



INTERNATIONAL LIFEGUARD TRAINING PROGRAM™

Basic Life Support Sequence and Component Matrix (Based upon the 2010 CPR and Emergency Cardiac Care Guidelines)

The following sequence is provided for Healthcare Provider level Basic Life Support care when a person of any age is found on land, apparently unresponsive.

- **Quickly check the scene for safety**, correct if unsafe (if possible). Put on exam gloves.
- **Shake and shout**, “Are you ok?” **while simultaneously quickly checking for obvious signs of normal breathing** (while checking for responsiveness, look at the chest for signs of normal breathing. If breathing is gasping, weak or the rescuer is uncertain if the patient is breathing during this quick check – the rescuer should proceed as if breathing is absent). If obvious normal breathing is determined, place in the recovery position and provide appropriate care based upon signs and symptoms found.
- **Activate the EAP / Contact EMS**. Retrieve BLS equipment, including AED and Supplemental Oxygen.
- **If breathing is absent or inadequate**, quickly position for a pulse check at the carotid artery in the neck (brachial artery in the arm for infants) for up to 10 seconds. Pulse must be clearly felt (if the rescuer is uncertain or pulse is hardly detectable, assume no pulse).
- **If a definite pulse is found**: Begin Rescue Breathing appropriate for the age of the patient (see matrix), reassessing pulse after approximately 2 minutes. If a pulse is found during reassessment, continue rescue breathing, reassessing pulse every 2 minutes.
- **If no pulse is found**: Begin CPR – 30 Chest Compressions followed by 2 ventilations (15:2 for multiple rescuers working on a child or infant patient). Switch compressors every 2 minutes (for multiple rescuers). When an AED is available, immediately turn on, properly attach, and follow the prompts. After each shock is advised and delivered or if no shock advised, immediately begin CPR until prompted to stand clear by the AED to reanalyze (approximately 2 minutes). Continue with CPR after each analysis/shock or no shock.
- **Ventilations do not go in**: If while providing ventilations (during rescue breathing or CPR cycles), visible chest rise is not achieved, quickly re-tilt and attempt a second ventilation. If the second ventilation does not go in, immediately begin 30 chest compressions. After the compressions, quickly check the mouth. If an object is seen, finger sweep (suction if fluid) and attempt two ventilations. Repeat until ventilations are successful. Once visible chest rise is achieved with a ventilation attempt, continue with the care previously being administered.

SYMPTOM/CARE	ADULT (Puberty onset and older)	CHILD (Prepubescent)	INFANT (Approximately less than 1 year old)
Initial Check	Quick check for responsiveness and obvious signs of breathing	Quick check for responsiveness and obvious signs of breathing	Quick check for responsiveness and obvious signs of breathing
If no obvious Normal Breathing	Check for pulse in carotid artery for up to 10 seconds	Check for pulse in carotid artery for up to 10 seconds	Check for pulse in brachial artery for up to 10 seconds
Definite Pulse Found	Begin Rescue Breathing (RB): 1 ventilation every 5 seconds for 2 minutes, then reassess pulse. (about 24 ventilations)	Begin Rescue Breathing (RB): 1 ventilation every 3 seconds for 2 minutes, then reassess pulse. (about 40 ventilations)	Begin Rescue Breathing (RB): 1 ventilation every 3 seconds for 2 minutes, then reassess pulse. (about 40 ventilations)
Duration/strength of each ventilation (RB and CPR)	About 1 second, of sufficient volume to produce a visible chest rise	About 1 second, of sufficient volume to produce a visible chest rise	About 1 second, of sufficient volume to produce a visible chest rise
No Pulse Found (Single Rescuer)	30 Chest Compressions followed by 2 ventilations	30 Chest Compressions followed by 2 ventilations	30 Chest Compressions followed by 2 ventilations
No Pulse Found (Multiple Rescuers)	30 Chest Compressions followed by 2 ventilations for 2 minutes (about 5 cycles). Switch compressors	15 Chest Compressions followed by 2 ventilations for 2 minutes (about 8 cycles). Switch compressors	15 Chest Compressions followed by 2 ventilations for 2 minutes (about 8 cycles). Switch compressors.
Compressions: depth, method, and compression rate	2 inch depth, with two hands on the center of the chest (lower sternum above xyphoid); at least 100 compressions per minute	1/3 depth of chest depth with 1 or 2 hands on the center of the chest (lower sternum above xyphoid); at least 100 compressions per minute	1/3 depth of chest depth using two fingers below nipple line or two thumb encircling method for multiple rescuers; at least 100 compressions per minute
When to attach the AED and age defined pads	Immediately – When no pulse is detected and as soon as the AED is available with adult pads	Immediately – When no pulse is detected and as soon as the AED is available (Pediatric pads recommended – if none, adult pads are acceptable)	Immediately – When no pulse is detected and as soon as the AED is available (Pediatric pads recommended – if none, adult pads are acceptable)
AED and CPR Integration	Shock advised and delivered or no shock advised – immediately start CPR cycles beginning with compressions until prompted to stand clear (2 minutes).	Shock advised and delivered or no shock advised – immediately start CPR cycles beginning with compressions until prompted to stand clear (2 minutes).	Shock advised and delivered or no shock advised – immediately start CPR cycles beginning with compressions until prompted to stand clear (2 minutes).



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Basic Life Support Best Practices

PRIORITY OF CARE, “CAB”:

- **Compressions** – If after determining that the patient is suffering from cardiac arrest (no pulse), early chest compressions provide the patient with immediate care that may provide the best opportunity for a successful outcome. In team management (multiple rescuers) situations, it allows for one rescuer to begin care, without delay while other team members retrieve and prepare equipment (such as oxygen, BVM, and AED). Evidence shows that oxygen levels in the blood tend to be high during the first few minutes after cardiac arrest. As such, immediate opening of the airway and ventilation techniques performed first does not improve the outcome during cardiac arrest when compared to chest compressions.
- **Airway** – The rescuer no longer “looks, listens and feels for breathing” after opening the Airway. The Airway is opened to deliver ventilations during appropriate times during the BLS sequence (see “Breathing”)
- **Breathing** – If a patient does not have a pulse, the first two Ventilations will be delivered after 30 compressions. If the patient does have a definite pulse and no obvious signs of normal breathing, Ventilations are delivered using the appropriate Rescue Breath to seconds’ ratio for the age of the patient for approximately two minutes, followed by reassessment of the pulse. Breathing is never directly assessed, beyond what can be obviously observed by looking at the chest during a quick check during the initial check for responsiveness. Gasping and other breathing like (but ineffective) behavior, such as Agonal breathing **will not** be interpreted as **Normal Breathing**. If Agonal breathing is observed by the rescuer, appropriate BLS care must be continued.

CPR - PUSH FAST, PUSH HARD:

- Compression rate of at least 100 compressions in 60 seconds. A recommended method of maintaining the correct compression pace is to think of the beat in the song “Staying Alive” by The Bee Gees which is about 100 beats per minute.
- Compressions for ADULTS should be at least 2 inches deep.
- Compressions for CHILDREN and INFANTS should be about 1/3 the depth of anterior-posterior diameter of the patient’s chest.
- Compressions must allow for the full recoil of the chest in order to be fully effective.
- Rescuers should perform 30 chest compressions in about 18 seconds.
- Rescuers continue compressions and ventilations sequence until an AED is available or until EMS arrives and takes over care.
- Rescuers responding in teams switch out who is performing compressions every two minutes or whenever there is a change in care or equipment (such as AED arrival) to help ensure maximum effectiveness and reduce rescuer fatigue.
- The time period between each set of compressions must be minimized. It should only take a few seconds to deliver two effective ventilations and then return to the next set of compressions.

VENTILATIONS:

- Rescuers perform the **Jaw Thrust with head tilt** technique with a Seal Easy Mask or Bag Valve Mask to quickly open the airway to deliver ventilations to patients without a suspected spinal injury. If spinal injury is suspected, the **Jaw Thrust without head tilt** technique should be used.
- A ventilation should be provided for a duration of about 1 second during CPR ventilations and Rescue Breathing.
- Over ventilation is to be avoided as it may cause complications, such as vomiting due to gastric inflation which will delay continued CPR care. Over ventilation also decreases the overall effectiveness of the care due to the increase in intrathoracic pressure, decreasing the venous return of blood to the heart which reduces the overall cardiac output.
- Bag Valve Mask equipment with oxygen requires two rescuers to operate effectively (one to place the mask on the mouth and monitor/maintain an open airway while the other rescuer delivers ventilations by squeezing the bag while monitoring for visible chest rise). If two rescuers are not available to operate (or one is needed for compressions, AED set up, etc.), it is more effective for the remaining rescuer to utilize a pocket mask with oxygen supplementation, if available.
- Care must not be delayed while setting up equipment. Chest compressions (or rescue breathing if appropriate) should be continued until equipment ready and rescuers are prepared to assist.

AED:

- Rescuers retrieve the AED (and other BLS equipment) as soon as an unresponsive patient is discovered.
- The AED equipment must be applied as soon as it is available when treating a patient without a definite pulse.
- Care is interrupted only long enough to prepare the patient for AED placement (removal of clothing, shaving if excessively hairy, etc.)
- If the patient is wet, he or she must be quickly dried off (chest area) and precautions should be taken to keep the chest area dry during care (rescuers who are wet should avoid chest compressions until they are dry).
- The rescuer / rescuer team must apply the electrode pads, following the AED manufacturer’s instructions. Pediatric pads / dose attenuator are recommended for Child and Infant patients, but if these are not available, adult pads are acceptable.
- Rescuers must follow AED prompts. If analysis indicates a shock is advised, the shock should be delivered and CPR, beginning with chest compressions must be immediately resumed. If analysis indicates no shock advised, CPR, beginning with chest compressions must be immediately resumed. Some AEDs may prompt for reassessment of breathing and/or pulse during subsequent analysis due to being programmed at the 2005 ECC standard for basic prompting. Rescuers should immediately resume compressions after each analysis followed by a shock or no shock delivery.
- Rescue teams must coordinate and practice quick, efficient hands on/hands off transitions to reduce the amount of time between shocks delivery and chest compressions.

Drowning:

- Evidence supports first opening the airway and attempting ventilations prior to removal of an unresponsive patient during a water rescue. Upon extrication, the standard “CAB” would resume (See BLS Protocols for an unconscious guest in the water).