Resuscitation Council UK

Systems saving lives Guidelines

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References

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The Chain of Survival

- The Chain of Survival is a concept that summarises the complex Systems Saving Lives approach. It is intended for everyone involved in resuscitation care, including laypersons, healthcare professionals, educators, and

stakeholders. The concept can be used for a variety of purposes, ranging from raising awareness to inclusion in educational materials.
- For simplicity and consistency, the four-link format is used by Resuscitation Council UK.
- For specific situations or target audiences, a multifaceted chain system (i.e. the basic Chain of Survival plus additional elements) may be applied.

The Formula of Survival

- The Formula of Survival depicts the overarching system behind a successful Chain of Survival and its underlying factors. It can be used to highlight the complex interaction of science, education and implementation to achieve optimal outcomes.
- The three interactive factors are: Science (referring to the continuous evaluation of evidence by the International Liaison Committee on Resuscitation [ILCOR] and the development of evidence-informed guidelines by the European Resuscitation Council); Education (referring to resuscitation training for those who may potentially, or actually take care of cardiac arrest patients, training that must be effective and up to date); and Implementation (referring to a well-functioning Chain of Survival at national, regional and local levels, potentially adapted to various resource settings).

Advocacy

- Multi-national collaborative bodies, national governments, local authorities, and relevant charities should advocate for policies that increase survival rates and improve the quality of life for cardiac arrest patients through the following actions:
    - Promotion of comprehensive policies/legislation: advocate for policies that increase survival rates, reduce inequalities, and enhance the quality of life for those affected by cardiac arrest.
    - Public awareness campaigns: increase public awareness through initiatives such as ‘World Restart a Heart’ and ‘Get Trained, Save Lives’.
    - Mandatory CPR training: Implement mandatory CPR training for children, students (e.g. Restart a Heart), and drivers.
    - Enhanced workplace preparedness: strengthen policies for workplace preparedness (e.g. Resus Ready).

    - Stakeholder engagement: collaborate with stakeholders to support cardiovascular health, and harmonise CPR policies.
    - CPR training at major sporting and large-scale events: offer free short CPR training sessions at major sporting events and other large-scale gatherings to raise awareness and increase knowledge among attendees.

Awareness campaigns and initiatives to promote CPR

- Community initiatives to promote the implementation of CPR should be endorsed and supported.
- Multi-national collaborative bodies, national governments, local authorities, and relevant charities should actively participate in World Restart a Heart (WRAH) to raise awareness of bystander CPR and the use of AEDs, train as many citizens as possible, and develop new and innovative systems and policies.

Young people learning CPR

- All school-aged children should receive CPR training every year.
- CPR education should start at an early age (around four years of age), progressing to comprehensive training that includes chest compressions by ages 10–12, ventilation by age 14, and AED usage by ages 13–16.
- Children who have been trained should be encouraged to educate family members and friends, aiming to teach at least ten others within two weeks. Take-home CPR training kits should be distributed to maximise the multiplier effect.
- CPR training should also be extended to higher education, particularly for healthcare and teaching students.
- Technology-enhanced learning (e.g. extended reality (XR), serious games, smartphone apps) should be incorporated to engage schoolchildren effectively and supplement traditional training methods.
- Ministries of education and policymakers should mandate BLS education in schools by law, supported by legislation, funding, and public awareness campaigns in every country.

Resuscitation in low-resource settings

- Experts from all resource settings are encouraged to investigate and report on populations, aetiologies, and outcomes of resuscitation, following established reporting standards such as the Utstein reporting template.
- Experts from all resource settings should be consulted regarding cultural differences and the regional and local acceptability, applicability, and implementation of guidelines and recommendations.
- All reports and research on resuscitation should include a brief section on the respective resource context, for example, the income classification setting.
- In situations where standard guidelines are not applicable, specific recommendations may be developed for low-resource settings (such as areas with limited funding, offshore environments or remote areas) concerning essential equipment, education, and procedures for managing cardiac arrest both during and after the event.

Social media

- Social media (SoMe) platforms could be used as research tools for data collection, analysis, education, awareness campaigns, communication, and information sharing on sudden cardiac arrest.
- SoMe platforms should be leveraged to support public awareness campaigns, disseminate knowledge on CPR for any age group, and foster community participation.
- SoMe platforms should be incorporated into CPR training programmes. Educational and healthcare institutions are encouraged to use concise, engaging videos, and interactive materials to reinforce learning and retention.
- Real-time engagement and feedback should be encouraged. Live question-and-answer sessions, interactive posts, and gamified learning should be used to increase engagement and knowledge retention in CPR training.
- The validation of SoMe content by experts should be promoted. Institutions are encouraged to ensure that educational materials shared on social media align with international CPR guidelines to prevent the spread of misinformation.
- SoMe-driven initiatives should be monitored and evaluated. Further research is needed to determine their impact on CPR training efficacy, bystander CPR

rates, and patient survival outcomes.

First responders

- Every healthcare system should implement a first responder programme.
- Registered first responders who are near a suspected OHCA should be notified by an ambulance service dispatch centre and dispatched to both public locations and private residences, in order to reduce the time to first chest compression and shock delivery, and to improve survival rates with favourable neurological outcomes.
- Systems that dispatch first responders should be linked to AED registries (i.e. The Circuit) and should prioritise both the physical safety and psychological support of first responders.
- App-based technologies, such as the GoodSAM platform, can facilitate the rapid identification and activation of nearby trained responders and AEDs, supporting earlier intervention and improved outcomes in OHCA.
- Cardiac arrest events should be reported to the Out-of-hospital Cardiac Arrest Outcomes (OHCAO) Registry in a standardised manner to monitor system performance and support continuous quality improvement.

Emergency Service response to cardiac arrest

- Ambulance services should use standardised algorithms or criteria to identify cardiac arrest promptly.
- Ambulance services should teach, monitor, and improve OHCA recognition in dispatch centres.
- Ambulance services should implement and evaluate dispatcher-assisted public-access AED systems, including linkage to AED registries.
- The use of locked or inaccessible AED cabinets is discouraged.
- All emergency service resources responding to OHCA should be equipped with a defibrillator.
- Ambulance services should organise prehospital critical care teams for adult and paediatric OHCA.
- Ambulance services should monitor and address low resuscitation exposure among personnel to ensure teams include members with recent experience and implement proper training to overcome low exposure.

- Ambulance service systems treating OHCA should implement system improvement strategies to enhance patient outcomes, as well as Termination of Resuscitation (TOR) rules to determine whether to stop resuscitation or continue during transport.
- Emergency medical dispatch centres should implement systems allowing call handlers to deliver CPR instructions for cardiac arrest patients.

In-hospital cardiac arrest management

- Hospitals should consider introducing a rapid response system (RRS).
- Hospitals should use system improvement strategies to enhance patient outcomes and contribute data to the National Cardiac Arrest Audit (NCAA).
- Hospitals should implement protocols for managing family presence during CPR and provide respective education for healthcare teams.
- Hospitals are encouraged to use the “Ten Steps Toward Improving In-Hospital Cardiac Arrest Quality of Care and Outcomes” framework to guide structured, system-wide improvements in resuscitation quality, outcomes, and team wellbeing.

Cardiac arrest centres (CAC)

- Adult patients with non-traumatic OHCA should be cared for at a CAC whenever possible and where such pathways exist.
- Healthcare systems should establish local protocols to develop and maintain a cardiac arrest network.

System performance improvement

- Organisations or communities that treat cardiac arrest should implement system improvement strategies to enhance patient outcomes.

Survivorship and co-survivorship

- Healthcare systems should create and implement policies for the care of cardiac arrest survivors and their co-survivors (i.e. those also impacted by the event) from pre-discharge to long-term follow-up. These policies should adopt a multidisciplinary approach, responsive to the needs of both survivors and co-survivors. Healthcare professionals should receive adequate training to support both the identification of needs and the provision of appropriate care.
- Multi-national collaborative bodies, national governments, local authorities, and relevant charities should support cardiac arrest survivor organisations, strengthening ties with healthcare systems, survivors, and co-survivors.
- Engaging in partnerships with organisations that have broader missions, such as cardiovascular healthcare organisations, can help address the diverse needs of survivors and co-survivors and optimise resource utilisation.
- Healthcare systems should actively engage cardiac arrest survivors, co-survivors, and the public as partners in policy development and research to reduce inequalities and enhance the quality, relevance, and integrity of outcomes.

New technologies and artificial intelligence

- Artificial intelligence (AI) and digital health technologies show potential to improve cardiac arrest outcomes but are not yet ready for routine clinical use, and their application should be limited to research or controlled settings.

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