (A suggested guide for reviewing cardiac arrests is available in the appendix).

3. Organisations must review local audit data regularly against published standards. Where audit identifies deficiencies or unexpected poor performance, a review at a senior organisational level must be undertaken. The Resuscitation Committee must receive appropriate support to achieve this.

Supporting information

1. National Cardiac Arrest Audit – http://www.resus.org.uk/pages/ncaa.htm

2. NHS Executive. Health Services Circular 2000/028 – Resuscitation Policy http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publicationsand statistics/Lettersandcirculars/Healthservicecirculars/DH_4004244

3. Raising the Standard: A compendium of audit recipes for continuous quality improvement in anaesthesia.
    http://www.rcoa.ac.uk/news-and-bulletin/rcoa-news-and-statements/the-audit-recipe-book-3rd-edition-2012

4. Time to Intervene? A review of patients who underwent cardiopulmonary resuscitation as a result of an in-hospital cardiorespiratory arrest. A report by the National Confidential Enquiry into Patient Outcome and Death (NCEPOD). 2012. http://www.ncepod.org.uk

Supporting tools

Example guide* to reviewing cardiac arrests:

Answer the following questions:

1. Was there a clearly documented physiological monitoring plan stating type and frequency of observations in the 24 hours preceding the arrest and were these undertaken as per request?

2. What were the patient's Early Warning Scores in the 12 hours preceding the arrest?

3. If the patient's scores at any time in that 12 hour period were elevated to 'trigger level', as per the local escalation policy, was the correct escalation undertaken?

4. Were there other reasons for escalating care (e.g. symptoms [chest pain], signs [clammy], laboratory results, or staff or patient/relative concern)?

5. If there were other reasons for escalating care was the correct escalation undertaken?

6. Did the patient receive appropriate assessment and/or treatment in response to a clearly identified reason for escalation?

7. If the patient received treatment, did his/her condition improve in response to that treatment?

8. If the patient did not improve, was the patient escalated to a more senior level in a timely manner?

9. Did the patient have documented and discussed ceilings of care, including resuscitation status?

10. Has the review identified any other deficiencies (e.g. missing equipment or drugs, equipment failures, problems with team performance or communication)?

If the answer to any of the above questions raises concern, proceed to root cause analysis and action plan.

*   *Modified from original checklist developed by Kate Beaumont, Nursing Director, The Learning Clinic*

14 Research

Standards

1. Research must be conducted in accordance with the National Research Framework. Research involving human participants, their organs, tissue or data require approval from a Research Ethics Committee.

2. Research involving patients who lack capacity must also comply with relevant legislation.

3. The organisation's Resuscitation Committee can be a valuable source of advice for those contemplating undertaking clinical research in resuscitation.

Supporting information

1. Bossaert LL, Perkins GD, Askitopoulou H, Raffay VI, Greif R, Haywood KL, Mentzelopoulos SD, Nolan JP, Van de Voorde P, Xanthos TT; European Resuscitation Council Guidelines for Resuscitation 2015Section 11. The ethics of resuscitation and end-of-life decisions. Resuscitation 95 (2015) 302–311

2. National Research Ethics Service
http://www.nres.nhs.uk/EasysiteWeb/getresource.axd?AssetID=355&type=full&servicetype=Attachment

3. National Research Ethics Service Does my project require review by a Research Ethics Committee?
http://www.nres.nhs.uk/EasySiteWeb/GatewayLink.aspx?alId=134016

4. NHS Constitution 2010
http://www.nhs.uk/choiceintheNHS/Rightsandpledges/NHSConstitution/Documents/nhs-constitution-interactive-version-march-2010.pdf

12 APPENDIX

Suggested measures to assess adherence to standards

The numbers listed in the first column correspond to the standards referred to in the corresponding chapter of this document.

Aspect of cardiopulmonary resuscitation in acute care	Example measures
Resuscitation Committee standard	
1, 2, 3, 4, 5, 6, 7	Check list and Terms of reference
8, 9	Resuscitation Policy and minutes of meetings
10	Training Policy
11	Minutes of meetings
12	Terms of reference, Annual report
13	Audit of accounts
Resuscitation Officers standard	
1	Staffing records
2, 3, 4	RO job description or person specification
5	Evidence from RO appraisal
6, 7	Inspection
8, 10	Accounts
9	Evidence of equipment checklists, action plans and Equipment policy
10	Audit reports
11, 12, 13,	RO appraisal
Training of staff standard	
1, 2	Resuscitation Policy, Induction programme; training records; training matrix
3	Course content, lesson plans
4, 5, 6, 7, 8, 9, 10, 11, 12	Training records, course content, lesson plans, competency documents, audit of individual cardiac arrests

13,	Staff training records
Prevention of cardiorespiratory arrest standard	
1, 2, 3	Copy of policy
4, 5, 6	Copy of policy, patient observation chart and escalation plan
7	Review of training materials, and clinical practice
8, 9	Copy of policy, audit of individual cases
The resuscitation team standard	
1, 3, 5, 6, 7, 8, 9, 10, 12, 13	Copy of policy, minutes of meetings, audit of individual cardiac arrests
2, 4	Copy of policy, training records, review of team certificates, assessment of team competencies, audit of individual cardiac arrests
11	Copy of policy, and switchboard records
16	Documentation and audit reports
Resuscitation of children standard	
1, 2	Copy of policy, audit of individual cardiac arrests
3, 4, 5	Policy, and training records, review of team certificates, assessment of team competencies, audit of individual cardiac arrests
6	Copy of policy, audit of individual cardiac arrests
7, 8, 9	Copy of policy, forms, implementation
Resuscitation in special circumstances standard	
1	Policy
Patient transfer standard	Policy
1	Policy
Post cardiac arrest care standard	
1, 2, 3	Policy, Care Pathway, Care Bundles for use on critical care units

Decisions relating to cardiopulmonary resuscitation standard	
1, 2, 3, 4, 5, 6, 7	Policy, audit of adherence to policy
Audit and reporting standard	
1	Policy, minutes of Board meetings, audit
2, 4	Documentation
3	Registration with NCAA, and NCAA reports
5	Minutes of meetings
Research standards	
1, 2, 3	Policy; Ethics Committee minutes and records