

SAUDI HEART ASSOCIATION

NATIONAL CPR COMMITTEE

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# THE EVIDENCED BASED 2015 CPR GUIDELINES

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# CPR PRACTICAL CHECK LIST

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## BLS practical stations

### Terminology

BLS	Basic Life Support
CPR	Cardiopulmonary Resuscitation = Cardiac compression and breathing
FBO	Foreign Body Obstruction
PALs	Pediatric Advance Life support
NALs	Neonatal Advance life support
AED	Automated External Defibrillation
ABC	Airway Breathing Circulation
CAB	Chest compression Airway Breathing

## **Call for Help**

- Pre-hospital( Out of Hospital Cardiac Arrest (OHCA).): call 997
- In hospital:
  - Paging system
  - bleep system
  - Unannounced

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# CPR

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## 1. BLS

- Pre-hospital → CAB
- In hospital → ABC

### **PRE-HOSPITAL ADULT CPR**

- **Establish unresponsiveness** and check for effort of breathing by opening the airway (3-5 sec.) EMS system should be activated (997) and get the AED
  - **No effort of breathing, start CAB sequence;**
  - **check pulse** (if trained < 5 sec) and immediate chest compression 30 Compressions within the first 10-15 seconds (rescue compression). **Open airway** (head tilt-chin lift ).
  - **Check for breathing** (look, listen, feel). If breathing is absent or inadequate, give 2 breaths, "rescue breathing" 1 second per breath (3 sec.), Healthcare providers should use a barrier device while lay persons can use any other means to protect themselves, e.g. Shamagh, Ghuthra, shayla, handkerchief or towel. Watch chest rise and fall during exhalation.
  - **CPR Sequence;**
    1. Locate and check carotid pulse or femoral pulse (5-10 sec.). If pulse is present but no breathing, provide rescue breathing (one breath every 5-6 seconds, about 10 -12 breaths per minute).
    2. If no pulse, start compression: ventilation cycles. Give 5 cycles (Approximately 2 minutes) with ratio 30:2 and at a rate of at least 100-120 per minute. Minimal interruption during compressions (<10 seconds), Chest compression (approximately 4.5-5.5cm depth/ or 5 cm = 2 inches. not more than 6 cm) followed by 2 breaths (1 second/breath). The set of each 30 compressions should take approximately 15-18 seconds.
    3. After 5 cycles of CPR (Approximately 2 minutes) compression: ventilation ratio 30:2 and at a rate of at least 100-120 per minute.)
- check for pulse in carotid or femoral arteries. According to the findings:**
- If there is pulse and breathing: Place the victim in the recovery position carefully, especially if neck injury is suspected, monitor Vital signs until EMS arrives.

- If there is pulse but no breathing. Continue rescue breathing, one breath every 5 – 6 sec. (10 - 12/min.), Recheck pulse every 2 minutes.
- If there is no pulse, no breathing. Continue CPR, 5 cycles of CPR (Approximately 2 minutes) as mentioned above. Then check pulse in carotid or femoral arteries every 2 minutes). Continue the cycles until success is achieved or EMS arrived.

**if RESCUER 2 arrives** ; Rescuer 1 stays as the ventilator and rescuer 2 acts as the chest compressor; Rescuers should switch every 5 cycles of CPR approximately 2 minutes.

## **PRE-HOSPITAL CHILD & INFANT CPR**

- Establish unresponsiveness and check for effort of breathing by opening the airway (3-5 sec.)
- (EMS system should be activated (997) and get the AED if second rescuer around otherwise start resuscitation then call after 2 minutes). No effort of breathing start **ABC sequence**;
- Open airway (head tilt-chin lift ) Check breathing (look, listen, feel) (if trained 5-10 sec).
- If breathing is present place the victim carefully in recovery position, then check pulse ( if trained A,B,C the same sequence no change). If untrained apply (C-A-B) sequence with immediate chest compression 30 rescue compressions and 2 rescue breathing .
- Healthcare providers should use a barrier device while lay persons can use any other means of protecting themselves, e.g. Shamagh, Ghuthra, shayla, handkerchief or towel. Watch chest rise and fall during exhalation.
- **CPR SEQUENCE:**
  1. Locate and check carotid pulse or femoral pulse (5-10 sec.)and brachial in case of infant. If pulse is present but no breathing, provide rescue breathing (one breath every 4-5 seconds, about 12 -20 breaths per minute).
  2. If no pulse, start compression: ventilation cycles. Give 5 cycles (Approximately 2 minutes) with ratio 30:2 and at a rate of at least 100-120 per minute. Minimal interruption during compressions (<10 seconds), Chest compression (approximately 4-5cm depth/ or 4 cm = 1.5 inches. not more than 5 cm) followed by 2 breaths (1 second/breath). The set of each 30 compressions should take approximately 15-18 seconds.
  3. After 5 cycles of CPR (Approximately 2 minutes) compression: ventilation ratio 30:2 and at a rate of at least 100-120 per minute.).

***check for pulse in carotid or femoral arteries. According to the findings:***

- If there is pulse and breathing: Place the victim in the recovery position carefully, especially if neck injury is suspected, monitor Vital signs until EMS arrives.

- If there is pulse but no breathing. Continue rescue breathing, one breath every 3 – 5 sec. (12 -20/min.), Recheck pulse every 2 minutes.
- If there is no pulse, no breathing. Continue CPR, 5 cycles of CPR (Approximately 2 minutes) as mentioned in step 5. Then check pulse in carotid or femoral arteries/brachial for infant every 2 minutes). Continue the cycles until success is achieved or EMS arrives.

**if RESCUER 2 arrives ;** Rescuer 1 stays as the ventilator and rescuer 2 acts as the chest compressor; with a ratio of 15:2 ; Rescuers should switch every 5 cycles of CPR approximately 2 minutes.

## **IN HOSPITAL ADULT CPR**

- Establish unresponsiveness and check for effort of breathing by opening the airway (3-5 sec.), in hospital EMS system should be activated and get crash cart and the AED (2015 guidelines preferred PAD system instead of paddles ones. **Start ABC sequence.**
- Check for breathing (look, listen, feel). If breathing is absent or inadequate, give 2 breaths, “rescue breathing” (1 second per breath (3 sec.), Healthcare providers should use a barrier device preferred Bag Valve mask resuscitator. Watch chest rise and fall during exhalation.
- **CPR SEQUENCE:**
  1. Locate and check carotid pulse or femoral pulse (5-10 sec.). If pulse is present but no breathing, provide rescue breathing (one breath every 5-6 seconds, about 10 - 12 breaths per minute).
  2. If no pulse, start compression: ventilation cycles. Give 5 cycles (Approximately 2 minutes) with ratio 30:2 and at a rate of at least 100-120 per minute. Minimal interruption during compressions (<10 seconds), Chest compression (approximately 4.5-5.5cm depth/ or 5 cm = 2 inches. not more than 6 cm) followed by 2 breaths (1 second/breath). The set of each 30 compressions should take approximately 15-18 seconds.
  3. After 5 cycles of CPR (Approximately 2 minutes) compression: ventilation ratio 30:2 and at a rate of at least 100-120 per minute.).

### ***check for pulse in carotid or femoral arteries. According to the findings:***

- If there is pulse and breathing: Place the victim in the recovery position carefully, especially if neck injury is suspected, monitor Vital signs until EMS arrives.
- If there is pulse but no breathing. Continue rescue breathing, one breath every 5 – 6 sec. (10 - 12/min.), Recheck pulse every 2 minutes.
- If there is no pulse, no breathing. Continue CPR, 5 cycles of CPR (Approximately 2 minutes) as mentioned in step 5. Then check pulse in carotid or femoral arteries every 2 minutes). Continue the cycles until success is achieved or EMS arrives.

**if RESCUER 2 arrives ;** Rescuer 1 stays as the ventilator and rescuer 2 acts as the chest compressor; Rescuers should switch every 5 cycles of CPR approximately 2 minutes.

## **IN HOSPITAL CHILD & infant CPR**

- Establish unresponsiveness and check for effort of breathing by opening the airway (3-5 sec.), in hospital EMS system should be activated and get crash cart and the AED (2015 guidelines preferred PAD system instead of paddles ones. Start ABC sequence.
- Check for breathing (look, listen, feel). If breathing is absent or inadequate, give 2 breaths, “rescue breathing” (1 second per breath (3 sec.), Healthcare providers should use a barrier device preferred Bag Valve mask resuscitator. Watch chest rise and fall during exhalation.

- **CPR SEQUENCE:**

1. Locate and check carotid pulse or femoral pulse/ brachial for infant (5-10 sec.). If pulse is present but no breathing, provide rescue breathing (one breath every 5-6 seconds, about 12 -20 breaths per minute).
2. If no pulse, start compression: ventilation cycles. Give 5 cycles (Approximately 2 minutes) with ratio 30:2 and at a rate of at least 100-120 per minute. Minimal interruption during compressions (<10 seconds), Chest compression (approximately 4-5cm depth/ or 4 cm = 1.5 inches. not more than 5 cm) followed by 2 breaths (1 second/breath). The set of each 30 compressions should take approximately 15-18 seconds.
3. After 5 cycles of CPR (Approximately 2 minutes) compression: ventilation ratio 30:2 and at a rate of at least 100-120 per minute.),

***check for pulse in carotid or femoral arteries. According to the findings:***

- If there is pulse and breathing: Place the victim in the recovery position carefully, especially if neck injury is suspected, monitor Vital signs until EMS arrives.
- If there is pulse but no breathing. Continue rescue breathing, one breath every 3 – 5 sec. (12 -20/min.), Recheck pulse every 2 minutes.
- If there is no pulse, no breathing. Continue CPR, 5 cycles of CPR (Approximately 2 minutes) as mentioned in step 5. Then check pulse in carotid or femoral arteries / brachial for infant every 2 minutes). Continue the cycles until success is achieved or EMS arrives.

**if RESCUER 2 arrives;** Rescuer 1 stays as the ventilator and rescuer 2 acts as the chest compressor; with a ratio of 15:2 ; Rescuers should switch every 5 cycles of CPR approximately 2 minutes.



## 2. FBO

### **FBO (PARTIAL):**

In case of FBO with partial obstruction in all age group only encourage the victim to cough or expel the FB, you may help with back blows.

how to recognize partial obstruction;

- conscious
- no cyanosis
- severe coughing
- no stridor

### **FBO (SEVERE):**

in case of FBO with severe obstruction in all age group you have to intervene as per age group skills and maneuver to help the victim expel the FB.

how to recognize severe obstruction;

- conscious
- cyanosis
- severe coughing
- stridor

## **SEVERE FBO IN ADULT & CHILDREN**

### **CONSCIOUS :**

Ask "Are you choking?" If the patient nods " yes" and uses the universal sign of choking, immediately intervene by:

1. Stand behind the victim and give Abdominal Thrusts (Heimlich maneuver), aiming to increase the intrathoracic pressure and expel the foreign body.
2. NOTE: Use Chest thrusts for pregnant or obese victim
3. Repeat thrusts with a distinctive movement to achieve expulsion of the foreign body or the victim becomes unconscious.

### **Victim becomes unconscious (witnessed)**

1. Put the victim in the ground and activate the EMS system or send someone to activate. (997 for pre hospital)
2. Observe for breathing normality or absence, If breathing is absent or inadequate, open the airway and try to ventilate. If unsuccessful, re-open the airway and try to ventilate again. If still unsuccessful begin cycles of chest compression and ventilation with the ratio 30:2.
3. Every time the airway is opened to give breaths, open the mouth wide and look for the object. If you see an object removes it using finger sweep. Then try to ventilate,

- If unsuccessful, re-open the airway and try to ventilate again, If still unsuccessful begin cycles of chest compression and ventilation with the ratio 30:2.
4. Repeat steps till chest raise, if chest raised, check pulse and continue 5 cycles of CPR about 2 minutes.
  5. Repeat cycles and reassess the pulse every 2 minutes( 5 cycles).

***According to findings:***

- If there is pulse and breathing: Place the victim in the recovery position carefully, especially if neck injury is suspected. Monitor Vital signs until EMS arrives.
- If there is pulse but no breathing. Continue rescue breathing, one breath every 5 – 6 sec. (10 - 12/min.)
- If there is no pulse and no breathing. Continue maneuvers of adult CPR.

**Victim found unconscious (unwitnessed)**

Establish unresponsiveness and effort of breathing by opening the airway (3-5 sec.) EMS system should be activated (997 for pre hospital) and get the AED

***Start CPR sequence according to the age group***

**SEVERE FBO IN INFANTS**

**conscious :**

**Confirm airway obstruction. Check for serious breathing difficulty, ineffective cough, weak or absent cry.**

1. Give up to 5 back blows, turn the infant carefully using both hands supporting the face and the back of the head and give 5 chest Thrusts.
2. Repeat blows and thrusts until achievement of expulsion of the foreign body or the victim becomes unconscious.

**Victim becomes unconscious (witnessed)**

1. Put the victim in the ground and activate the EMS system after 2 minutes or send someone to activate. (997 for pre hospital)
2. Observe for breathing normality or absence, If breathing is absent or inadequate, open the airway and try to ventilate. If unsuccessful, re-open the airway and try to ventilate again. If still unsuccessful begin cycles of chest compression and ventilation with the ratio 30:2.
3. Every time the airway is opened to give breaths, open the mouth wide and look for the object. If you see an object removes it using finger sweep ( do not sweep blindly) Then try to ventilate, If unsuccessful, re-open the airway and try to ventilate again, If still unsuccessful begin cycles of chest compression and ventilation with the ratio 30:2.
4. Repeat steps till chest raise, if chest raised, check pulse and continue 5 cycles of CPR about 2 minutes.
5. Repeat cycles and reassess the pulse every 2 minutes( 5 cycles)

***According to findings:***

- If there is pulse and breathing: Place the victim in the recovery position carefully, especially if neck injury is suspected. Monitor Vital signs until EMS arrives.
- If there is pulse but no breathing. Continue rescue breathing, one breath every 3 – 5 sec. (12 - 20/min.)
- If there is no pulse and no breathing. Continue maneuvers of infant CPR .

**Victim found unconscious (unwitnessed)**

1. Establish unresponsiveness and effort of breathing by opening the airway (3-5 sec.) EMS system should be activated after 2 minutes (997 for pre hospital) and get the AED.
2. Start sequence of infant CPR.

### 3. AED (Automated external Defibrillation)

1. Establish unresponsiveness and check for effort of breathing by opening the airway (3-5 sec.), in hospital EMS system should be activated and get crash cart and the AED (2015 guidelines preferred PAD system instead of paddles ones).
2. Check for breathing (look, listen, feel). If breathing is absent or inadequate, give 2 breaths, "rescue breathing" (1 second per breath (3 sec.)), Healthcare providers should use a barrier device preferred Bag Valve mask resuscitator. Watch chest rise and fall during exhalation.
3. Locate and check pulse (5-10 sec.). If pulse is present but no breathing, provide rescue breathing as per age group.
4. **Attach the AED as soon as it arrived.**
5. Place the AED next to the victim . POWER ON the AED
6. Attach electrode pads in the proper positions (as pictured on each of the AED electrodes, sternum and apex, with proper contact and no overlap of pads).  
**NOTE:** CPR should not be interrupted during this procedure.
7. Clear the victim during the ANALYZE. Some machines may ask you to press the analysis button, others will analyze automatically. The AED may take 5-15 seconds for analysis. (AED advises shock and charges)
8. Clear before delivering the shock. Ensure no contact with the victim. Loudly announce "I am clear, you are clear, all are clear "or simply "clear", then press the shock button. Single shock only to be delivered and then every 2 minutes thereafter. IN between start CPR 5 cycles of chest compression: ventilation as per age group. CPR is applied as 1 man CPR, while the second rescuer only operates the AED.
9. Repeat these steps until the EMS or ACLS team arrive or until the AED shows "No Shock Indicated".

***Continue monitoring the vital signs every two minutes and according to the findings:***

- If there is pulse and breathing: Place in the recovery position carefully, especially if neck injury is suspected, monitor Vital signs & ECG.
- If there is pulse but no breathing. Continue rescue breathing, (1 breath every 5 – 6 sec. (10 – 12/min.) for adult or one breath / 3 – 5 sec. (12 – 20 min.) for child and infant).
- If there is no pulse and breathing: Continue CPR 5 cycles of CPR (approx. 2 minutes) compression: ventilation 30:2 ratio and at a rate of least 100-120 per minute. Minimal interruption in compressions. Chest compressions depth according to the age of the victim, then analyze, shock, CPR and so on until success is achieved or EMS arrives.

## 4. Barrier device.

### 1. **FACE SHIELD:**

It is transparent sheet, with a permeable piece of cloth to allow ventilation through. It has a marking for the rescuer to know his side “ this side up”. It shows if any secretion or moist of breathing. If not available a piece of cloth ( like SHOMAGH or SHAYLA) will do.

### 2. **POCKET MASK:**

It is a face mask that fit for adult and children. it is transparent to show secretions or moist of breath. It has a p it is foldable and fit in a box, so to be carried. it can have an oxygen inlet for increasing the oxygen content of the rescuer breath.

### 3. **BAG-VALVE-MASK:**

It is a manual secured ventilation system. It consists of mask, one way valve and bag to deliver air. It deliver up to 100% oxygen. It is used by trained health care provider. Skills for how to use it and securing the mask on the face by C-E technique should be emphasized during the practical training.