

Choking Child/ Basic life support/ Defibrillation and Rhythms and Automatic External Defibrillator (AED)

Key Teaching Objectives

Each candidate should receive practice in skills for management of the following:

1. Basic life support of an infant
2. Basic life support of a child
3. Recognition of cardiac arrest rhythms
4. The use of a defibrillator
 - Capabilities
 - Safety
 - Delivery of a DC shock
5. Choking infant/child with ineffective cough

Demonstration of use of AED and opportunity for questions.

With the Covid 19 situation expired air resuscitation will no longer be taught/practised. BVM ventilation will be substituted to ensure participant safety.

Equipment Required for 12 candidates (3 groups of 4)

Resusci babe x 3

Resusci junior x 3 (may need to use 2 BLS trunks)

Antibacterial wipes x 3

Candidate Face marks

ALSi units x 3

Syringes x 3

Laminated A3 copies of assessment sheet & algorithms

Environment

Use plenary room.

Divide the room into 3 stations. Arrange each station with one junior, one baby manikin and one ALSi etc.

One station will be used for demonstrating to all 12 candidates

Instructors should face students at all times during demonstrations.

Plan

One instructor is the primary facilitator for this practical session which is building on the content provided in the online learning.

The primary facilitator will lead the set, introduce the demonstrations to all 12 candidates (allocate other instructor to demonstrate choking child back blows & front thrusts and BLS), direct candidates to practice in 3 groups of 4 and close this section of practice after 25 -30 mins.

Remind the candidates of the availability of the supervised and unsupervised sessions available to them during the course.

Set

"During the next 25 mins we are going to practice; techniques for managing a choking child, basic life support on a collapsed infant, and child, whilst at the same time ensuring your own safety. We will also practice airway opening and use bag valve mask ventilation rather than expired air resuscitation.

Dialogue

This station is taught using a modification of the 4 part-technique described previously in the preface to Practical Procedures/workshops. Each demonstration is to all 12 candidates, however practice occurs in small groups of 4 with 2 instructors/group:

Choking

(40 second video clip from St John's Ambulance used on Jan 17 trial course)

https://www.youtube.com/watch?v=gtbUB1XPW_o

Assess conscious level and effectiveness of cough.

Choking in the conscious infant or child with an effective cough:

Encourage coughing and monitor child continuously.

Choking in the conscious infant or child with an ineffective cough:

Key Treatment Points

1. Call for help
2. 5 back blows
3. 5 chest thrusts
4. Assess child and examine mouth for foreign body, remove if visible
5. Continue with back blows and chest thrusts, reassessing and examining mouth until removal or unconsciousness

Allow candidates to practice back blows and chest thrusts using all available manikins

Choking in the unconscious infant or child:

Key Treatment Points

1. Call for help
2. Place child on a flat surface
3. Open airway and remove foreign body if visible
4. Attempt 2 resuscitation breaths (**BVM ventilation**)
5. Even if breaths unsuccessful, proceed to 15 chest compressions and 2 ventilations
6. Before each set of ventilations look to see if the FB can be seen in the mouth and remove it if visible
7. Continue cycle of CPR with FB assessment and removal before each set of ventilations

Stay focussed on skills practice and FINISH this section in 10 mins

Basic Life Support – demonstration to all 12 candidates (stages one/two)

1. Initial DRS approach:
 - Check for Dangers
 - Assess Responsiveness
 - Send for Help
2. Open Airway
3. Assess Breathing
4. Give 2 Breaths (**BVM ventilation**)
5. Determine need for Chest Compressions:
 - no normal breaths
 - no cough in response to resuscitation breaths
 - +/- no central pulse – take no more than 10 seconds
6. Start chest compressions (see note below)
 - hand position
 - depth and recoil
 - rate of 100-120 per minute
7. Ratio 15 compressions:2 ventilations, continuing CPR for 1 minute
8. Ensure Help is coming

Instructor Notes:

Candidates can practice concurrently on infant and child as 2 instructors : 4 candidates

Pulse check

Even experienced health professionals can find it difficult to be certain that the pulse is absent within 10 seconds. Therefore, the absence of responsiveness and apnoea or abnormal breathing are indications to start chest compressions.

Chest compressions

Ensure that candidates are clear about the technique for chest compressions – lower half of the sternum. Two fingers or thumbs for an infant and the heel of one or two hands for a child. The number of hands is the candidate's choice, but should be adequate to depress the chest by at least one third of its diameter. Ensure that each candidate has the opportunity to practise on an infant and child manikin. This is best achieved by dividing the group in two after step 3 of the 4 step teaching and each instructor taking the smaller group through step 4 with (their) manikin. The groups then swap around halfway through the allocated time.

Closure of small group practice for choking and BLS (~25 mins/60mins)

The instructors will ask if there are any questions and having answered them, close the session by having the class repeat the steps for basic life support.

Coaching/Assessment Technique

The candidate's performance should be assessed informally during the session. This is recorded on a mark sheet and reported back to the faculty meeting. Candidates will have ongoing coaching and practice during the Repeated skills practice session at the end of Day 1.

Session continues with Rhythms and Defibrillation Skill Station

Plan

One instructor is the primary facilitator for this practical session which is building on the content provided in the online learning.

The primary facilitator will lead the set, rhythm recognition and safe defibrillation demonstration to all 12 candidates (allocate other instructors to demonstrate safe defibrillation), direct candidates to practice in 3 groups of 4. Closure will occur in each small group after AED demonstration.

Remind the candidates of the availability of the supervised and unsupervised sessions available to them during the course.

Practice use of Realiti to maximise fidelity of practice

*Be positive and supportive throughout

Ensure accurate timing of the skills station - to ensure all candidates can practise safe defibrillation. Candidates are learning 'a drill' therefore repeated practise, in the same sequence, allows for consolidation of this skill.

Set

"Over the next 30 mins session we are going to teach and practise the safe use of a defibrillator and ask you to identify various cardiac arrest rhythms."

Dynamic Rhythm Recognition

Using the Realiti rhythm simulator, ask candidates to identify each of the cardiac arrest rhythms.

Defibrillation - Hands Free

This station is taught using a modification of the 4-part technique described previously in the Pocket Guide to Teaching for Clinical Instructors

Demonstration occurs to all 12 candidates, prior to candidates' practice in groups of 4.

The following techniques & sequence should be taught:

“Your colleagues are performing effective CPR on a 25 kg child who has an intravenous cannula. Please take appropriate action.”

1.	Apply electrode pads in correct position
2.	Selects energy required 100J (4 J/kg)
3.	Advises the plan for charging
4.	Remove free flowing oxygen, “compressions continue & everyone else clear” :
5.	Charge defibrillator. Once charged state “hands off” - rhythm check, diagnoses VF
6.	states “stand clear” loudly and ensures rescuers are clear
7.	Delivers shock and recommences CPR immediately
8.	Continues CPR for 2 minutes
9.	Advises plan for charging towards the end of the 2 min cycle
10.	Remove free flowing oxygen, “compressions continue & everyone else clear” :
11.	Charge defibrillator. Once charged state “hands off” - rhythm check
12.	States “stand clear” loudly and ensures rescuers are clear
13.	Delivers shock and recommences CPR immediately Assistant gives adrenaline 2.5ml of 1:10 000 (10 micrograms/kg after the second shock – this may be initiated by candidate or instructor in testing) (Instructor changes to sinus rhythm at rate of 110)
14.	Advises plan for charging towards the end of the 2 min cycle
15.	Remove free flowing oxygen, “compressions continue & everyone else clear”
16.	Charge defibrillator. Once charged state “hands off” - rhythm check
17.	Briefly pauses CPR to assess rhythm, (sinus rhythm)
18.	Disarm defibrillator and seek evidence for ROSC ROSC is indicated by presence of a central pulse and end-tidal CO ₂ - if available. This must take no longer than 10 seconds

While there are additional steps in the shockable rhythm protocol, this skill station focuses on defibrillation. Discussion should include giving amiodarone after the 3rd shock and doses of adrenaline every second loop.

Management of non-shockable rhythms is not demonstrated, but should be mentioned by the instructor. For example, “if after the rhythm check I observed a non-shockable rhythm I

would disarm the defibrillator, **seek evidence for ROSC, if none present, recommence CPR** immediately and follow the non-shockable arm of the protocol.”

Defibrillation - Manual

All APLS courses in Australia and New Zealand use hands-free defibrillators with pads. If using paddles instead of pads the differences are:

1. The paddles must be placed firmly on the chest over gel pads
2. The paddles should only be charged on the chest. No CPR should be performed while charging.
3. After delivery of the shock the paddles should be immediately returned to the defibrillator.

During this skill station correct pad selection, correct pad placement and the safety aspects of defibrillation should be emphasised

Correct Pad Selection

Standard adult automatic external defibrillators (AEDs) and pads are suitable for use in children older than 8 years. Ideally, for children between 1 and 8 years, paediatric pads with a paediatric capability should be used. Adult pads are acceptable if no paediatric pads are available

Correct Pad Placement

The usual placement is antero-lateral. One pad is put over the apex in the mid-axillary line, and the other is placed just to the right of the sternum, immediately below the clavicle.

If the anterior-posterior placement is used, one pad is placed just to the left side of the lower part of the sternum, and the other just below the tip of the left scapula.

Safety

A defibrillator delivers enough current to cause cardiac arrest. The user must ensure that other rescuers are not in physical contact with the patient (or the trolley) at the moment the shock is delivered. The defibrillator should only be charged when the paddles are in contact with the child and only discharged when in contact with the child or replaced properly in their storage position.

Basic Life Support

It is important to emphasise that basic life support must recommence immediately after defibrillation. Emphasise that chest compressions and ventilations only stop for defibrillation and chest compressions stop for the rhythm check as the rhythm cannot be seen clearly on the monitor when chest compressions are ongoing. If a drug is being given after a shock, chest compressions should be recommenced immediately after the shock and then the drug given.

Rhythm Check

Make it clear that there is no need to check the rhythm at any other time than indicated in the algorithm. If the rhythm at that check has changed to an apparently perfusing rhythm **then a check for ROSC is indicated by presence of a central pulse and (if available) end-tidal CO₂**– this must take no longer than 10 seconds. If there is ROSC then post-resuscitation care given. **If there is no evidence of ROSC (or a pulse below 60 beats per minute with poor perfusion) then use the PEA algorithm.** If there is apparent asystole, check the leads and if confirmed use the asystole algorithm. This is all to prevent the cessation of chest compressions during cardiac arrest.

Types of Defibrillation

Ensure that candidates are aware of the use of AEDs and their limitations in children. An adult AED can be used for a child over 8 years but for a child between 1 and 8 years paediatric attenuation pads or leads should be used. For infants of less than one year, a manual defibrillator which can be adjusted to give the correct shock is recommended. However, if an AED is the only defibrillator available, its use should be considered, preferably with paediatric attenuation pads. The order preference for defibrillation in infants less than one year is as follows:

1. Manual defibrillator
2. AED with dose attenuator
3. AED without dose attenuator

Many AEDs can detect VF/VT in children of all ages and differentiate “shockable” from “non-shockable” rhythms with a high degree of sensitivity and specificity.

Check that candidates are aware that bi-phasic defibrillators use the same doses as the older mono-phasic ones.

Advise candidates to familiarise themselves with the defibrillator in use at their own institution on their return to their place of work.

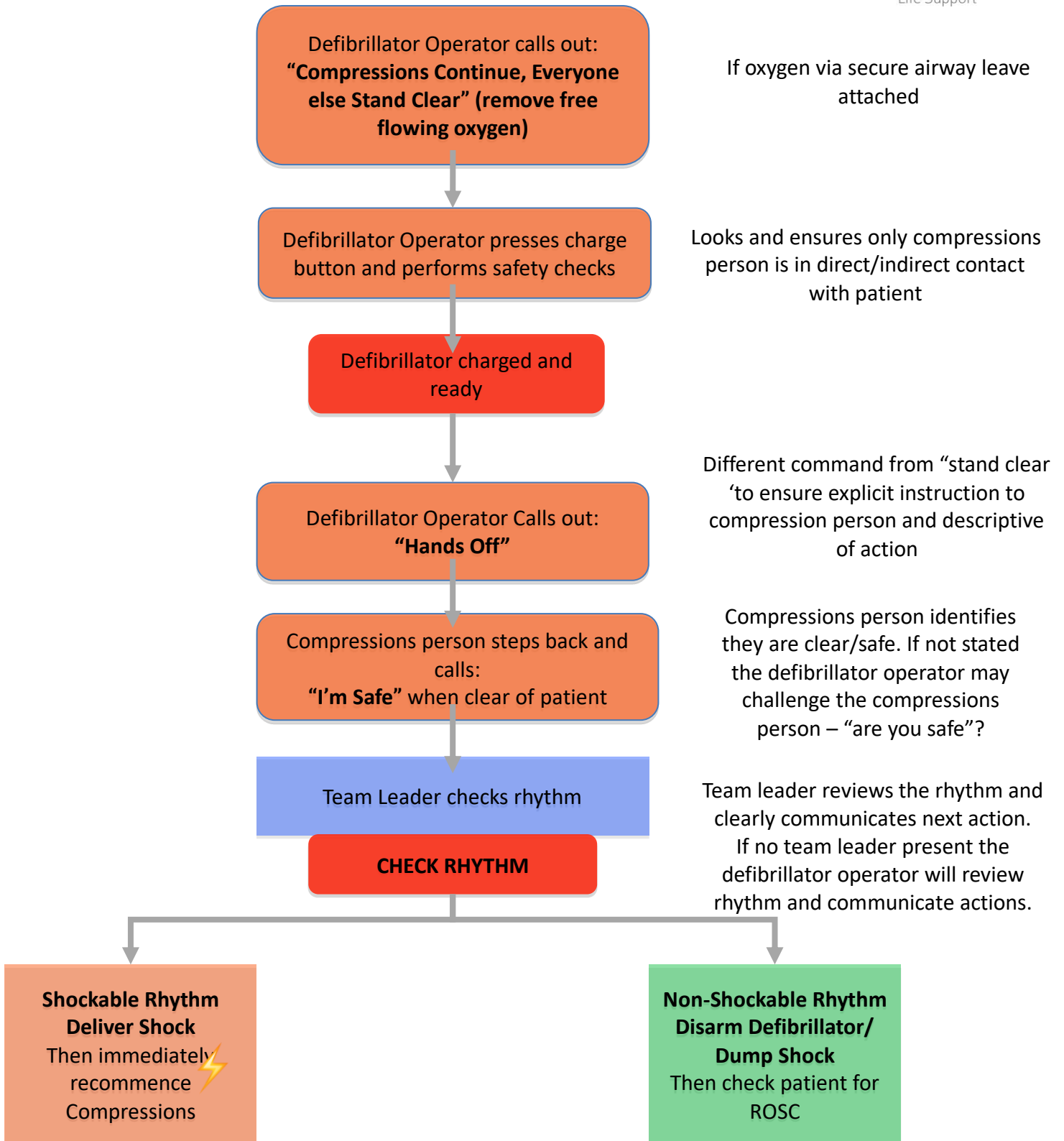
Closure for manual defibrillation.

It is vital to allow time for questions. Important concerns may be addressed at this time. The session can be closed by having the candidates repeat the sequence used for defibrillation.

Cardiac scenarios in the afternoon will give more opportunity for hands on practice.

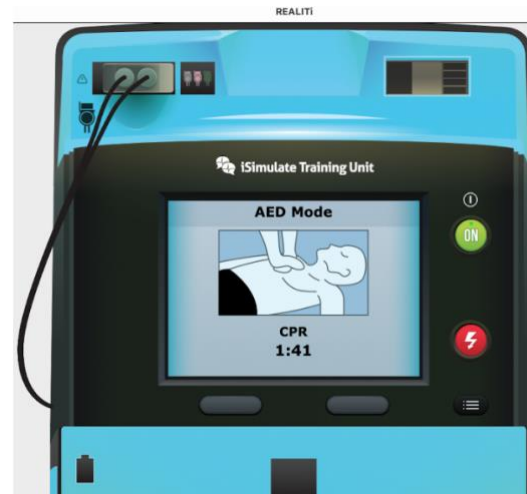
Coaching/Assessment Technique

The candidate's performance should be assessed informally during the session. This is recorded on a mark sheet and reported back to the faculty meeting. Candidates will have ongoing coaching and practice during the Repeated skills practice session at the end of Day 1.



AED use demonstration

Realiti switched to AED mode by (adjusting system mode) using 'Defibrillation teaching – monitor selection'. Note the Blue AED (pictured) is the only functional module licensed to APLS.



One instructor performing BLS, they have called for help and help arrives with an AED

Instructions from AED are followed

Step 1 – Turn on

Step 2 - "put on pads" (touch monitor ipad when this has been done)

Candidates encouraged to be familiar with AED in their clinical area (some AEDs will shock without needing assistant to push button)

Note time AED advises - 'hands off chest'

Closure for Choking/BLS/Defibrillation and AED

Candidates should have the opportunity to formally ask questions.

Recap session objective of practice in the skills for applying a structure to: managing choking, performing BLS and safe use of a manual defibrillator

Cardiac scenarios and the Repeated Skills Practice in in the afternoon will give more opportunity for hands on practice and coaching.