Modern clinical guidelines are developed from structured evidence reviews, with the aim of guiding clinical decision making. In an exhaustive and meticulous process, the International Liaison Committee on Resuscitation (ILCOR) considered 277 specific questions related to resuscitation, to arrive at a “state-of-the-art” international consensus statement on resuscitation science. It is from these recommendations that the new iteration of the American Heart Association (AHA) resuscitation guidelines have been developed. So, what’s new?

Compressions

The single biggest change has been the recommendation to provide chest compressions before ventilations, a shift from the time-honoured A-B-C (airway, breathing, chest compressions) to C-A-B (chest compressions, airway and breathing). The greatest chance for recovery from a collapse following ventricular fibrillation or pulseless ventricular tachycardia is in those patients who receive high-quality CPR and early defibrillation. The C-A-B sequence is an attempt to refocus CPR away from ventilation, where time is often wasted, and onto the vital role of compression delivery. To further reduce the time delay to the initiation of compressions, the “look, listen and feel for breathing” step has also been removed.

High-quality compressions should be delivered:

- At a rate of at least 100/minute;
- To a depth of at least 5 cm in adults and children and 4 cm in infants;
- Allowing complete chest recoil;
- With a minimum of interruptions; and
- Avoiding excessive ventilation avoided.

Thirty compressions should be provided, followed by two breaths. For single, untrained bystanders, compression-only CPR should be performed, and they should be encouraged to push hard and fast. With this simplification, it is hoped that more bystanders will provide CPR. Where possible, a team approach should be taken to minimise interruptions and improve CPR efficiency. Defibrillation should be performed as soon as possible for patients with shockable collapse rhythms, i.e. pulseless ventricular tachycardia or ventricular fibrillation.

Capnography

Capnography should now be seen as an integral tool in resuscitation. It allows the confirmation of successful intubation and the monitoring of tube position, enables ventilation titration, and may assist in the identification of ineffective chest compression and the return of spontaneous circulation. In short, capnography enables individual-specific resuscitation to take place.

Drugs

Adrenaline, vasopressin and amiodarone have been retained as resuscitation drugs, but atropine has been removed from the PEA/asystole algorithm, although it still plays a vital role in the management of vagally mediated bradycardias. Chronotropic drug infusion is now recommended as an alternative to pacing for the treatment of the adult with symptomatic and unstable bradycardia.

Post-cardiac arrest care

Probably the most exciting addition to the guidelines is post-cardiac arrest care, an integrated care package constructed around four key aspects:

1. Cardiopulmonary optimisation, where blood pressure > 65 mmHg, central venous saturation > 70% and the avoidance of hyperventilation are recommended as targets. An interesting recommendation is that the fraction of inspired oxygen should be titrated to achieve a saturation of 94% after the return of spontaneous circulation, as evidence shows that hyperoxia in the post-arrest period worsens neurological outcomes.

2. Neurological monitoring and support entails the avoidance of hyperglycaemia, as well as the monitoring for (by EEG) and treatment of seizures.
3. Postoperative hypothermia targets a core body temperature of 32–34°C for 12–24 hours with the avoidance of hyperthermia. An important point emphasised in the guidelines is that neurological prognostication within the first 24 hours is inaccurate and, if the patient is treated with post-arrest hypothermia, this time frame should be extended beyond 72 hours.

4. Finally, aggressive attempts should be made to identify and treat the cause of the arrest. These should include a 12-lead ECG with subsequent cardiac catheterisation, if indicated. This, then, represents the major recommendations and changes to adult CPR as reflected in the AHA guidelines, which were released at the same time as the European Resuscitation Council (ERC) guidelines.1 Despite being based on the same science, as reflected in the ILCOR consensus statement, there are significant differences between the AHA and ERC guidelines when it comes to paediatric BLS and ACLS.

The AHA guidelines have applied the C-A-B change to the paediatric guidelines while, at the same time, removing airway opening and rescue breaths from the first steps of the algorithm. The executive statement of the AHA guidelines regarding paediatric CPR states that “despite the importance of providing a combination of ventilations and chest compressions for resuscitation of victims from asphyxia arrest … a switch to a C-A-B was recommended for ease of teaching”. This decision was taken to provide a uniform CPR training message, which focuses on the central role of compressions and early defibrillation. They note that this sequence should result in, roughly, an 18-second delay before the initiation of ventilation, and less if a team resuscitation is taking place.

In contrast, the ERC guidelines recommend that the airway be opened, a “look, listen and feel for breathing” sequence be followed, and that it is “preferable to modify adult BLS and perform five initial breaths followed by one minute of CPR”.3 Thus, for the paediatric arrest patient, the ERC has essentially retained the A-B-C sequence of resuscitation, but may have delayed the onset of chest compression compared to previous algorithms.

So, how should we respond to these new guidelines?

Firstly, you should realise that these are only guidelines. Guidelines represent an interpretation of science, and interpretation depends on your paradigm. In a developed country, where paediatric cardiac-related arrest is increasing relative to respiratory-related arrests, it may be acceptable to nod the head to uniformity and teach C-A-B. In developing countries, where respiratory failure predominates, the question must be raised if these recommendations are in the paediatric patient’s best interest? Is it reasonable to sacrifice the more logical and clinically effective treatment method on the altar of teaching uniformity? Delivering a uniform message may increase the number of victims receiving bystander CPR but, as has been shown by Kitamura et al.,4 children who receive conventional bystander CPR show more favourable neurological outcomes than those who receive compression-only CPR.

Secondly, the conclusions and recommendations made by the ERC are based on the same science and hold equal validity. In fact, I would argue that the ERC CPR guidelines for paediatric arrest may be superior to those of the AHA in our South African context. We need to develop independent, broad-based and representative structures with a strong science background, from disciplines as diverse as cardiology, critical care, anaesthesiology, paediatrics, emergency medicine and nursing, which can provide us with a critical evaluation of the guidelines and consensus recommendations relevant to a South African context.

And, thirdly, guidelines are promulgated to update and guide clinical decision making. In our minds, though, they tend to morph into rigid structures that, in my experience, restrict critical thinking and enquiry. They represent that which has been done, but not that which may be. We should move beyond seeing resuscitation in terms of guideline implementation, and rather engage at the level of the science that drives and shapes these guidelines.

So, when next you perform CPR and you start to deliver either C-A-B or A-B-C, remember to push hard, to push fast, to defibrillate early, and to consider cooling; but spare a moment to see beyond the guidelines and think about why you are doing what you are doing.

Rodseth RN, MBChB, DA, DCH, FCA, MMed
Thomas LM, RN
Perioperative Research Unit, Department of Anaesthetics, Nelson R Mandela School of Medicine, University of KwaZulu-Natal and Department of Anaesthetics, Inkosi Albert Luthuli Central Hospital, Durban, South Africa
Emergency Care Education, International AHA Training Center
Correspondence to: Dr Reitze Rodseth, e-mail: ReitzeRodseth@gmail.com

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