

## Resuscitation Service

*Providing for Life*



# Basic Life Support Handbook

1<sup>ST</sup> EDITION 2002

Based on the Resuscitation



Council (UK) guidelines 2000

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## Basic Life Support

Basic life support alone will rarely revive a casualty. It will however buy time until other more definitive measures can be instigated which may bring the patient back to life. Adequate and effective basic life support is vital for the other elements of the chain of survival to be successful.



The chain of survival is only as strong as its weakest link and each link is dependent on the others.

The chain of survival is:

Early access to the victim

Early Basic Life Support

Early Defibrillation

Early Advanced Life Support

In order to achieve an outcome which means the patient survives with intact neurology all links in the chain must be effective.

Basic life support implies that no equipment is necessary to be able to perform this task. However, in this Trust, there is a no mouth to mouth policy do to the potential risk to the rescuer from potentially life threatening or life limiting illnesses.

It is important that the rescuer considers the potential risks before attempting to intervene. It is more detrimental to the casualty if the rescuer becomes the second casualty and therefore reduces the available resources to treat the initial casualty.

In the UK there have been several incidences of the transmission of TB, Meningitis and salmonella by mouth to mouth ventilation. The risk of HIV and hepatitis transmission has not yet been reported but remains a potential risk especially if there is fresh blood in the mouth of the casualty. Injury and inoculation from sharps is common, even during well managed resuscitation attempts.

Before attempting to help the casualty ensure that the environment is safe. Generally in a hospital situation rescuers should be safe but be aware of the potential dangers from inhaled substances, gases, liquids and electricity.

If possible avoid attempting to lift a patient from where they are discovered back into bed or trolley. If you see a patient collapse and fall attempt to support their neck and head but never risk injury to yourself.

Assess the risk to yourself prior to commencing resuscitation, always try and adhere to universal precautions such as gloves in order to minimise the risks to yourself.

Upon discovering a collapsed adult and ensuring that the environment is safe make a rapid and simple assessment. Use the A, B, C method of assessment;

### **Squeeze, Shake, Shout**



**A – Airway**

**B – Breathing**

**C – Circulation**



Assess the casualty's responsiveness by firmly gripping both shoulders and giving a gentle **shake**. If there is no response move close to their ear and **shout**, “**Are you alright?**”

If you suspect that the patient may have a cervical spine injury do not shake them but squeeze shoulders vigorously whilst shouting. This serves as both a physical and verbal stimulus to patients. Remain alert for any signs of life during the initial assessment. Regardless of the degree of response complete the ABC assessment of the patient. Ask the patient to open their eyes rather than give a verbal response, a patient who has suffered a CVA may not be able to speak but will almost always open their eyes in they are conscious.

It is important that you are not on your own at this point and you should alert others by shouting for **HELP** without leaving the patient.

Ideally the patient should be supine but the initial assessment can be carried out with casualty in any position.

### **Airway**

The next step is to check the patient's airway for signs of obstruction. Many of these patients will vomit either prior to or during their collapse. If you open the airway before checking the mouth you may cause the patient to aspirate which may be detrimental to their outcome. If there is obstruction use suction or other means to try and clear the obstruction. Avoid the use of fingers, as this may be a risk to you. Leave well fitting dentures in place but remove those that are ill fitting.

Now you should open the patients airway using either a head tilt chin lift maneuver or jaw thrust in the case of



suspected trauma. This will help to ensure that the tongue, the most common cause of airway obstruction, does not obstruct the natural passage of air.

### **Breathing**

Observe the casualty for signs of spontaneous breathing. If possible expose the chest but do not allow this to delay your assessment. Move down to the casualty's level turning your head so you can visualize the chest and place your ear over their open mouth. Look, listen and feel for 10 seconds for any sign that the casualty is breathing. If you are a trained health care professional you should also feel for a pulse simultaneously.



Look, listen and feel for breathing and pulse

If after 10 seconds you cannot detect any signs of breathing go for help immediately before commencing CPR. On your return from activating emergency help bring with you a pocket mask. On your return do not recheck the casualty for breathing or circulation. If someone has responded to your initial call for help, send him or her to alert the cardiac arrest team and bring back a pocket mask.

There are four instances when 1 minute of CPR should be performed prior to going for help. They are **paediatrics, trauma, near drowning, and drug and alcohol intoxication**. This is because there is a primary respiratory cause for these categories of people suffering a cardiac arrest.

Upon your return you should commence resuscitation by delivering 2 effective rescue breaths, within 5 attempts (see rescue breathing)

### **Circulation**

Checking for a pulse in a collapsed adult is best achieved by the use of the carotid pulse, as radial pulses may be weak or absent in the very sick patient, although the femoral artery may also be used. To locate the carotid artery, maintain head tilt with one hand on the victim's forehead and locate the trachea with 2 or 3 fingers of the other hand. Slide these fingers into the natural groove between the trachea and the muscles at the side of the neck, where the carotid pulse can usually be felt. It is worth remembering that rescuers require far too much time to perform the pulse check, in one study 50% of the rescuers took 24 seconds to decide whether a pulse was present or not.



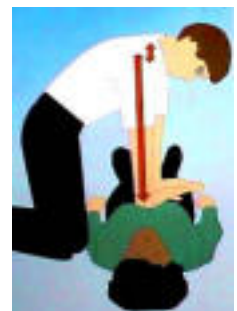
Chest compressions are an artificial means of pumping blood around a victim's body. Blood is circulated to the lungs, heart and brain by increasing intrathoracic pressure and/or direct pressure on the heart. Animal studies have shown that a rate of <80 compressions per minute is required to achieve optimal blood flow. The recommended compression rate during CPR is 100 per minute. Coronary perfusion pressures rise with the performance of sequential compressions, for this reason the ratio is now 15 compressions to two ventilations.

Proper hand placement is determined by identifying the lower half of the sternum. Find the costal margin and run your fingers along it until you reach the base of the sternum (xiphoid process). The heel of one hand should be placed two fingerbreadths above the xiphoid process. Place the other hand on top the first so that the hands are parallel. Do not compress over the lowest portion of the base of the sternum (xiphoid process).



Fingers may be interlaced or extended but should be kept off the chest.

Lock your elbows, with arms straight and shoulders positioned directly over the patient's chest. The thrust for each chest compression should be straight down on the patient's torso. Depress the chest approximately 4-5 cm with each compression or 1/3 of the chest depth. The pressure must be released after each compression to allow blood to flow into the chest and heart. Correct hand position should be maintained throughout the compression cycle. Chest compressions provide only about one third of normal cardiac output and this decreases with prolonged CPR. Only by following the recommended guidelines for hand positioning and force with blood flow be optimised during CPR.



Cardiopulmonary resuscitation should not be interrupted for subsequent assessment of the patient unless they show some sign of life. If the patient does show some indication that they have regained a cardiac output then the rescuer should begin the assessment process again from the beginning. The only two other times that CPR should be stopped are when advanced help arrives or the rescuer becomes too exhausted to continue.

### **Rescue Breathing**

There will be patients whom have suffered a respiratory arrest with no loss of cardiac output. These patients will require artificial support of their breathing until definitive means to support them can be initiated. The assessment process should be the same and when it is established that the patient has a pulse but inadequate respiration then the rescuer should instigate rescue breathing for the patient. This is the provision of 10 breaths of expired air, or artificial ventilation by other means, per minute. After one minute the rescuer

should reassess the victims pulse. There is no need to reassess the victims breathing unless they show some sign that they have resumed spontaneous respiration. The rescuer should ensure that the chest rises with each ventilation, which should be delivered over about 2 seconds. The recommended tidal volume for mask to mouth ventilation is approximately 10ml/kg or 700 – 1000mls.

### **Foreign Body Obstruction**

Complete airway obstruction will result in death within minutes if left untreated. Fortunately the incidence is rare with a recorded 1.2 deaths per 100,000. Foreign body obstruction should always be considered as a cause in the deterioration any victim, especially the younger age group, who suddenly stops breathing, becomes cyanosed or becomes unconscious with no obvious reason. A foreign body can cause either a complete or partial obstruction. Treat a victim with partial obstruction and poor air exchange as if he had a complete airway obstruction. Someone suffering from complete airway obstruction will not be able to speak.

The initial response of the rescuer to a person suffering from airway obstruction is five sharp back blows. The heel of the rescuers hand is used to deliver 5 back slaps between the victim's shoulder blades. If this fails then the rescuer should move to abdominal thrusts. Abdominal thrusts elevate the diaphragm and increase airway pressure, thus forcing air from the lungs.

### **Abdominal thrusts**

Stand behind the victim, wrap your arms around their waist and proceed as follows. Make a fist with one hand. Place the thumb side of your fist against the victim's abdomen, between the belly button and the xiphoid process. Grasp the fist with your other hand and press your fist into the victim's abdomen with

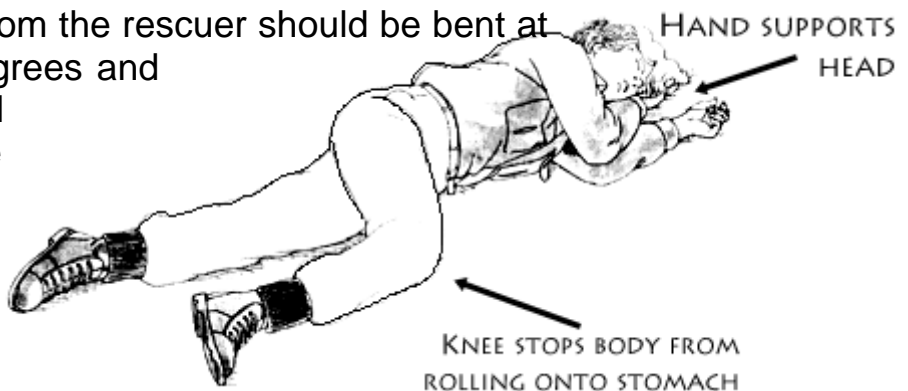


a quick inward and upward movement. Repeat this maneuver up to five times. Alternate back-blows with abdominal thrusts until help arrives or the obstruction has been removed. If the victim has become unresponsive **chest** thrusts can be performed on the victim in the supine position. Because of the potential complications of using the abdominal thrust technique for the relief of foreign body obstruction all patients who have received this maneuver should be examined by a physician as soon as possible.

### **Recovery Position**

The recovery position is used in the management of patients who are both breathing and have a perfusing circulation but are unresponsive. It aim of this

maneuver is to ensure that the airway of the victim is protected from aspiration and/or obstruction. A true lateral position tends to make an unconscious patient's body unstable and therefore a modified lateral position is preferred. This modification also allows for monitoring and support of the patient. The victim should be in as near a true lateral position as possible, with the head dependant allowing for free drainage of fluids from the mouth. The position should be as stable as possible. Pressure on the thoracic cavity should be avoided. Good observation of the mouth and face should be possible. If trauma is suspected the victim should only be moved if it is otherwise impossible to maintain a patent airway. If the victim remains in the recovery position for longer than 30 minutes then they should be turned onto the opposite side, regular assessment of the lowermost arm should be made for signs of impaired circulation. The victim's arm nearest to the rescuer should be placed in a stop sign position. The opposite arm should come over the victim to rest on their cheek. The furthest leg from the rescuer should be bent at an angle of about 45 degrees and the victim then rolled towards the rescuer. The rescuer should continuously assess the victim for signs of breathing and circulation.



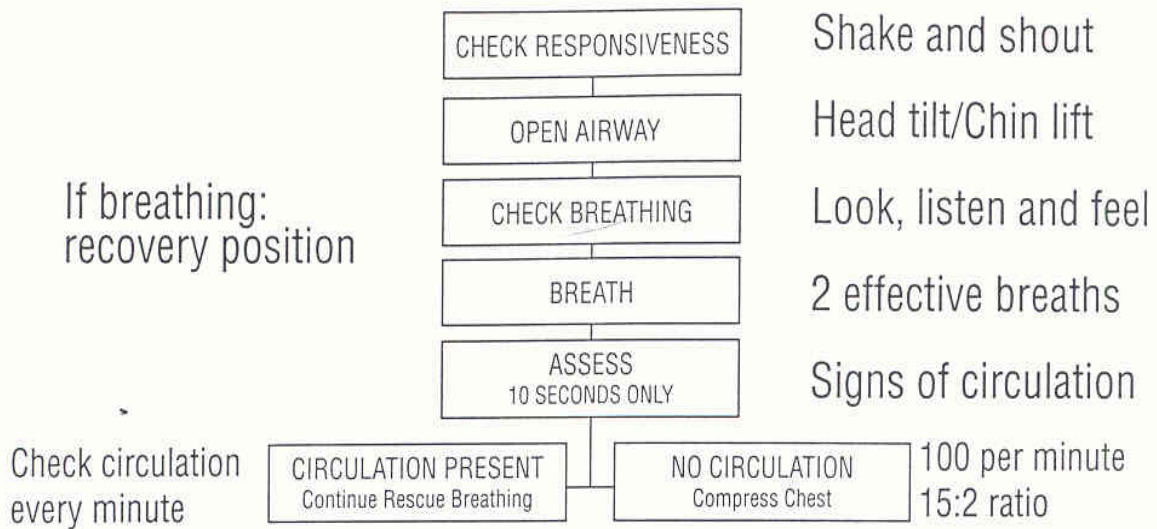
## **Pocket Masks**



Pocket masks are now common in many places and are designed as adjunct to artificial respiration during resuscitation. All of these masks have a one-way valve in order to protect the rescuer from return of expired air. They commonly also have a nipple which can be used to administer supplemental oxygen. It is important that these devices are used correctly so that the patient is ventilated during any resuscitation effort. Firstly unpack the mask. Then fit the one-way valve that comes with the mask. Place the narrow end over

the victim's nose avoiding contact with the eyes. The arched bottom of the mask should rest on the victim's bottom jaw with the chin just showing. Place your thumbs over the cushioned edges of the mask and push down to create a seal. Your thumbs should be parallel. Position your fingers low down on the jawbone to thrust the jaw into the mask. Use the sides of your hands to keep the head tilted back thus keeping the airway open.

# ADULT BASIC LIFE SUPPORT



**Send or go for help as soon as possible according to guidelines**

Figure 4.1 Basic Life Support Algorithm

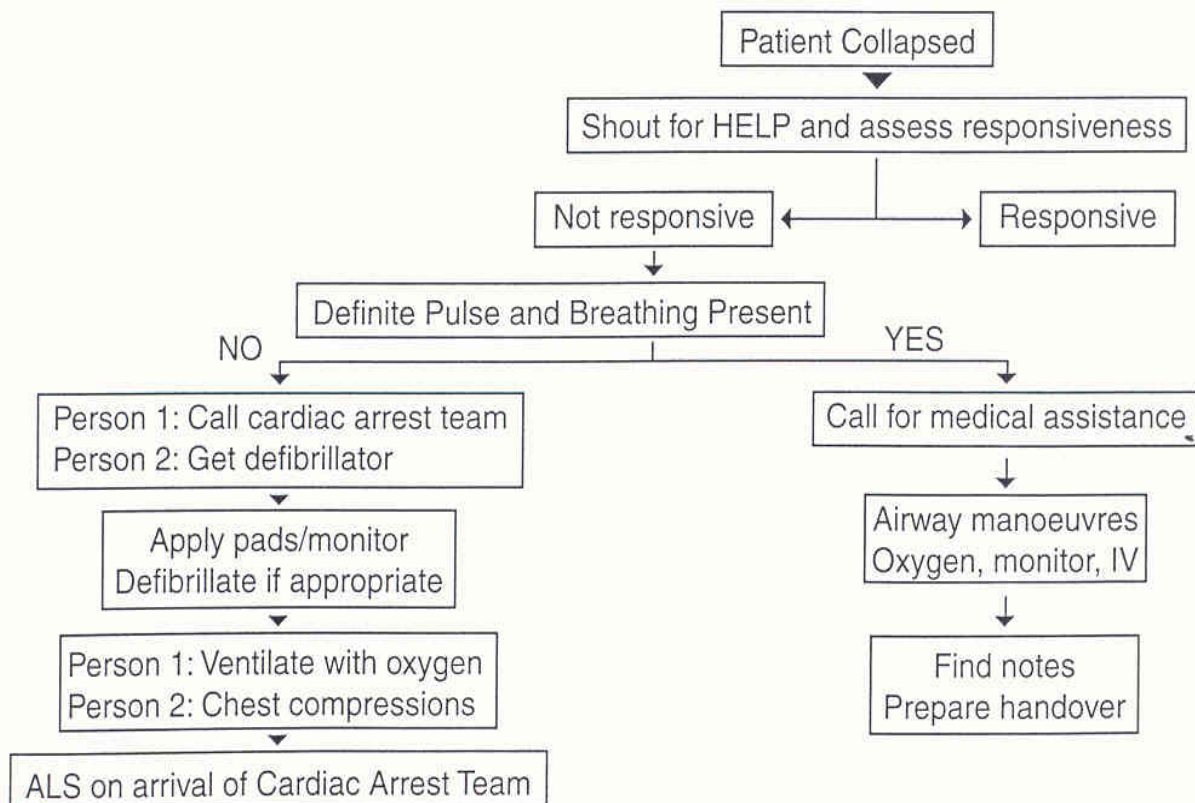


Figure 4.2 In hospital Basic Life Support (Modified from Leah and Coats)

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