

INTRODUCTION

Basic life support refers to maintaining airway patency, and supporting breathing and circulation without the use of equipment other than a protective device, usually a facemask or shield. In the pre-hospital environment BLS includes the use of a bag-mask and Guedal airway.

BLS is undertaken as a prelude to defibrillation, often with an automated external defibrillator (AED).

ADULT BASIC LIFE SUPPORT SEQUENCE (see Appendix 1)

This sequence is for a single ambulance clinician, however, when more than one clinician is present, tasks can be shared and undertaken simultaneously.

1. Safety

Ensure that you, the patient and any bystanders are safe.

2. Check Responsiveness

Gently shake the patient by the shoulders and ask loudly: **"Are you alright?"**

a. The responsive patient:

- take history and make assessment of what is wrong, with further action determined accordingly.

b. The unresponsive patient:

- obtain help if appropriate
- turn the patient onto his back and then open the airway using head tilt and chin lift. Look in the mouth. If a foreign body or debris is visible attempt to remove it with a finger sweep, forceps or suction as appropriate
- when there is a risk of back or neck injury, establish a clear upper airway by using jaw thrust or chin lift in combination with manual in-line stabilisation of the head and neck by an assistant (if available). If life threatening airway obstruction persists despite effective application of jaw thrust or chin lift, add head tilt a small amount at a time until the airway is open; establishing a patent airway takes priority over concerns about a potential back or neck injury.

3. Keeping the airway open

Look, listen and feel for normal breathing, taking no more than 10 seconds to determine if the patient is breathing normally. If you have any doubt whether breathing is normal, act as if it is **not** normal.

Agonal breathing (occasional gasps, slow, laboured noisy breathing) is common in the early stages of cardiac arrest. It is a sign of cardiac arrest and should not be confused as a sign of life / circulation.

a. If the patient is breathing normally:

- turn into the recovery position
- undertake assessment, monitoring and transport accordingly
- re-assess regularly.

b. If the patient is not breathing normally:

- it may be difficult to be certain that there is no pulse
- if there are no signs of life (lack of movement, normal breathing, or coughing), or there is doubt, start chest compressions at a rate of 100 compressions per minute
- compression depth should be 4–5cm. Allow the chest to recoil completely after each compression. Take approximately the same amount of time for each compression and relaxation. Minimise interruptions to chest compression. Do not rely on a palpable carotid or femoral pulse as a gauge of effective arterial flow.

4. Combine chest compression with rescue breaths

After 30 compressions, open the airway again and provide two ventilations with the most appropriate equipment available, using an inspiratory time of one second with adequate volume to produce normal chest expansion. Each time compressions are resumed the ambulance clinician should place his hands without delay 'in the centre of the chest'.

Add supplemental oxygen as soon as possible.

Continue chest compressions and ventilation in a ratio of 30:2.

Stop to recheck only if he starts breathing normally; otherwise do not interrupt resuscitation until starting advanced life support techniques.

Performing chest compressions is tiring; try to change the person doing chest compressions every two

minutes; ensure the minimum of delay during the changeover. Once the airway is secure (for example after tracheal intubation) continue chest compressions uninterrupted at 100 per minute (except for defibrillation or further assessment as indicated). Ventilate 10 times per minute. Avoid hyperventilation.

If attempts at ventilation do not make the chest rise as in normal breathing, then before the next attempt at ventilation:

- check the patient's mouth and remove any obstruction
- recheck that the airway position is optimal with adequate head tilt / chin lift or jaw thrust
- do not attempt more than two breaths each time before returning to chest compressions.

CPR in confined spaces

Over the head CPR and straddle CPR may be considered for resuscitation in confined spaces.

THE RECOVERY POSITION

There are several variations of the recovery position each with its own advantages. No single position is perfect for all patients. The position should be stable, near a true lateral position with the head dependent, and with no pressure on the chest to impair breathing. If the patient has to be kept in the recovery position for more than 30 minutes, turn the patient to the opposite side to relieve pressure on the lower arm.

Use of the Automated External Defibrillator (AED)

1. Make sure you, the patient and any bystanders are safe.
 2. If you do not have an AED with you, perform CPR until an AED arrives.
 3. As soon as an AED is available:
 - switch on the defibrillator and attach the electrode pads. If more than one ambulance clinician is present, CPR should be continued whilst this is done
 - follow the spoken / visual directions
 - ensure nobody touches the patient whilst the AED is analysing the rhythm.
- 4a. If a shock is indicated:
- ensure nobody touches the patient
 - push the shock button as directed
 - continue as directed by the voice/visual prompts.

4b. If no shock is indicated:

- immediately resume CPR using a ratio of 30 compressions to 2 rescue breaths
- continue as directed by voice / visual prompts.

5. Continue to follow AED prompts until:

- qualified help arrives and takes over
- the patient starts to breathe normally
- you are exhausted
- the resuscitation attempt is abandoned.

Key Points – Adult Basic Life Support

- Agonal breathing is common in the early stages of cardiac arrest and should not be confused as a sign of life/circulation.
- If there are no signs of life, start chest compressions at a rate of 100 compressions per minute using a ratio of 30 compressions to 2 breaths.
- Once the airway is secure, chest compressions should be uninterrupted with ventilations 10 times per minute; avoid hyperventilation.
- As soon as an AED is available switch on the defibrillator and attach the electrode pads and follow voice/visual prompts.
- To relieve pressure on the lower arm, whilst in the recovery position, turn the patient to the opposite side every 30 minutes.

SELECT BIBLIOGRAPHY

- ¹ Van Alem AP, Sanou BT, Koster RW. Interruption of cardio-pulmonary resuscitation with the use of the automated external defibrillator in out-of-hospital cardiac arrest. *Annals of Emergency Medicine* 2003;42(4):449.
- ² Eftestol T, Sunde K, Steen PA. Effects of Interrupting Precordial Compressions on the Calculated Probability of Defibrillation Success During Out-of-Hospital Cardiac Arrest. *Circulation* 2002;105(19):2270-2273.
- ³ Hallstrom A, Cobb L, Johnson E, Copass M. Cardiopulmonary Resuscitation by Chest Compression Alone or with Mouth-to-Mouth Ventilation. *N Engl J Med* 2000;342(21):1546-1553.
- ⁴ Bahr J, Klingler H, Panzer W, Rode H, Kettler D. Skills of lay people in checking the carotid pulse. *Resuscitation* 1997;35(1):23.

- ⁵ Hauff SR, Rea TD, Culley LL, Kerry F, Becker L, Eisenberg MS. Factors impeding dispatcher-assisted telephone cardio-pulmonary resuscitation. *Annals of Emergency Medicine* 2003;42(6):731.
- ⁶ Handley AJ. Teaching hand placement for chest compression—a simpler technique. *Resuscitation* 2002;53(1):29.

METHODOLOGY

The methodology describing the development process of the international cardio-pulmonary resuscitation treatments recommendations on which this guideline is based is fully described in the publications listed below.

Morley PT, Zaritsky A. The evidence evaluation process for the 2005 International Consensus Conference on cardio-pulmonary resuscitation and emergency cardiovascular care science with treatment recommendations. *Resuscitation* 2005;67(2-3):167-170.

Zaritsky A, Morley PT. The Evidence Evaluation Process for the 2005 International Consensus Conference on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Circulation* 2005;112(22_suppl):III-128-130.

