

# Adult Basic Life Support (BLS)



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*I have no disclosures.*

# OBJECTIVES

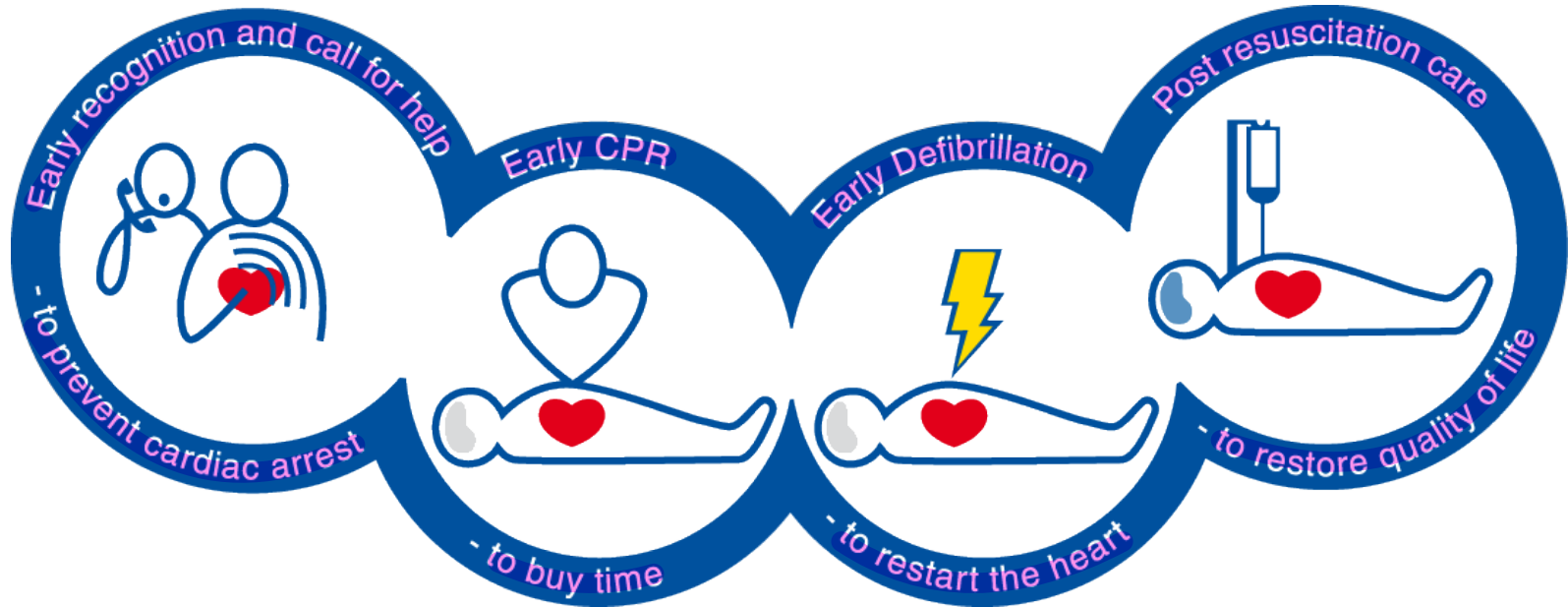
- Understand the Adult Chain of Survival
- Adult BLS Steps
  - How to assess the collapsed victim
  - How to perform High Quality CPR
  - How to provide effective ventilation
  - How to properly use an AED
  - How to place an unconscious breathing victim in the recovery position.
- Special Scenarios
  - Opioid Overdose

# BACKGROUND

- Approximately 700,000 cardiac arrests per year in Europe
- Survival to hospital discharge presently approximately 5-10%
- Bystander CPR vital intervention before arrival of emergency services – double or triple survival from SCA (sudden cardiac arrest)
- Early resuscitation and prompt defibrillation (within 1-2 minutes) can result in >60% survival
- Where are our national figures?

# CHAIN OF SURVIVAL

## Adults





# CHAIN OF SURVIVAL – Adults

Out-of-Hospital

AED:

Automatic  
External  
Defibrillator



In-Hospital

ACLS:

Advanced  
Cardiovascular  
Life  
Support



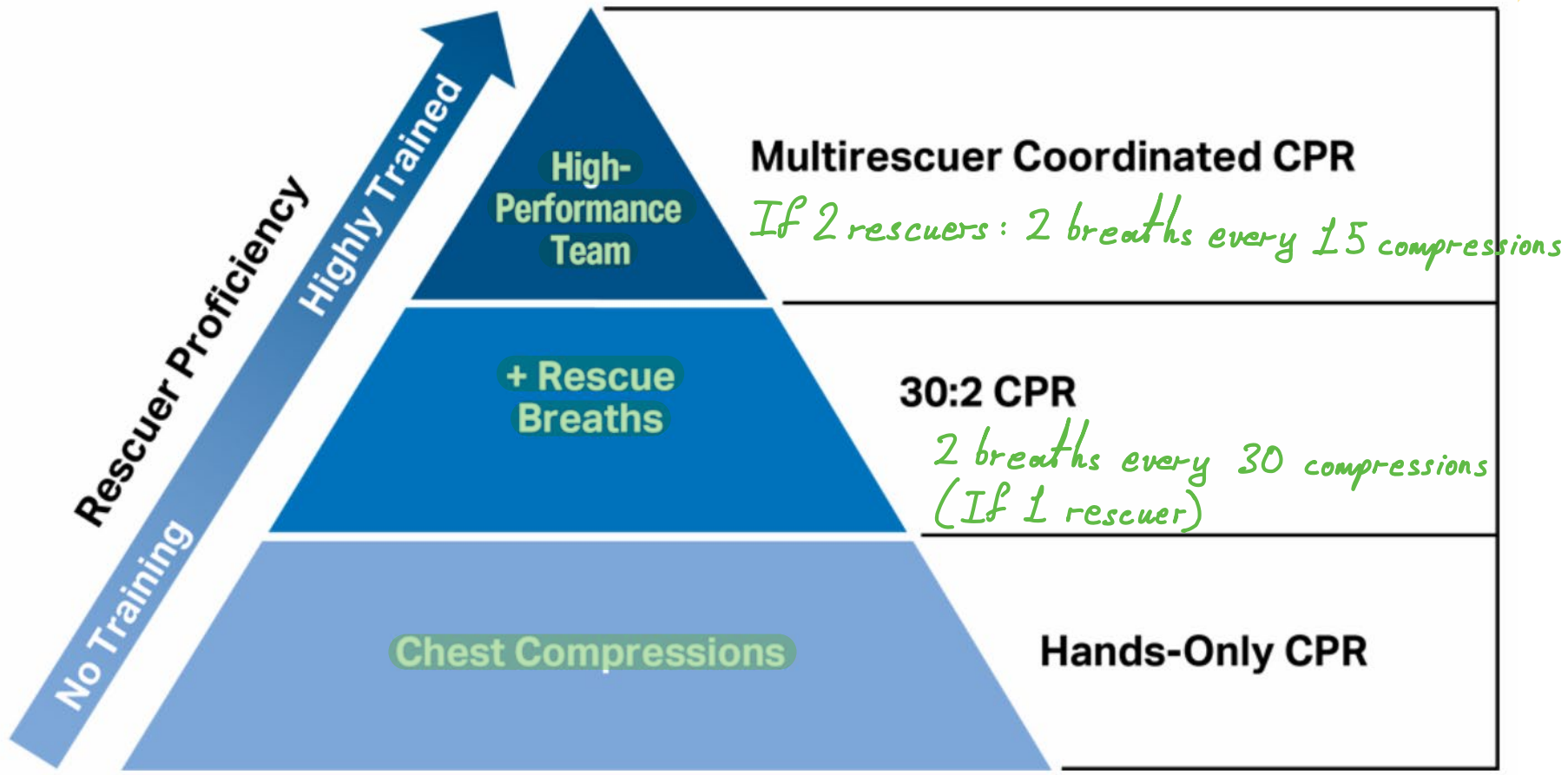
# CHAIN OF SURVIVAL - Paediatrics

## Out-of-Hospital



## In-Hospital

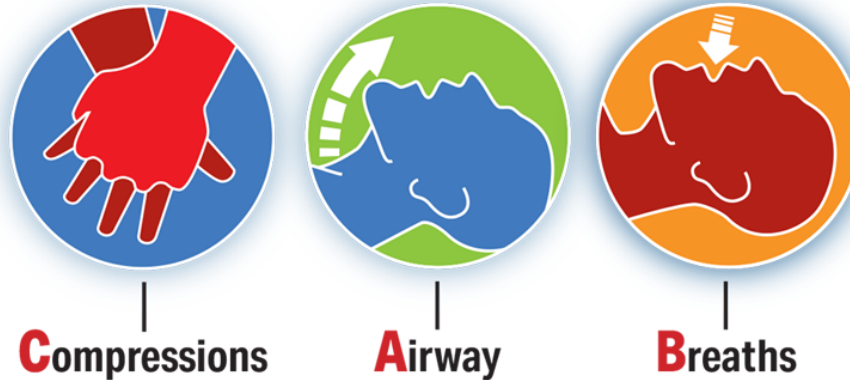




**“Something is better than nothing”** → *Even if you're not a CPR pro, do it!*

Previously: ABC  
Recently: CAB

# C-A-B



## Critical Concepts

High-quality CPR improves a victim's chances of survival. The critical characteristics of high-quality CPR include the following:

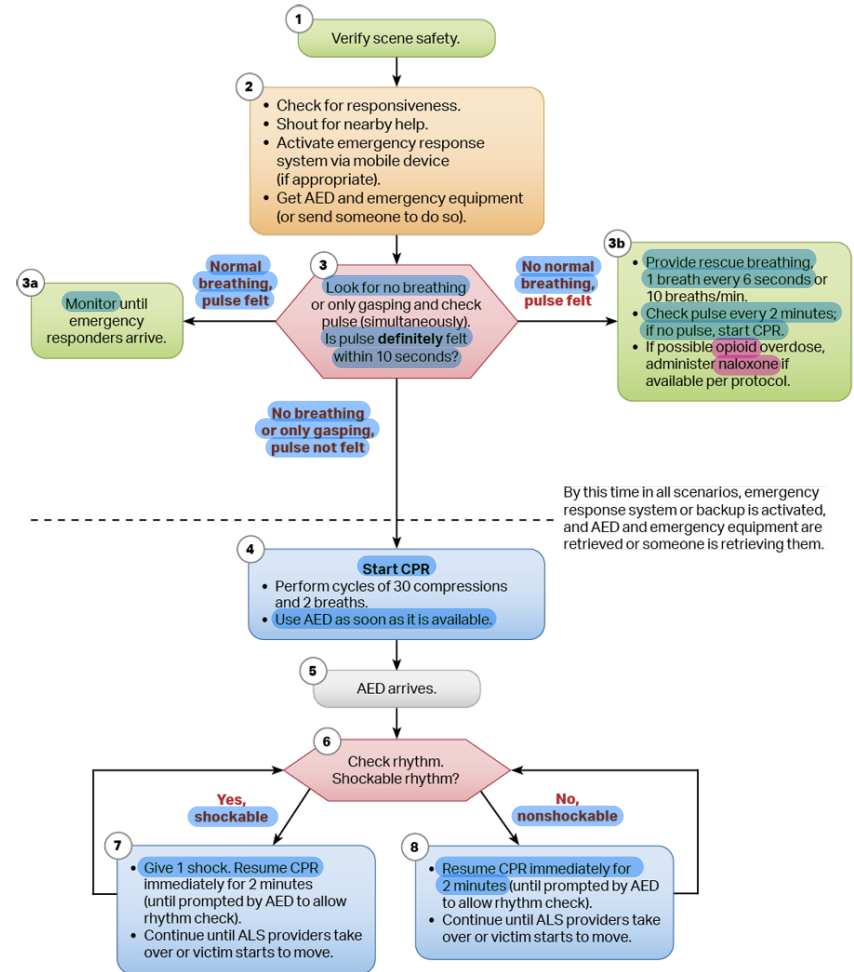
- **Start compressions within 10 seconds** after recognizing cardiac arrest.
- **Push hard and push fast:** Compress at a rate of 100 to 120/min with a depth of
  - At least 5 cm for adults
  - At least one third the depth of the chest, approximately 5 cm, for children
  - At least one third the depth of the chest, approximately 4 cm, for infants
- **Allow complete chest recoil** after each compression.
- **Minimize interruptions** in compressions (try to limit interruptions to less than 10 seconds).
- **Give effective breaths** that make the chest rise.
- **Avoid excessive ventilation.**

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# Adult BLS

CPR is indicated when victim is pulseless.



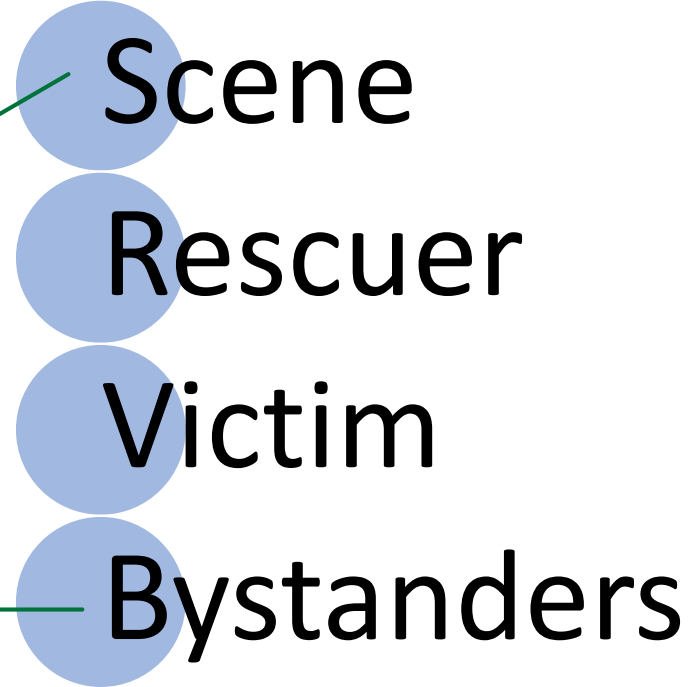
# Adult BLS Steps

- Verify Safety

مثال: المريف وقع بنص الشارع.  
شيله للرصيف بعدين ابدأ.

Too many bystanders with no  
helpful role would just create a  
chaos.

(بالذات إذا كانوا مفلين عالفاضي.)





# CHECK RESPONSE & Call for Help

*Shake the shoulder & call him.*



# Adult BLS Steps

- Check for Breathing & Pulse

*Look, Listen & Feel*



©EMC





# Adult BLS Steps

- Chest Compressions *If pulseless.*



## High Quality CPR

Compression to Ventilation Ratio	30:2
Compression Rate	100-120 /min
Compression Depth	5-6 cm with full recoil
Compression Period Length	Every 5 cycles or 2 minutes
Chest Compression Fraction (CCF)	Min > 60%, preferably >80%

*Duration of compression*

$\frac{\text{Duration of compression}}{\text{Total time of CPR}}$

# Adult BLS Steps

- Pregnant Women

**Positioning:** Gently position the pregnant woman on her back on a firm surface. It's important to slightly tilt the woman's body to her left side to help prevent compressing the inferior vena cava, which could affect blood return to the heart.



# Adult BLS Steps

- Pediatrics

**Chest Compressions:** Place the infant on a firm surface, such as a table or the ground. Position **two fingers** (index and middle fingers) **in the center of the infant's chest, just below the nipple line**. Perform chest compressions by pressing down about **1.5 inches deep** at a rate of about 100-120 compressions per minute. Use two fingers for compressions, as an **infant's chest is smaller and more delicate**.



**Adult**

About age 12 years or older



**Child**

Between the ages of 1 and 12 years



**Infant**

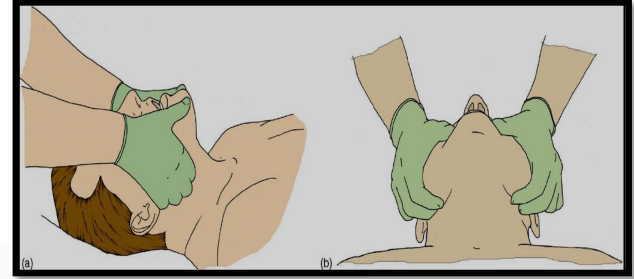
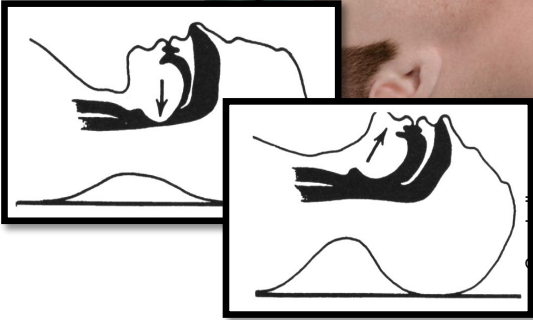
Younger than 1 year

*Chest compressions ✓*

# Adult BLS Steps

- Airway

*Head Tilt-Chin Lift*



*Jaw-Thrust Maneuver*

## Extra from ChatGPT

Maintaining the airway is crucial for a collapsed patient to ensure they can breathe properly. Here's how you can do it:

- 1. Head Tilt-Chin Lift:** Gently tilt the patient's head back with one hand while lifting the chin with your other hand. This helps to open the airway by moving the tongue away from the back of the throat.
- 2. Jaw-Thrust Maneuver:** If you suspect a neck or spine injury, use the jaw-thrust maneuver instead. Place your fingers on either side of the patient's lower jaw and lift it forward without moving the neck. This should open the airway without compromising the spine.
- 3. Clear the Mouth:** If there are any visible obstructions like foreign objects or vomit, carefully remove them using your fingers or a cloth.
- 4. Reposition the Patient:** If the patient's airway isn't clear with the head tilt-chin lift or jaw-thrust maneuver, gently roll the patient onto their side, supporting their head, to allow any fluids or obstructions to drain from the mouth. This is known as the recovery position.
- 5. Suctioning:** If you have access to a suction device, you can use it to clear the airway of fluids, mucus, or other obstructions. Make sure to use proper technique to avoid injuring the patient.
- 6. Oxygen:** If available, administer supplemental oxygen using a mask or other oxygen delivery system. This can help improve the patient's oxygen levels and breathing.

Remember, maintaining the airway should be done carefully and gently to avoid causing any harm, especially if there's a possibility of neck or spine injury. If the patient doesn't respond to these measures or their condition worsens, seek professional medical help immediately.



# Adult BLS Steps

- Breathing

## Bag-Mask Device



### High Quality CPR

Compression to Ventilation Ratio	30:2
Ventilation Period (if 1 rescuer)	< 10 sec
Ventilation Rise	Visible Chest rise

## Extra from ChatGPT

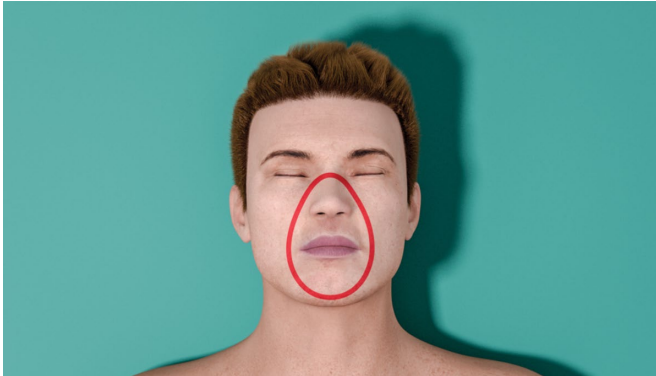
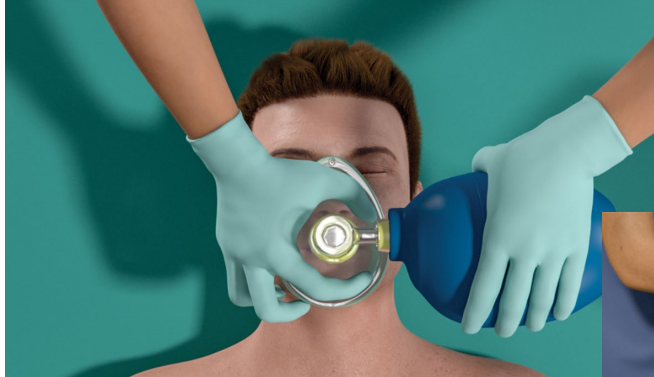
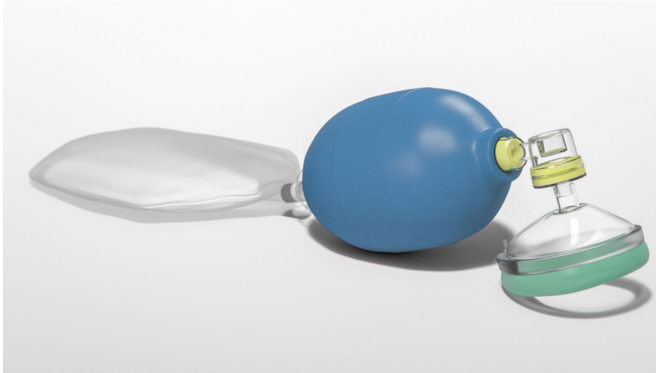
Breathing for a collapsed patient is essential to ensure they're getting enough oxygen and expelling carbon dioxide. Here's what you should do:

- 1. Assess Breathing:** Look, listen, and feel for signs of breathing. Watch for chest movement, listen for breath sounds, and feel for air coming from the patient's nose or mouth.
- 2. Rescue Breaths:** If the patient is not breathing or is breathing abnormally, you may need to provide rescue breaths. Pinch the patient's nose closed and cover their mouth with yours, forming an airtight seal. Give a breath that makes the chest visibly rise. For an adult, provide a breath that lasts about 1 second. For an infant or child, the breath should be smaller and gentle.
- 3. Chest Rise:** Watch for the chest to rise as you provide each rescue breath. If the chest doesn't rise, reposition the head and try again, making sure to maintain a good seal.
- 4. Chest Compressions:** If you're performing CPR, combine chest compressions with rescue breaths. After each set of compressions (usually 30 compressions), provide 2 rescue breaths.
- 5. Ventilation Rate:** The ventilation rate varies based on the age of the patient. For adults, provide 1 rescue breath every 5 to 6 seconds. For children and infants, provide 1 rescue breath every 3 to 5 seconds.
- 6. Use of Bag-Mask Device:** If you're trained and have access to a bag-mask device, you can use it to provide more effective rescue breaths. Ensure a proper seal over the patient's mouth and nose and deliver breaths using the bag-mask device.
- 7. Monitor Breathing:** Continuously monitor the patient's breathing and adjust your actions based on their response. If their breathing starts spontaneously, allow them to breathe on their own.

It's important to follow appropriate guidelines and training while providing rescue breaths, as improper technique can be less effective. If the patient's breathing doesn't improve or their condition deteriorates, seek professional medical assistance immediately.

# Adult BLS Steps

- Breathing



*“E – C Technique”*



Various methods of mask positioning have been described. The one-hand E-C technique is shown in the images below. Using the nondominant hand, create a C-shape with the thumb and index finger over the top of the mask, and apply gentle downward pressure. Hook the remaining fingers around the mandible, and lift it upward toward the mask, creating the E.



Bag-valve-mask (BVM) ventilation. One-hand E-C technique.

[View Media Gallery](#)



Bag-valve-mask (BVM) ventilation. One-hand E-C technique.

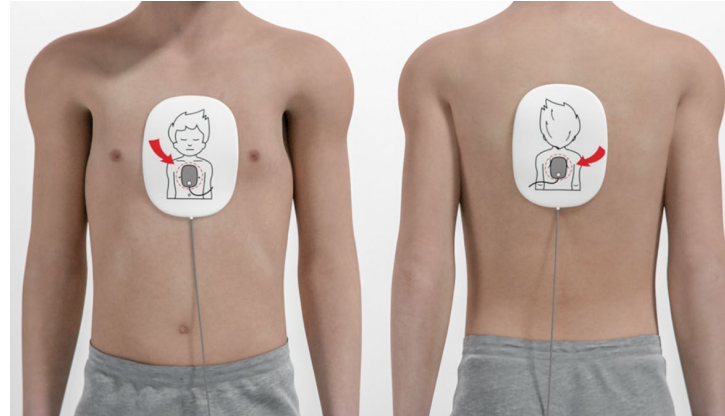
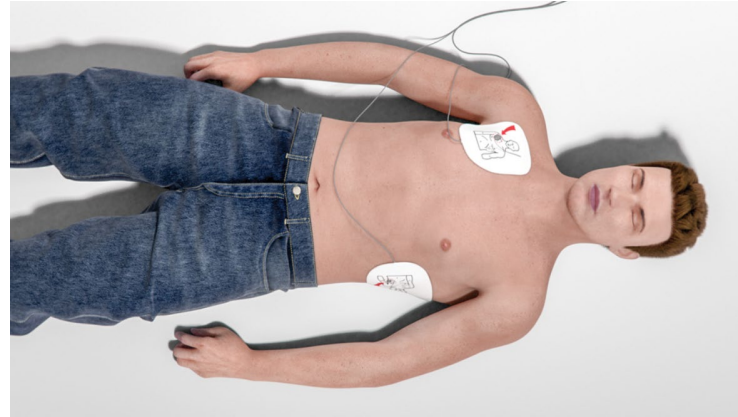
[View Media Gallery](#)

# Adult BLS Steps

- Automatic External Defibrillator



## Electrodes



## Extra from ChatGPT

An AED stands for "Automated External Defibrillator." It's a portable medical device used to diagnose and treat life-threatening cardiac arrhythmias, specifically ventricular fibrillation and pulseless ventricular tachycardia, through the application of an electric shock. AEDs are designed to be used by laypeople or non-medical professionals and are commonly found in public spaces, workplaces, schools, and other areas where sudden cardiac arrest might occur.

Key features of an AED include:

- 1. Automated Operation:** AEDs are designed to guide users through the process of using the device, often with voice prompts and visual instructions. This makes them user-friendly, even for individuals without medical training.
- 2. Defibrillation:** AEDs deliver an electric shock to the heart to restore its normal rhythm. The shock interrupts the abnormal rhythm and allows the heart's natural pacemaker to regain control.
- 3. Analysis:** AEDs analyze the heart's rhythm to determine whether a shock is necessary. They can differentiate between rhythms that require defibrillation and those that don't.
- 4. Electrode Placement:** AEDs come with adhesive electrode pads that need to be placed on the person's chest. These pads detect the heart's electrical activity and deliver the shock if needed.
- 5. Safety Features:** AEDs often have safety features to prevent accidental shocks, such as analyzing the rhythm before delivering a shock and ensuring that bystanders are clear of the patient when a shock is administered.

AEDs are valuable tools in situations where every second counts, as they can significantly improve the chances of survival for individuals experiencing sudden cardiac arrest. It's important to receive proper training in CPR and AED use, but even without formal training, the AED's instructions and prompts can assist in providing life-saving intervention until professional medical help arrives.

# Adult BLS Steps

- Automatic External Defibrillator

*No one is allowed to touch the patient during the shock!*





# Adult BLS Steps

- Team Approach



**“CPR Coach”**

## Extra from ChatGPT

### 1. Team Approach:

The “team approach” in CPR highlights the significance of coordinated and organized efforts by a group of responders when providing care to a person in cardiac arrest. In a medical emergency, multiple individuals with various skills may be involved, such as first responders, bystanders, paramedics, and medical professionals. A well-coordinated team can perform tasks simultaneously, ensuring that critical steps, such as initiating CPR, using an AED, and providing rescue breaths, are carried out efficiently. Clear communication, task delegation, and a shared understanding of roles are crucial elements of a successful team approach to CPR.

### 2. CPR Coach:

A “CPR coach” is an individual who takes on the responsibility of guiding and directing the individuals performing CPR. The CPR coach ensures that proper technique, timing, and sequence are followed during the resuscitation efforts. This role is especially important in situations where there might be variations in the skills or experience levels of the responders. The CPR coach may provide instructions for chest compressions, rescue breaths, and other interventions, helping to maintain the quality of CPR and increasing the chances of a positive outcome. In some cases, the term “CPR coach” may also refer to the automated voice prompts provided by an AED (Automated External Defibrillator) that guide responders through the steps of CPR.

Both the team approach and the role of a CPR coach underscore the need for collaboration and direction in CPR scenarios, as effective teamwork and clear guidance greatly contribute to the success of resuscitation efforts.

# Adult BLS Steps

## Team Approach

### Resuscitation Triangle Roles

#### Compressor

- Assesses the patient
- Does 5 cycles of chest compressions
- Alternates with AED/Monitor/Defibrillator every 5 cycles or 2 minutes (or earlier if signs of fatigue set in)

#### AED/Monitor/Defibrillator

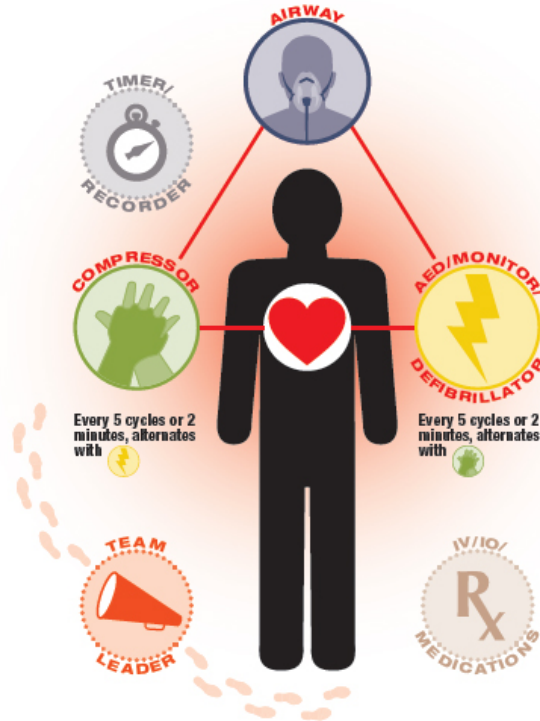
- Brings and operates the AED/monitor/defibrillator
- Alternates with Compressor every 5 cycles or 2 minutes (or earlier if signs of fatigue set in), ideally during rhythm analysis
- If a monitor is present, places it in a position where it can be seen by the Team Leader (and most of the team)

#### Airway

- Opens the airway
- Provides bag-mask ventilation
- Inserts airway adjuncts as appropriate

The team owns the code. No team member leaves the triangle except to protect his or her safety.

### Positions for 6-Person High-Performance Teams\*



\*This is a suggested team formation. Roles may be adapted to local protocol.

### Leadership Roles

#### Team Leader

- **Every resuscitation team must have a defined leader**
- Assigns roles to team members
- Makes treatment decisions
- Provides feedback to the rest of the team as needed
- Assumes responsibility for roles not assigned

#### IV/IO/Medications

- An ACLS provider role
- Initiates IV/IO access
- Administers medications

#### Timer/Recorder

- Records the time of interventions and medications (and announces when these are next due)
- Records the frequency and duration of interruptions in compressions
- Communicates these to the Team Leader (and the rest of the team)

# Adult BLS Steps

- Team Approach



Share Knowledge

Summarize & Reevaluate

Clear Messages

Closed loop communication

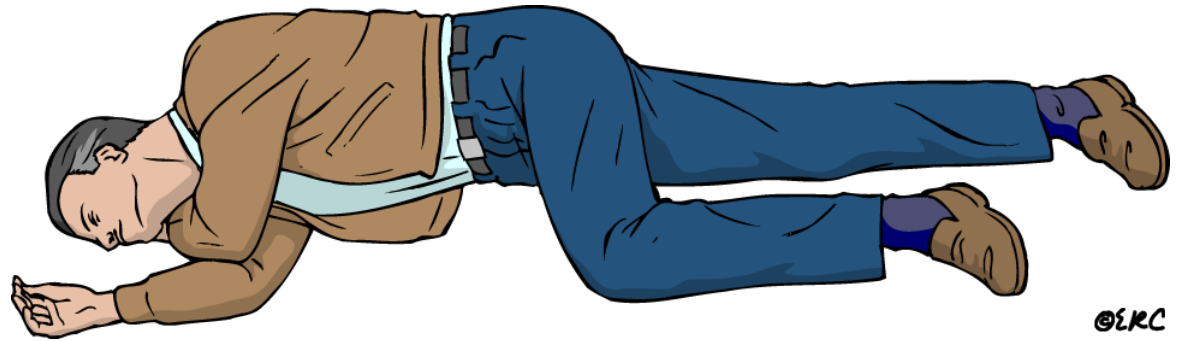
Mutual Respect



# Adult BLS Steps



- Recovery Position
- *IF VICTIM STARTS TO BREATHE NORMALLY  
PLACE IN RECOVERY POSITION*



# Extra from ChatGPT

The recovery position, also known as the lateral recumbent position, is a safe and stable position in which an unconscious or unresponsive person can be placed to maintain an open airway and prevent choking. It's commonly used when there is a concern about maintaining a clear airway, especially if the person is not fully conscious or is vomiting.

Here's how to place someone in the recovery position:

## **1. Positioning:**

- If the person is lying on their back, gently roll them onto their side.
- The person's arm that is closest to you should be bent at a right angle, with their hand placed under their head. This supports their head and helps maintain the open airway.
- The person's upper leg should be bent at the knee, slightly raising it to stabilize their position.
- The person's lower arm can be extended straight out or tucked under their head for comfort and support.

## **2. Head Tilt-Chin Lift:**

- While placing the person in the recovery position, ensure their head is tilted slightly backward and their chin is lifted upward. This helps keep the airway open.

## **3. Monitor:**

- Once the person is in the recovery position, continuously monitor their breathing and overall condition.

The recovery position is especially useful when you need to keep the airway clear, such as when someone is unconscious or intoxicated. It allows fluids to drain from the mouth and minimizes the risk of choking.

Remember, the recovery position is not suitable for all situations. If you suspect a neck or spinal injury, or if the person is experiencing severe trauma, it's best to keep them in their current position (unless their airway is compromised), and wait for professional medical help. If in doubt, seek medical assistance and follow any guidelines or instructions you've been provided with.

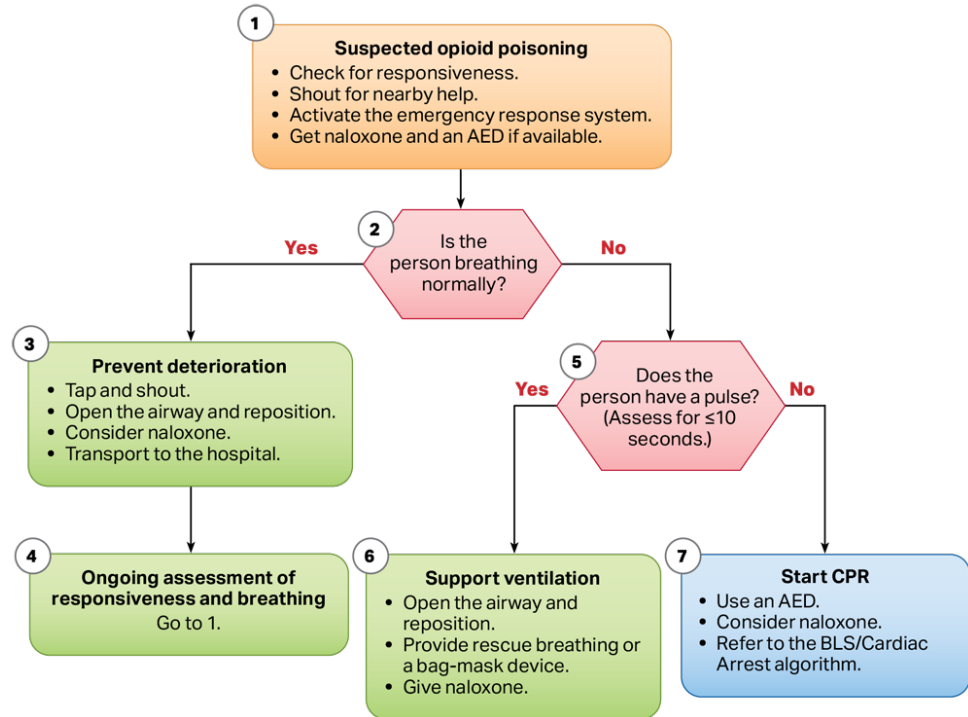
# When Can I Stop CPR?

- Victim revives
- Trained help arrives
- Too exhausted to continue → *It's not "silly". You have energy too!*
- Unsafe scene → *التارح زي ما حكينا*
- Physician directed (do not resuscitate orders) → *Ethically, you should leave the victim to die.*
- Cardiac arrest of longer than 30 minutes
  - (controversial)

# Special Scenarios

-

## Opioid Poisoning



# Special Scenarios

-

## Heart Attack

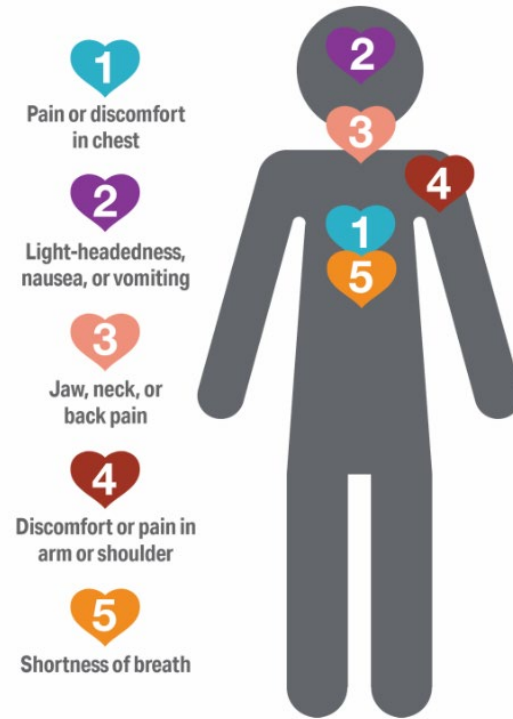
*The heart muscle is affected*

**“Time is Muscle”**

Early Recognition

Early Intervention

- ASA (*Aspirin → Useful in heart attacks as it prevents blood clotting*)
- CPR



# Special Scenarios

-

## Stroke

*The brain is affected*



"Time is Brain"	
F	Face Drooping
A	Arm Weakness
S	Speech Difficulties
T	Time to Call

# Special Scenarios

-

## Drowning

### “Rescue breaths first”

“Rescue breaths first” refers to the approach of starting cardiopulmonary resuscitation (CPR) with providing rescue breaths before initiating chest compressions. This approach is typically used in scenarios where the primary concern is a respiratory emergency rather than a cardiac emergency. It’s especially relevant when the person is not breathing or is breathing inadequately.

# Special Scenarios

-

## Anaphylaxis

### Epinephrine Injection for Anaphylaxis:

An epinephrine injection is administered in cases of severe allergic reactions (anaphylaxis) to counteract the allergic response. Anaphylaxis can cause a rapid drop in blood pressure, difficulty breathing, and swelling of the airways, which can be life-threatening. The injection of epinephrine helps constrict blood vessels, improve heart function, and open up the airways, allowing the person to breathe more easily.



## “Epi injection”



# Special Scenarios - Chocking

## Relief of Foreign-Body Airway Obstruction

Adults and adolescents	Children (age 1 year to puberty)	Infants (age less than 1 year)
<ol style="list-style-type: none"> <li>1. Ask "Are you choking?" If the victim nods yes and cannot talk, severe airway obstruction is present. Take steps immediately to relieve the obstruction.</li> <li>2. Give abdominal thrusts to a victim who is standing or sitting or chest thrusts for pregnant or obese victims.</li> <li>3. Repeat thrusts until effective or the victim becomes unresponsive.</li> </ol>	<ol style="list-style-type: none"> <li>1. Ask "Are you choking?" If the victim nods yes and cannot talk, severe airway obstruction is present. Take steps immediately to relieve the obstruction.</li> <li>2. Give abdominal thrusts to a victim who is standing or sitting or chest thrusts for obese victims.</li> <li>3. Repeat thrusts until effective or the victim becomes unresponsive.</li> </ol>	<ol style="list-style-type: none"> <li>1. If the victim cannot make any sounds or breath, severe airway obstruction is present.</li> <li>2. Give up to 5 back slaps and up to 5 chest thrusts.</li> <li>3. Repeat step 2 until effective or the victim becomes unresponsive.</li> </ol>
<b>Victim becomes unresponsive</b>		
<ol style="list-style-type: none"> <li>4. Activate the emergency response system via mobile device (if appropriate) or send someone to do so. After about 2 minutes of CPR, if you are alone with no mobile device, leave the victim to activate the emergency response system (if no one has already done so).</li> <li>5. Lower the victim to the floor. Begin CPR, starting with chest compressions. Do not check for a pulse.</li> <li>6. Before you deliver breaths, look into the mouth. If you see a foreign body that can be easily removed, remove it.</li> <li>7. Continue CPR until advanced providers arrive.</li> </ol>		

*No Blind Finger Sweeps*

## Extra from ChatGPT

"No blind finger sweeps" refers to the caution against using your fingers to blindly sweep or probe inside the mouth or throat of a person who may be choking. This advice is particularly important when dealing with a choking victim, as attempting to clear the airway using this method can be unsafe and potentially harmful.

In situations where someone is choking and you suspect there's an obstruction in their airway, it's generally recommended to perform the Heimlich maneuver (abdominal thrusts) or back blows and chest thrusts for infants and children, depending on the victim's age. These techniques are designed to apply controlled force to expel the object causing the obstruction.

Blindly sweeping your finger into the mouth can push the obstruction further down the airway, potentially making the situation worse. It may also cause injury to the person's mouth, throat, or airway. Therefore, it's best to avoid using your fingers to sweep the throat without being able to see what you're doing.

In cases of choking, if the victim is conscious and coughing forcefully, encourage them to keep coughing to try to expel the obstruction. If the person becomes unconscious or their coughing becomes weak or silent, call for emergency help immediately and initiate appropriate first aid measures, such as abdominal thrusts (Heimlich maneuver) if needed and if you're trained to do so.

# Special Scenarios

- Chocking

*Abdominal thrusts in a non-obese child.*



## Special Scenarios

-

## Chocking

*Chest thrusts*

*in a*  
*pregnant*

*woman.*



## Special Scenarios

-

## Chocking

Infants

Slaps  
(upto 5)



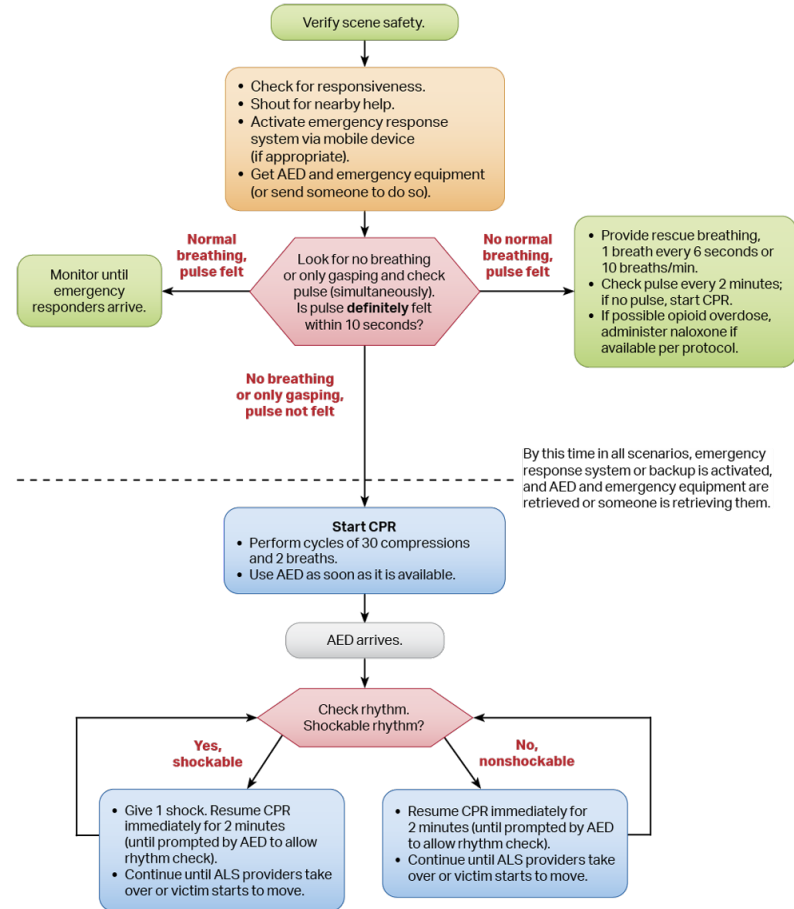
Chest  
thrusts  
(upto 5)



# Summary

Adult BLS

# Adult BLS

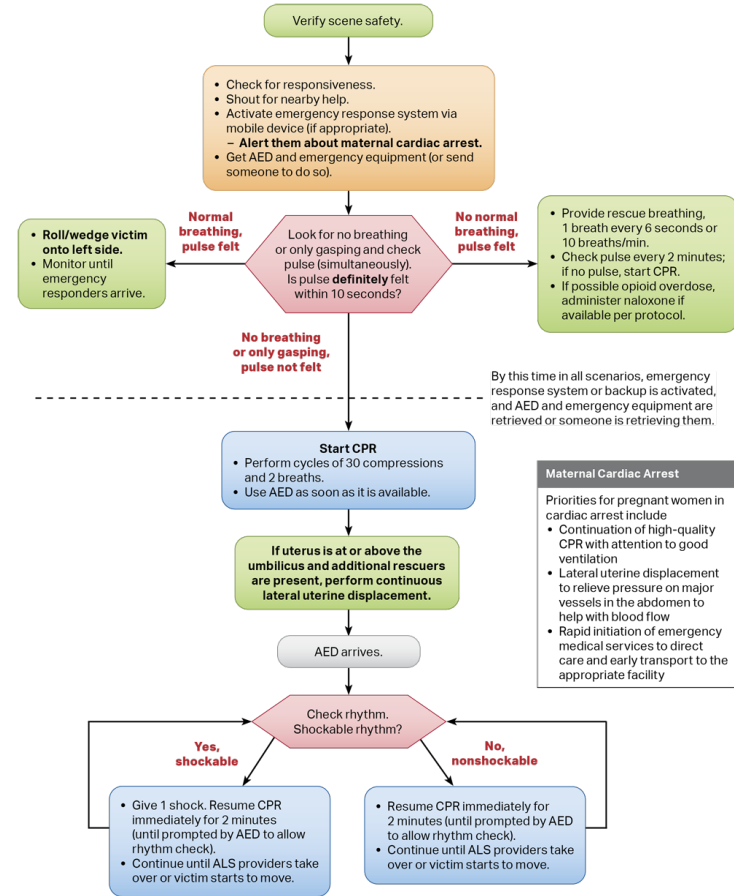




# Adult BLS

## -

# Pregnancy



## Summary of High-Quality CPR Components for BLS Providers

Component	Adults and adolescents	Children (age 1 year to puberty)	Infants (age less than 1 year, excluding newborns)
Verifying scene safety	Make sure the environment is safe for rescuers and victim		
Recognizing cardiac arrest	Check for responsiveness No breathing or only gasping (ie, no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check should be performed simultaneously in less than 10 seconds)		
Activating emergency response system	<i>If a mobile device is available, phone emergency services</i>  If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available		
Compression-ventilation ratio <i>without advanced airway</i>	<b>1 or 2 rescuers</b> 30:2	<b>1 rescuer</b> 30:2  <b>2 or more rescuers</b> 15:2	
Compression-ventilation ratio <i>with advanced airway</i>	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)	Continuous compressions at a rate of 100-120/min Give 1 breath every 2-3 seconds (20-30 breaths/min)	
Compression rate	100-120/min		
Compression depth	At least 5 cm*	At least one third AP diameter of chest Approximately 5 cm	At least one third AP diameter of chest Approximately 4 cm
Hand placement	2 hands on the lower half of the breastbone (sternum)	2 hands or 1 hand (option for very small child) on the lower half of the breastbone (sternum)	<b>1 rescuer</b> 2 fingers or 2 thumbs in the center of the chest, just below the nipple line  <b>2 or more rescuers</b> 2 thumb-encircling hands in the center of the chest, just below the nipple line  If the rescuer is unable to achieve the recommended depth, it may be reasonable to use the heel of one hand
Chest recoil	Allow complete recoil of chest after each compression; do not lean on the chest after each compression		
Minimizing interruptions	Limit interruptions in chest compressions to less than 10 seconds with a CCF goal of 80%		

\*Compression depth should be no more than 6 cm.

Abbreviations: AED, automated external defibrillator; AP, anteroposterior; CCF, chest compression fraction; CPR, cardiopulmonary resuscitation.

**Thank You**