

Advanced Cardiac Life Support (CPR) Online Course



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Management of cardiac arrest is a critical skill for all health professionals. Regular updates are essential for maintaining the knowledge and practical skills required for CPR. In the following modules, we draw upon the most recent Australian Resuscitation Council recommendations to review the approach to the patient with suspected cardiac arrest. For each topic an eTutorial is used to introduce the topic and provides a useful background to work through the clinical case scenario.

Learning Outcomes:

At the completion of the workshop the participants should be able to:

1. Discriminate the clinical features that indicate cardiac arrest
2. Prioritise the immediate management of the patient with cardiac arrest
3. Discriminate management of shockable and non-shockable arrest
4. Differentiate the reversible causes for cardiac arrest
5. Structure management of patient with return of spontaneous circulation (ROSC)
6. Prioritise the management of foreign body airway obstruction
7. Differentiate the management of the child with cardiac arrest

Summary of the e-Learning Program

The e-learning is interactive and requires the clinician to consider a range of the clinical problems and scenarios and provide a response. At the end of each topic a summative quiz is used to evaluate learning and understanding of the topic material. There are four topics, with a total course time of 8.5 hours.

The four topics are:

1. Basic Life Support
2. Advanced Cardiac Life Support
3. Airway: Foreign body Airway Obstruction
4. Paediatric CPR

Outline of the Program

Pre – course Quiz

1. Basic Life Support

Module Summary: Basic Life Support (BLS) is essential to successful Advanced Life Support (ALS)

Cardiac arrest results in generalised ischaemic hypoxic injury to body organs. The brain is the most sensitive body organ with loss of function occurring within 1 minute. In adults, cardiac arrhythmia associated with myocardial ischaemia is the most common cause for cardiac arrest. In contrast children are more likely to develop cardiac arrest as a result of hypoxia due to airway obstruction (eg. foreign body, drowning) or severe lung disease (eg. asthma).

Immediately after cardiac arrest the heart cells begin producing toxins that will rapidly poison the heart cell preventing resuscitation. Commencing immediate Basic CPR is critical to reducing the rate of cellular deterioration and maximises the likelihood that defibrillation will be successful and that patient recover from the cardiac arrest. The success of Advanced Life Support depends on early and effective Basic CPR.

In Adults Basic CPR is commenced with cardiac compressions. In children Basic CPR is commenced with 2 (rescue) breaths followed by compressions. In both adults and children compressions should be delivered at a rate of 100 - 120 / minute and with a ratio 30 compressions to 2 ventilations. With COVID19 the approach to resuscitation specific recommendations with respect to Basic CPR have been developed by the Australian Resuscitation Council and these are reviewed in the following Case Simulation.

Interaction/Assessment:

- Video Podcast (1) : Introduction to Basic Life Support
- Interactive Clinical Casebook: Principles of Basic Life Support (Formative assessment: 75 mins)
- Topic Quiz – Basic Life Support (Summative assessment: 30 mins)

2. Advanced Cardial Life Support

Module Summary: Arrest rhythms are divided into Shockable and Non-Shockable.

In the first interactive case we examine the management of *Shockable rhythms* (Ventricular fibrillation and Pulseless Ventricular tachycardia) and review the management of the patient with return of spontaneous circulation (ROSC). In the second interactive case we consider *Non-shockable rhythms* (Pulseless electrical activity (PEA) and Asystole) and consider the question of when to cease CPR.

With COVID19 the approach to resuscitation has been reviewed with the aim to reduce the risk of transmission of the virus during CPR. As discussed in the preceding module the modified approach to basic CPR in the patient who is **NOT** a confirmed case of COVIDS-19 and at **LOW** risk for COVID-19 is for the lay rescuer to avoid placing their face close to the patient (to check breathing) and to provide assisted ventilation only in the child and infant. For the health professional, defibrillation may delivered without PPE while standard PPE should be donned before commencing compressions and bag/mask ventilation.

Interaction/Assessment:

- Video Podcast (2) : Advacned Cardiac Life Support
- Interactive Clinical Casebook: Advanced Cardiac Life Support (ALS) 1 (Formative assessment: 75 mins)
- Interactive Clinical Casebook: Advanced Cardiac Life Support (ALS) 2 (Formative assessment: 75 mins)
- Topic Quiz – Advanced Life Support (Summative assessment: 30 mins)

3. Foreign Body Airway Obstruction

Module Summary: Foreign body airway obstruction is common. It may occur in adults (eg cafe coronary due to a food bolus) but is most often seen in the toddler where lollies, peanuts, toys are common causes.

Complete airway obstruction can lead to cardiac arrest in as little as 4 to 10 minutes and irreversible CNS damage within 3 to 5 minutes. Knowledge of the procedure for managing foreign body airway obstruction is an important and potentially life saving skill for all health professionals and is reviewed in this module.

Interaction/Assessment:

- Video Podcast (3) : Foreign Body Airway Obstruction
- Interactive Clinical Casebook: Foreign Body Airway Obstruction (Formative assessment: 75 mins)
- Topic Quiz – FB Airway Obstruction (Summative assessment: 30 mins)

4. Paediatric Arrest

Module Summary: Cardiorespiratory arrest in the child is most commonly the result of severe hypoxaemia or hypotension and may be caused by a wide variety of life-threatening conditions including trauma, drowning, upper airway obstruction, congenital heart disease and sepsis. Cardiac arrest results in generalised ischaemic hypoxic injury to body organs. Irreversible neuronal injury occurs after four minutes.

Cardiac arrest should be suspected in the child who is unresponsive to voice or touch (eyes closed, no verbal response, no movement) and who is not breathing or has gasping respirations. In a child the pulse may be checked but should not be allowed to delay initiating CPR. Cardiac compressions should be commenced in the child if no pulse can be identified within 10 secs or the pulse rate is < 60 beats/minute.

Interaction/Assessment:

- Interactive Clinical Casebook: Paediatric Cardiac Arrest (Formative assessment: 75 mins)
- Topic Quiz – The Child in Cardiac Arrest (Summative assessment: 30 mins)

5. Final Post Course Assessment Quiz

Final Course Quiz – Advanced Cardiac Life Support (CPR) (Summative assessment: 30 mins)