BLS MODIFIED

الكُتّاب: عمر صمادي

المدققين: إسماعيل العارضه

الدكتور/ة: قيس البلبيسي

Special Scenarios

Color code
Slides
Doctor
Additional info
Important

Adult
Basic Life Support
(BLS)

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cardiology

I have no disclosures.

OBJECTIVES

- BLS = Basic Life Support.
- ACLS = Advanced Cardiac Life Support, we will learn this in the future in medicine.

- 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%.

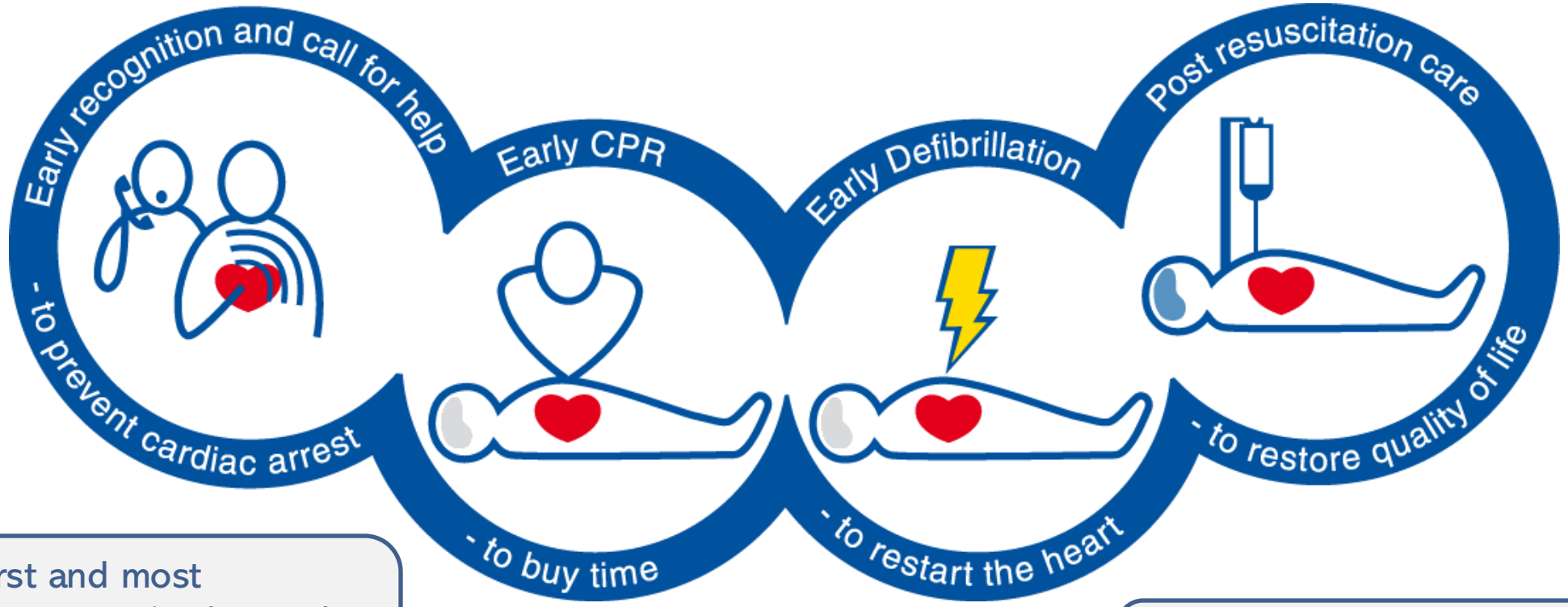
  It also depends on how fast resuscitation was provided.

- 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

Survival does not rely solely on resuscitation, but other steps too.



This first and most important step is always the early recognition of a problem needing BLS.

Every minute passes without resuscitation drops the survival chance by 10% 😱

CHAIN OF SURVIVAL – Adults

The way we approach a patient in need of BLS differs if the patient is adult or pediatric, let's start with adults.

Out-of-Hospital

AED

In-Hospital

ACLS

- Outside the hospital:

1. Recognition, someone passes out, stops breathing, someone is looking cyanotic, etc.
2. Call for help, because by yourself, you might not provide all the sufficient care.
3. Give high-quality CPR, we will talk about it in the lecture.
4. Defibrillation, done by AED in public settings, (we will talk about it soon).

- Inside the hospital:

1. In the hospital, recognition is already done, so we call for help by activation code blue.
2. High- quality CPR.
3. Defibrillation.
4. ACLS administration.

Before we know the difference between adult and pediatric resuscitation we need to understand these concepts:

- CPR is given to patients with Cardiac Arrest, meaning the loss of pulse.
- The loss of pulse can be caused by “Shockable rhythms” like ventricular tachycardia (Vtach), and ventricular fibrillation (Vfib), or “Non-shockable rhythms” like Asystole, and pulseless electrical activity (PEA).
- In adults, cardiac arrest comes mostly on its own, (may be caused by an underlying CAD).
- While in pediatrics, Respiratory arrest is the most common cause of Cardiac arrest, so we approach them a bit differently.

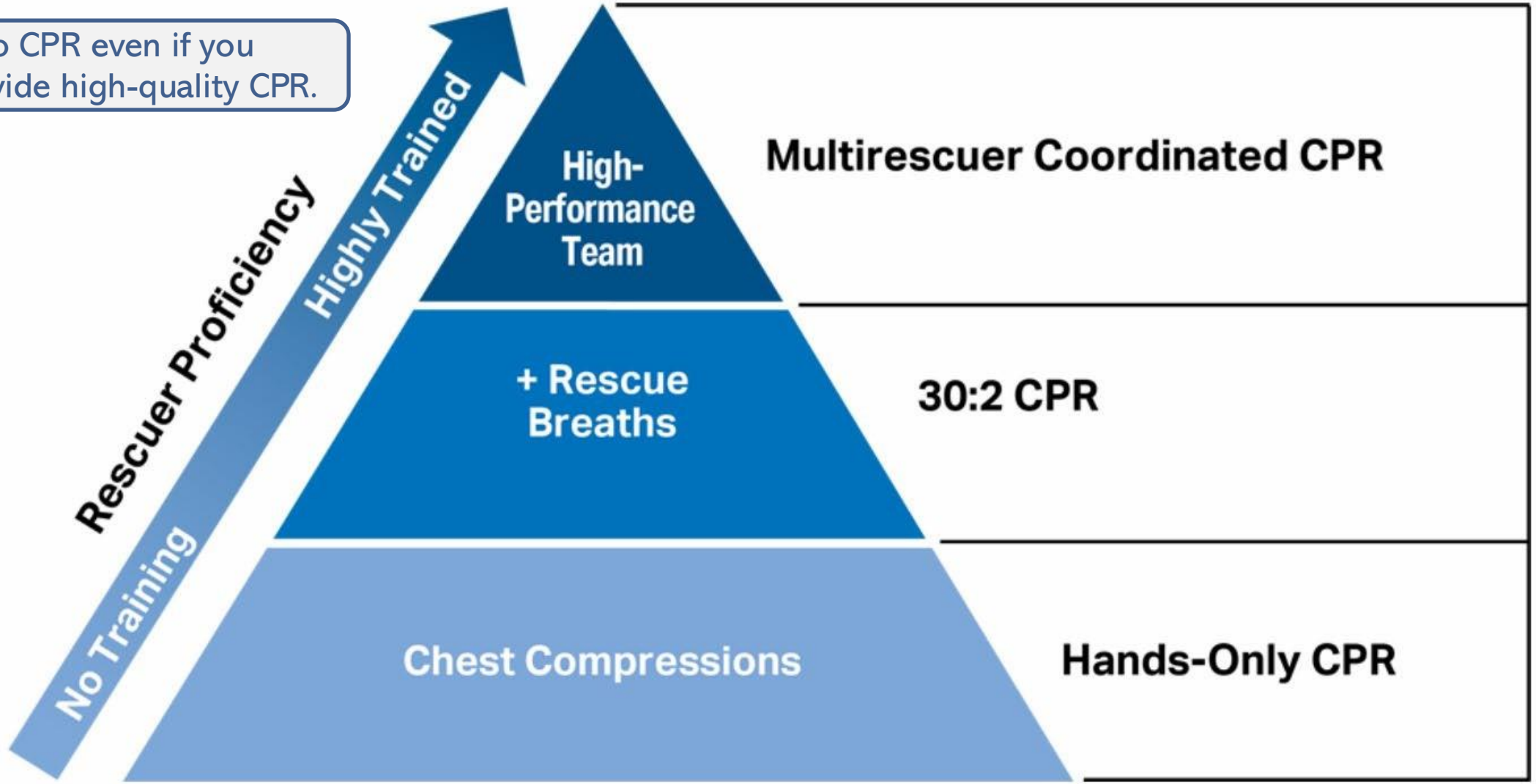
CHAIN OF SURVIVAL - Paediatrics

Recognition and prevention of **respiratory problems** is key in pediatric resuscitation.

Out-of-Hospital

In-Hospital

Always do CPR even if you can't provide high-quality CPR.

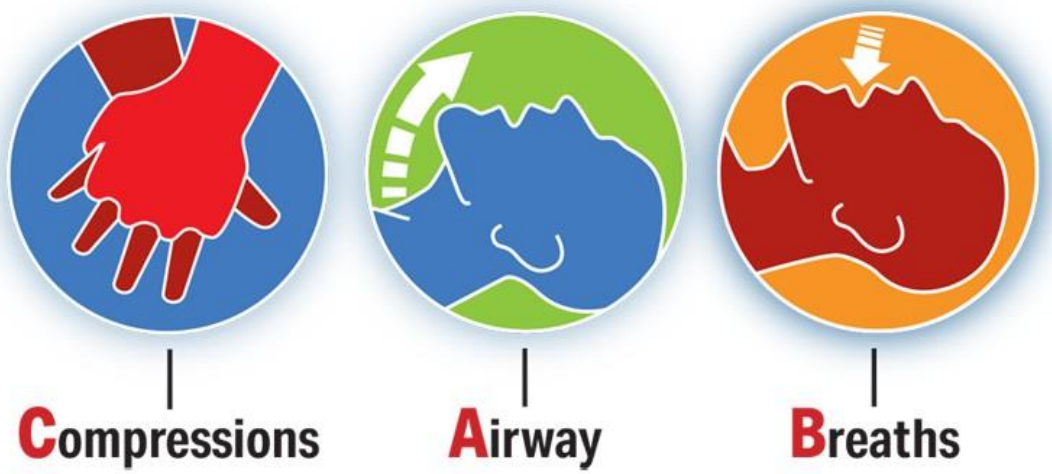


"Something is better than nothing"

American Heart Association.

START with compressions as soon as possible.

C-A-B

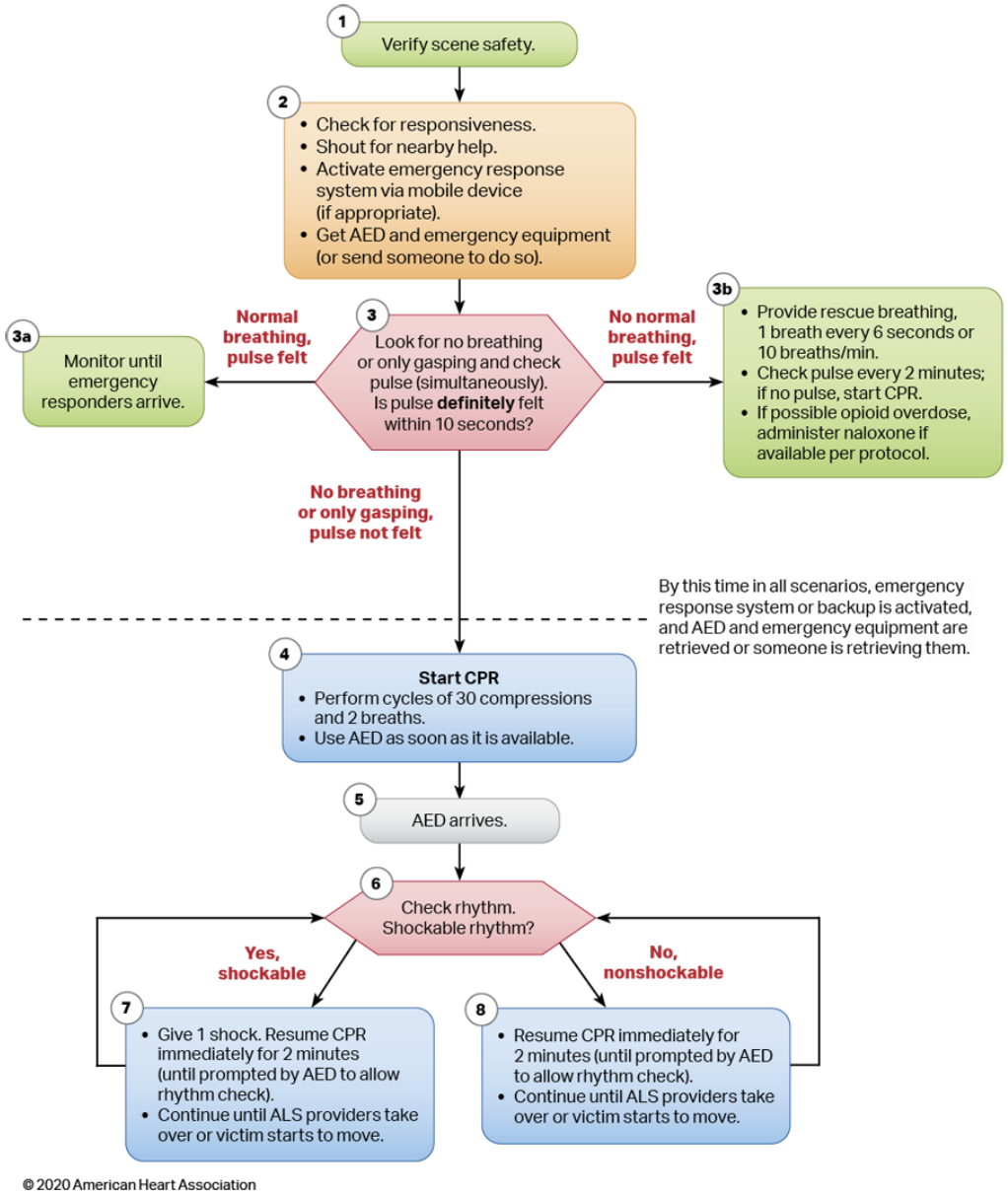


Critical Concepts

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.**

Adult BLS


1
Verify scene safety.
2
• Check for responsiveness.
• Shout for nearby help.
• Activate emergency response system via mobile device (if appropriate).
• Get AED and emergency equipment (or send someone to do so).
3
Look for no breathing or only gasping and check pulse (simultaneously). Is pulse definitely felt within 10 seconds?
Normal breathing, pulse felt
3a
Monitor until emergency responders arrive.
No normal breathing, pulse felt
3b
• Provide rescue breathing, 1 breath every 6 seconds or 10 breaths/min.
• Check pulse every 2 minutes; if no pulse, start CPR.
• If possible opioid overdose, administer naloxone if available per protocol.
No breathing or only gasping, pulse not felt
By this time in all scenarios, emergency response system or backup is activated, and AED and emergency equipment are retrieved or someone is retrieving them.
4
Start CPR
• Perform cycles of 30 compressions and 2 breaths.
• Use AED as soon as it is available.
5
AED arrives.
6
Check rhythm. Shockable rhythm?
Yes, shockable
No, nonshockable
7
• Give 1 shock. Resume CPR immediately for 2 minutes (until prompted by AED to allow rhythm check).
• Continue until ALS providers take over or victim starts to move.
8
• Resume CPR immediately for 2 minutes (until prompted by AED to allow rhythm check).
• Continue until ALS providers take over or victim starts to move.
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Adult BLS Steps

- Verify Safety

  - Meaning your safety, the patient's safety, the environment safety, etc. so if someone passed out in the street you should move them away from the street immediately before starting CPR.
  - When performing CPR with bystanders around, you should take leadership and decide who helps you and how (give instructions and orders), and who should stay away.
  - Be careful for injuries when moving the victim, especially neck injuries.

Scene

Rescuer

Victim

Bystanders

CHECK RESPONSE & Call for Help

Adult BLS Steps

- Check for Breathing & Pulse.

All simultaneously.

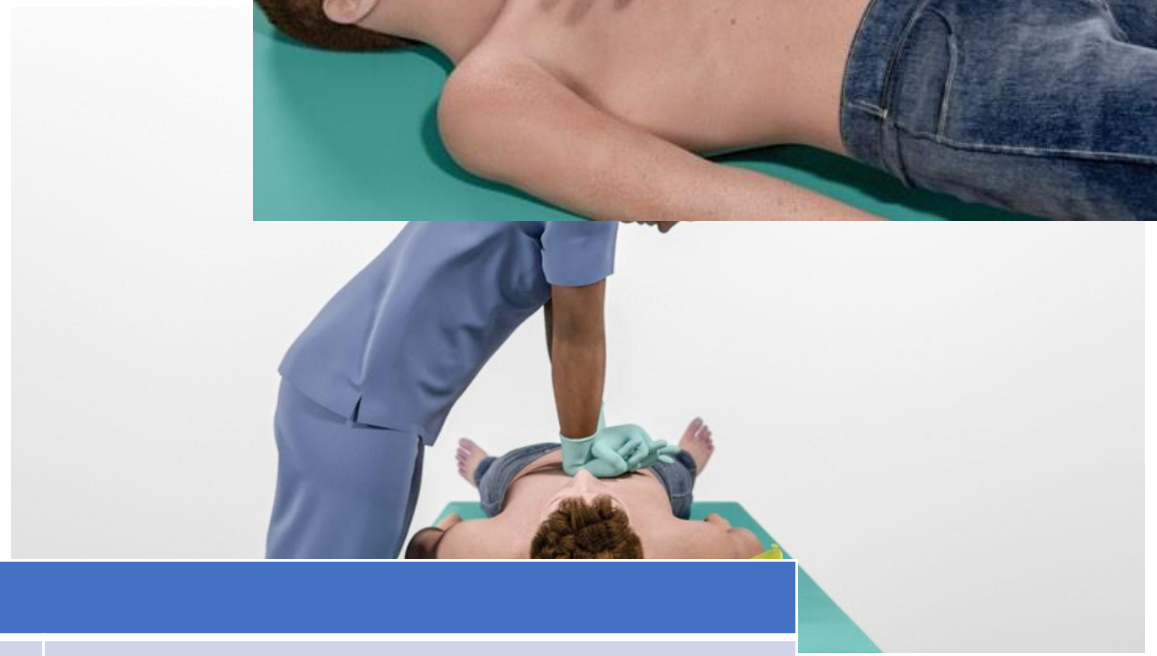
- LOOK for breathing movement.
- LISTEN for breathing sounds.
- FEEL the carotid pulse.

Look, Listen & Feel

Should take from 5 – 10 seconds

Adult BLS Steps

- Chest Compressions



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%

Performing a high-quality CPR :

- Place the heel of your hand on the sternum, not manubrium or xiphisternum.
- Place the other hand on the first hand and LOCK your elbows, no movement should happen in the elbows, the compression movement should come from your whole body, mostly the trunk.
- Be at a proper relative height from the patient, not too high and not too low, to allow proper movement and transmission of force.
- If you are on your own, for each 30 compressions give 2 breaths (that's called a cycle), if there is another person helping with breaths, they should be given continuously and simultaneously with compressions.
- The compression rate should be from 100-120 compressions/minute.
- The chest should be compressed 5-6 cm deep in each compression, if you feel a crack that's okay, the patient's life is more important.
- When you compress 5-6 cm, you should allow for full recoil of chest wall at each compression, because full chest recoil means full heart filling by venous return.
- Chest compression factor (CCF) is how much of your time resuscitating is spent on chest compression, it is preferably more than 80%, and minimum 60%.
- For every 5 cycles, or 2 minutes you should stop to assess pulse, breathing, and allow AED to analyze (will be explained soon), then you should go back to CPR.

Adult BLS Steps

- Pregnant Women

- In pregnant women, the uterus should be pushed to the left side while performing CPR to alleviate the pressure on the inferior vena cava (which is on the right side) and allow good venous return.

Adult BLS Steps

- Pediatrics

Compressions should be:

Adult

About age 12 years or older

5-6 cm deep in adults.

Child

Between the ages of 1 and 12 years

30% of chest depth in children 1-12 years old.

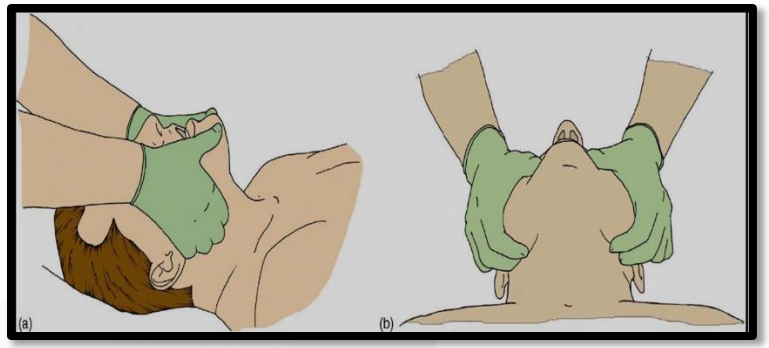
Infant

Younger than 1 year

Performed with 2 fingers and near the xiphiod process in infants.

Adult BLS Steps

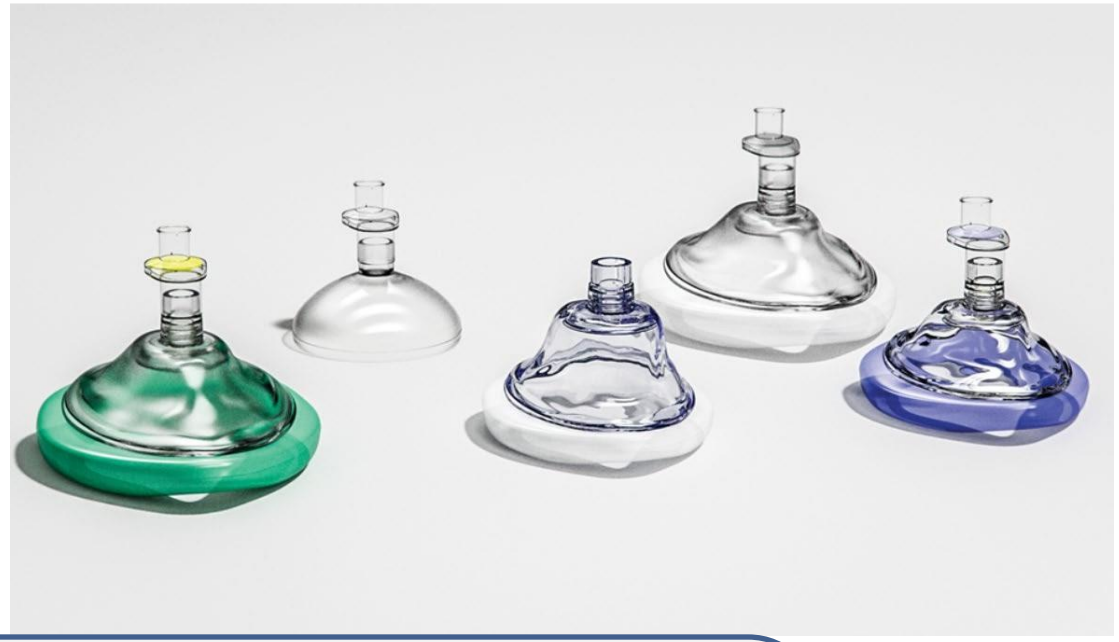
- Airway



- There are two way to ensure that airways are okay: 1-head tilt 2-Jaw thrust
- The most common cause of airway obstruction is the tongue, so we do a head tilt (backwards) (the pic on the left).
- But what if the victim has a neck injury? We do a jaw thrust, by grabbing the jaw with both hands and lifting it up (without moving the neck) (the pic on the right).

Adult BLS Steps

- Breathing



Breathing in a high-quality CPR should be :

- 2 breaths per 30 compressions.
- Breaths should make a visible chest wall rise.
- Breaths should take less than 10 seconds.

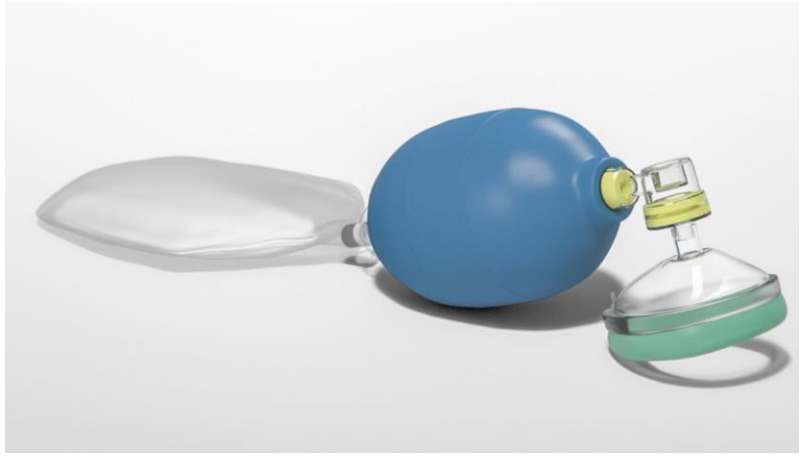
High Quality CPR	
Compression to Ventilation Ratio	30:2
Ventilation Period (if 1 rescuer)	< 10 sec
Ventilation Rise	Visible Chest rise

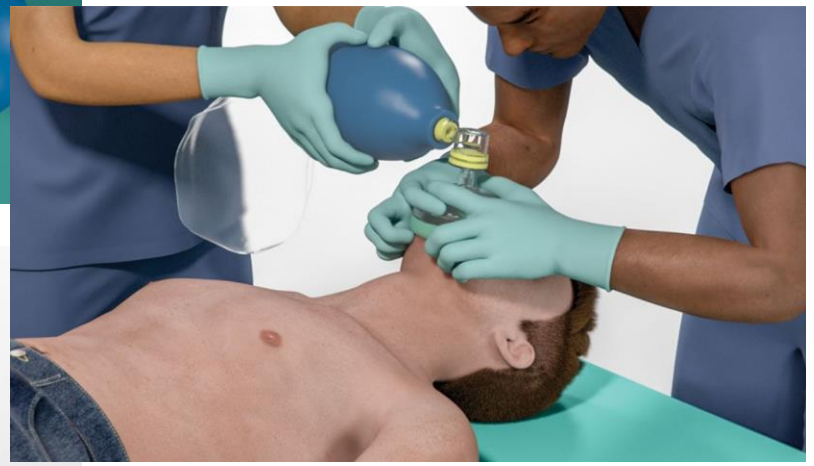
Adult BLS Steps

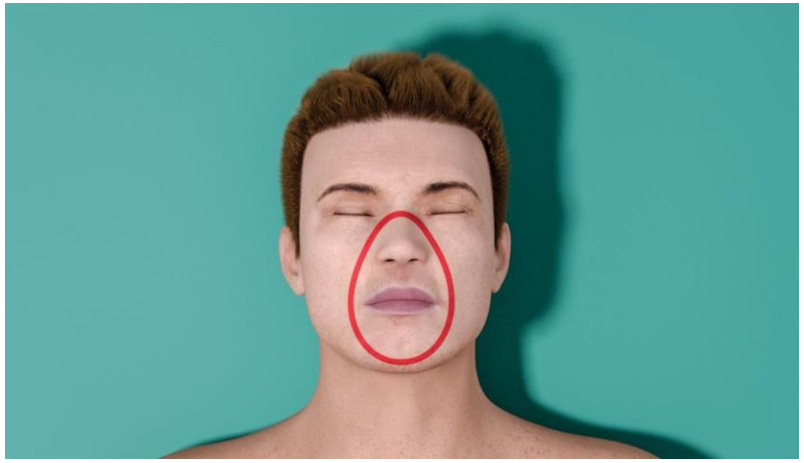
- Breathing

The E-C technique :

- You have 5 fingers in your hand, the thumb and index make the C, the rest make the E.
- The C holds the mask, the E holds the jaw of the patient.



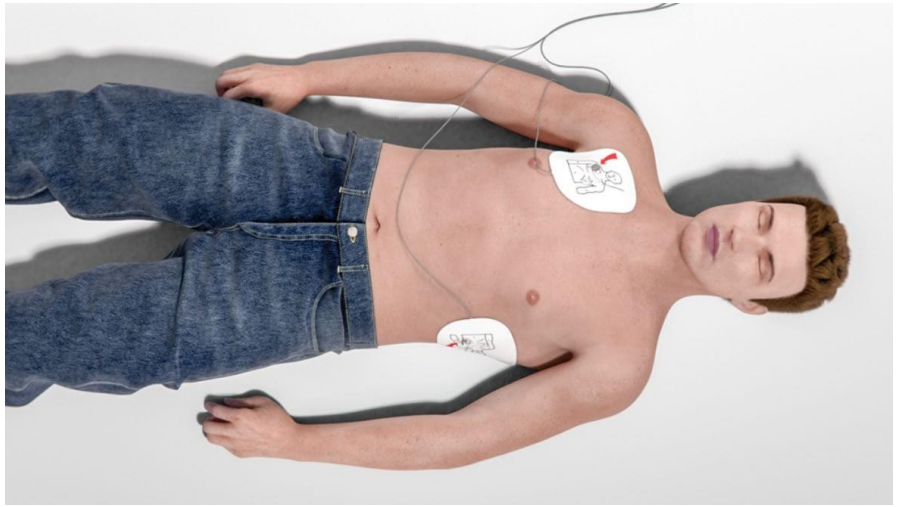


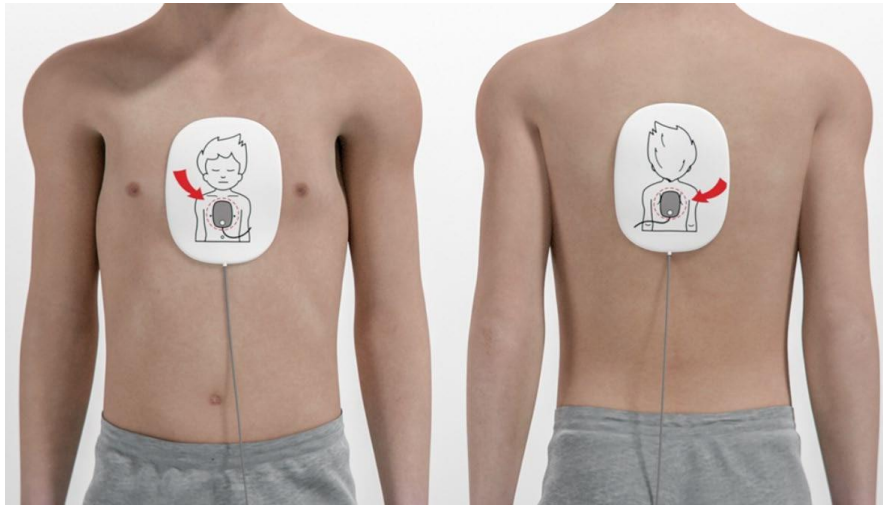


"E – C Technique"

Adult BLS Steps

- Automatic External Defibrillator AED





Adult BLS Steps

- Automatic External Defibrillator

- AED (Automatic External Defibrillator) is a simple ,small device that is available in crowded areas (auditoriums, stadiums, etc.) and it helps in defibrillation with minimal experience.
- It has two pads that can be placed on the right shoulder and left axilla (typically for adults), or on the chest and back (typically for children).
- While applying the AED pads, the compressions continue and never stop.
- When you turn on the device you should stop compressions temporarily for few seconds ,so the device could analyze if the heart rhythm is shockable or non-shockable.
- In shockable rhythms the device will say that shock is advised, so you charge the device, make the rescuers move away (CLEAR), then deliver the shock, after the shock IMMEDIATELY go back to compressions until the next assessment (5 cycles).
- If the rhythm is non-shockable the device will say shock is not advised, so you go back to compressions.
- In the hospital when you perform ACLS, you the physician should decide if the rhythm is shockable or not based on the ECG monitor.

If the rhythm is non-shockable, CPR could make it change into a shockable rhythm (even if it was asystole), so don't lose hope.

Adult BLS Steps

- Team Approach

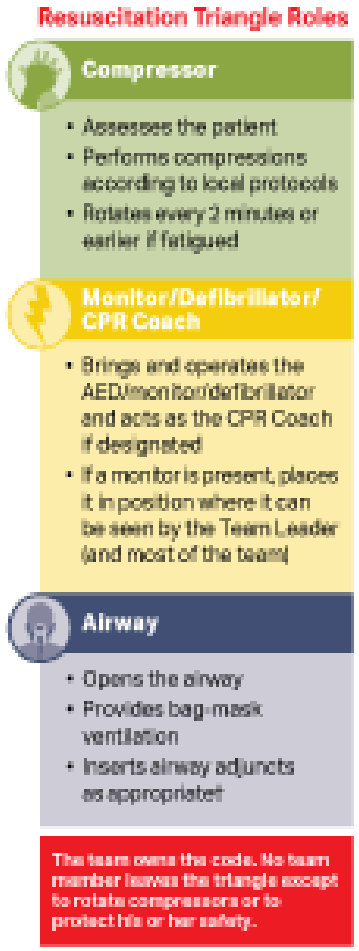
"CPR Coach"

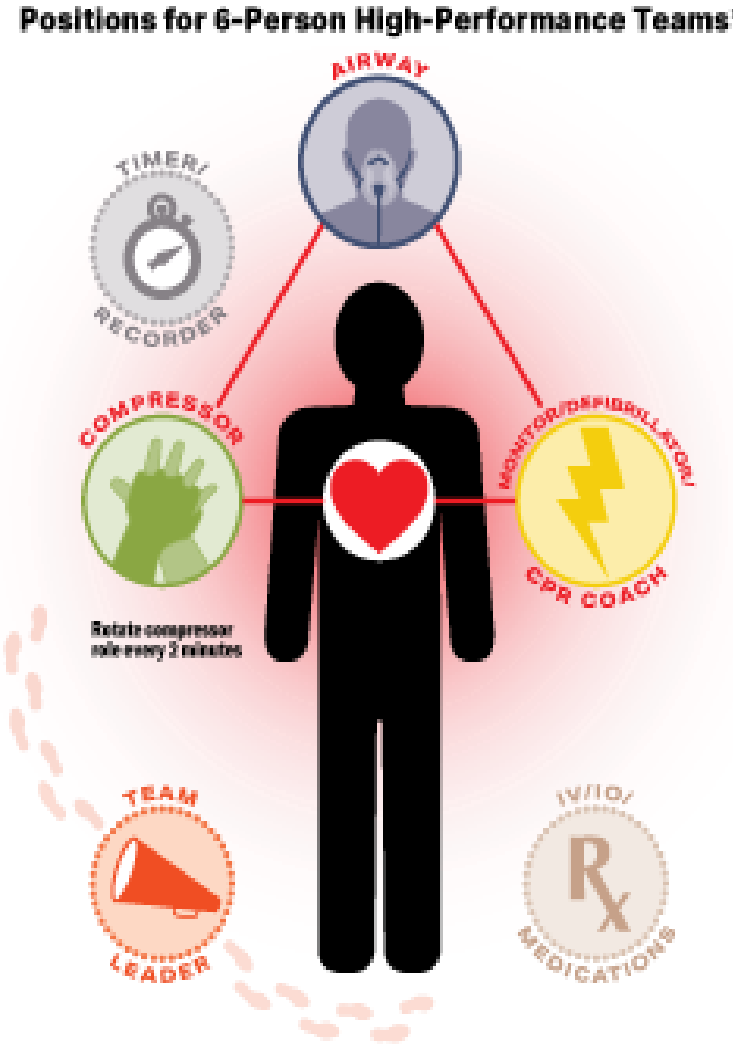
Adult BLS Steps

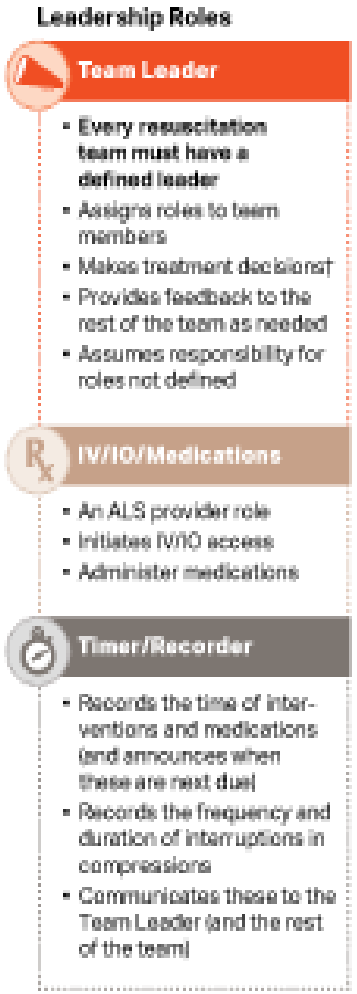
Team Approach

A good BLS team consists of :

- Someone who handles compressions.
- Someone who handles breathing.
- And someone who handles the AED and defibrillation, which is also usually the “coach”.







- Very very very important slide.

Adult BLS Steps

- Team Approach

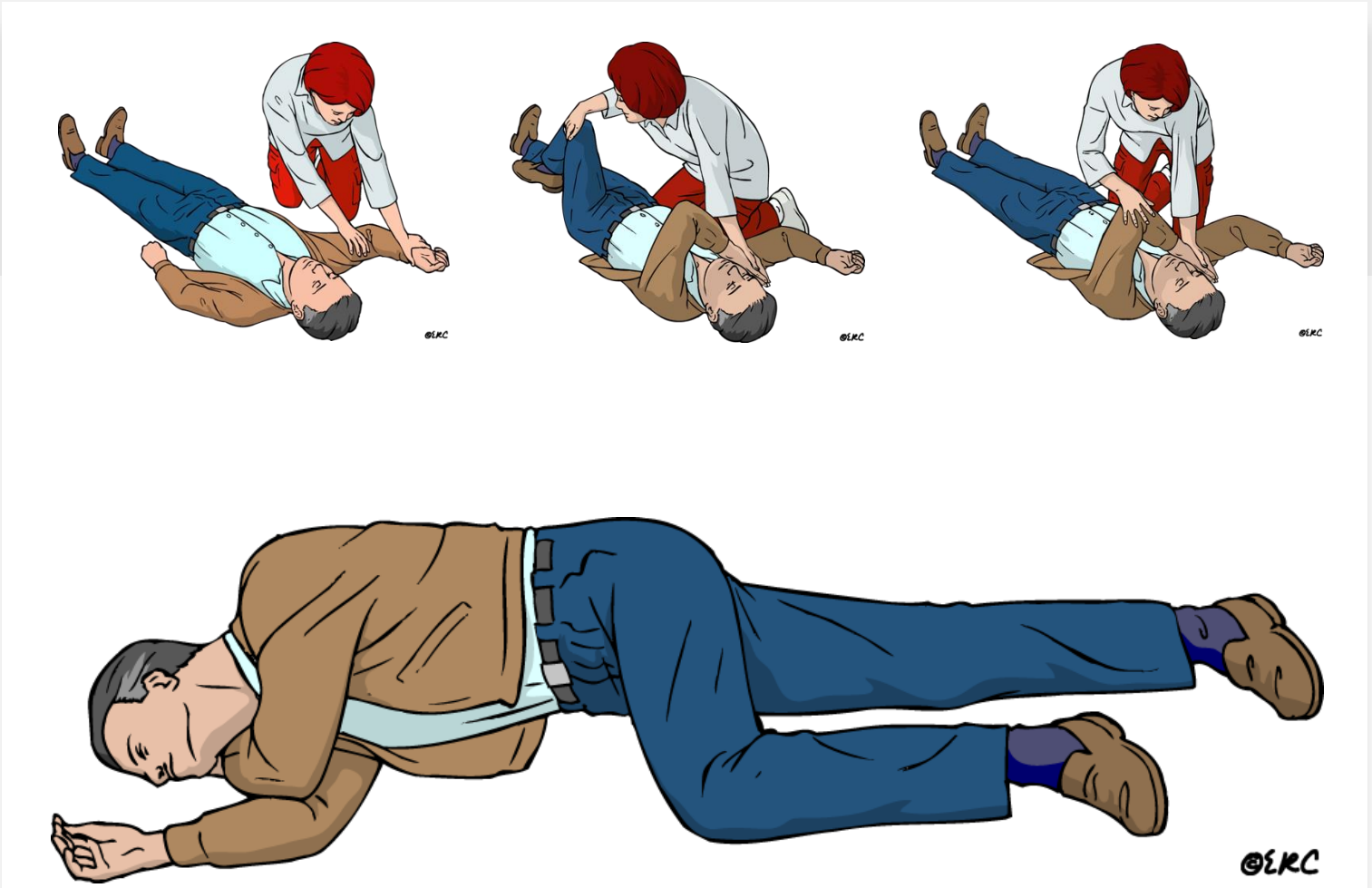
To have a good BLS/ACLS team you should have good leadership and communication skills by:

- Share knowledge and possible diagnosis, you may get good insightful suggestions from the team.
- Summarize and reevaluate, this helps you think in stressful situations.
- Clear massages, don't be vague, give detailed instructions like: "give him 1mg of epinephrine IV", rather than just saying "give epinephrine".
- Closed loop communication, confirm the order you were given by repeating what you heard.
- Mutual respect, the most vital, don't be sensitive and don't be aggressive.

Adult BLS Steps

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

To prevent vomiting and aspiration.



When Can I Stop CPR?

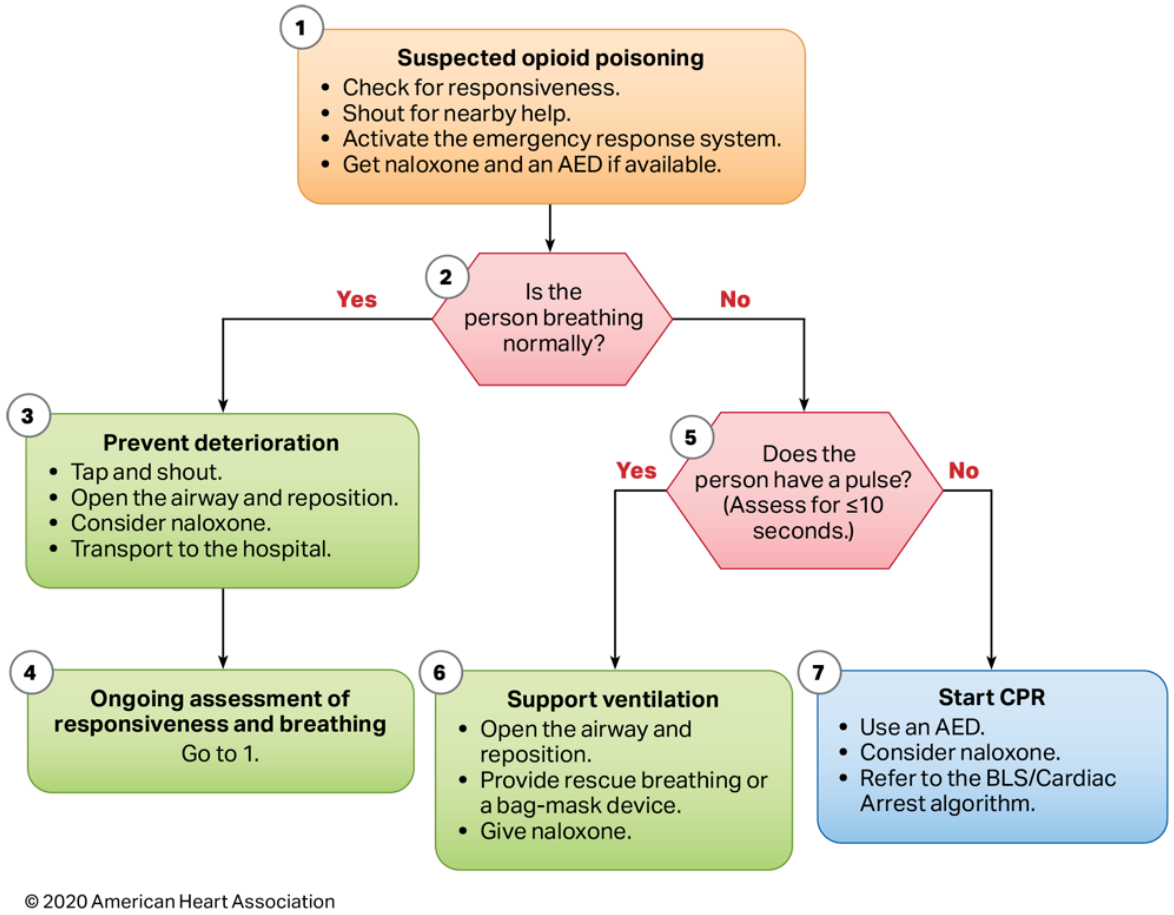
- Victim revives.
- Trained help arrives.
- Too exhausted to continue.
- Unsafe scene.
- Physician directed (do not resuscitate orders).
- Cardiac arrest of longer than 30 minutes:
  - (controversial).

Special Scenarios

-

Opioid Poising

- Suspect if there is needle marks or is a known addict.
- You should think about giving an antidote, like naloxone.

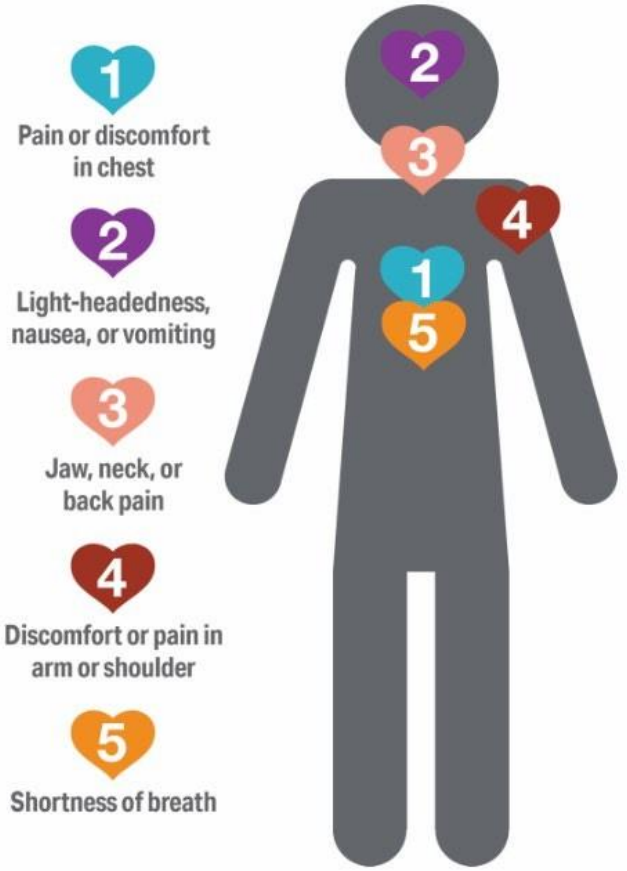


You should recognize the signs of heart attack and intervene before cardiac arrest happens.

Special Scenarios

-

Heart Attack



"Time is Muscle"
Early Recognition
Early Intervention
• ASA
• CPR

Special Scenarios - Stroke

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

Special Scenarios - Drowning

“Rescue breaths first”

To open up the lung.

Special Scenarios

-

Anaphylaxis

(allergy attack) give epinephrine injection.

"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)
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. 2. Give abdominal thrusts to a victim who is standing or sitting or chest thrusts for pregnant or obese victims. 3. Repeat thrusts until effective or the victim becomes unresponsive.	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. 2. Give abdominal thrusts to a victim who is standing or sitting or chest thrusts for obese victims. 3. Repeat thrusts until effective or the victim becomes unresponsive.	1. If the victim cannot make any sounds or breath, severe airway obstruction is present. 2. Give up to 5 back slaps and up to 5 chest thrusts. 3. Repeat step 2 until effective or the victim becomes unresponsive.
Victim becomes unresponsive		
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). 5. Lower the victim to the floor. Begin CPR, starting with chest compressions. Do not check for a pulse. 6. Before you deliver breaths, look into the mouth. If you see a foreign body that can be easily removed, remove it. 7. Continue CPR until advanced providers arrive.		

Unless the object choked on is easily reachable and visible, DO NOT try to reach for it with your fingers.

No Blind Finger Sweeps

The Heimlich maneuver is the best intervention, you stand behind the victim then press in and upwards on the abdomen.

Special Scenarios

-

Chocking

In the pregnant you should press on the chest.

Special Scenarios

-

Chocking

Special Scenarios

-

Chocking

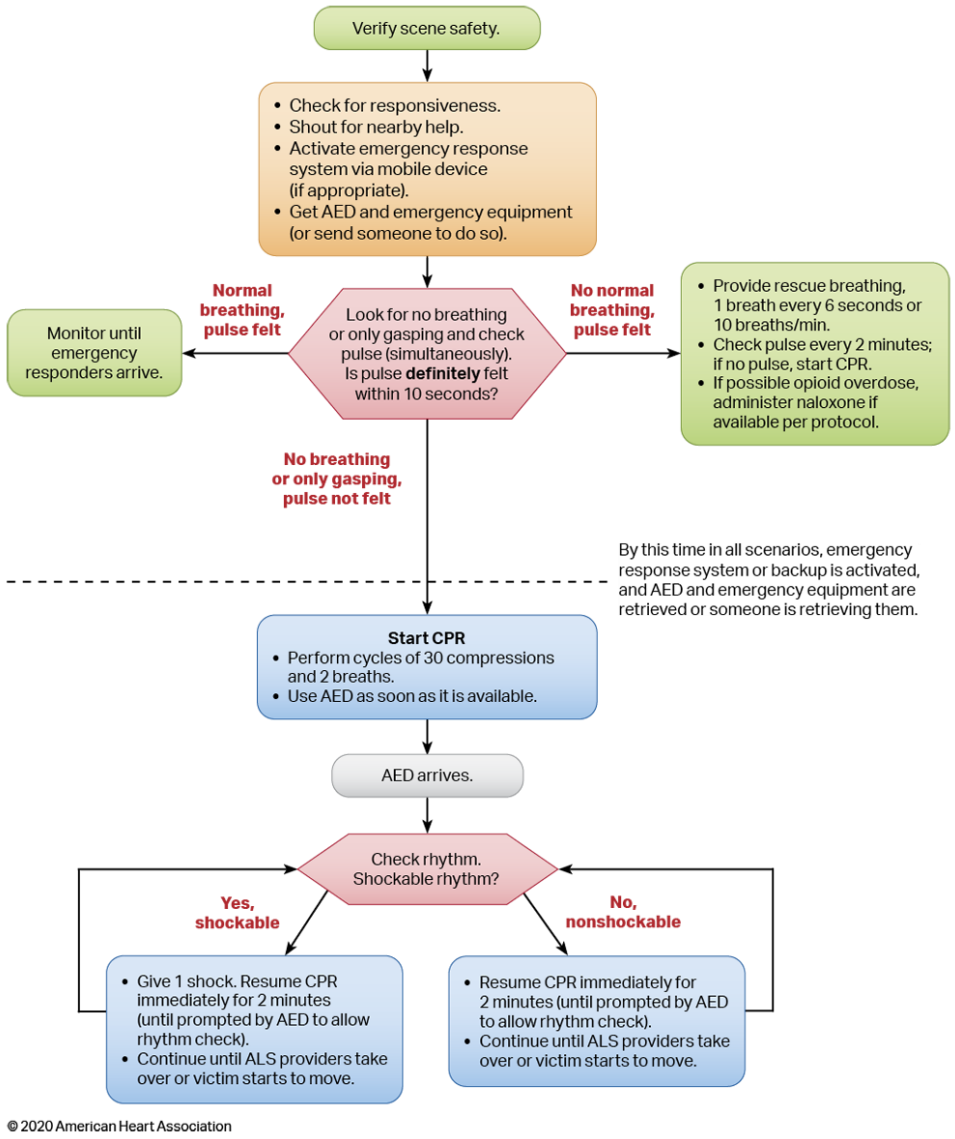
In babies you should:

- Start with head faced down and tap forcefully on the back (5 times).
- Then flip them and press on the xiphisternum inside and up (5 times).
- Repeat until rescued.

Summary

Adult BLS

Adult BLS


Verify scene safety.
• Check for responsiveness.
• Shout for nearby help.
• Activate emergency response system via mobile device (if appropriate).
• Get AED and emergency equipment (or send someone to do so).
Look for no breathing or only gasping and check pulse (simultaneously). Is pulse definitely felt within 10 seconds?
Normal breathing, pulse felt
Monitor until emergency responders arrive.
No normal breathing, pulse felt
• Provide rescue breathing, 1 breath every 6 seconds or 10 breaths/min.
• Check pulse every 2 minutes; if no pulse, start CPR.
• If possible opioid overdose, administer naloxone if available per protocol.
No breathing or only gasping, pulse not felt
By this time in all scenarios, emergency response system or backup is activated, and AED and emergency equipment are retrieved or someone is retrieving them.
Start CPR
• Perform cycles of 30 compressions and 2 breaths.
• Use AED as soon as it is available.
AED arrives.
Check rhythm. Shockable rhythm?
Yes, shockable
• Give 1 shock. Resume CPR immediately for 2 minutes (until prompted by AED to allow rhythm check).
• Continue until ALS providers take over or victim starts to move.
No, nonshockable
• Resume CPR immediately for 2 minutes (until prompted by AED to allow rhythm check).
• Continue until ALS providers take over or victim starts to move.
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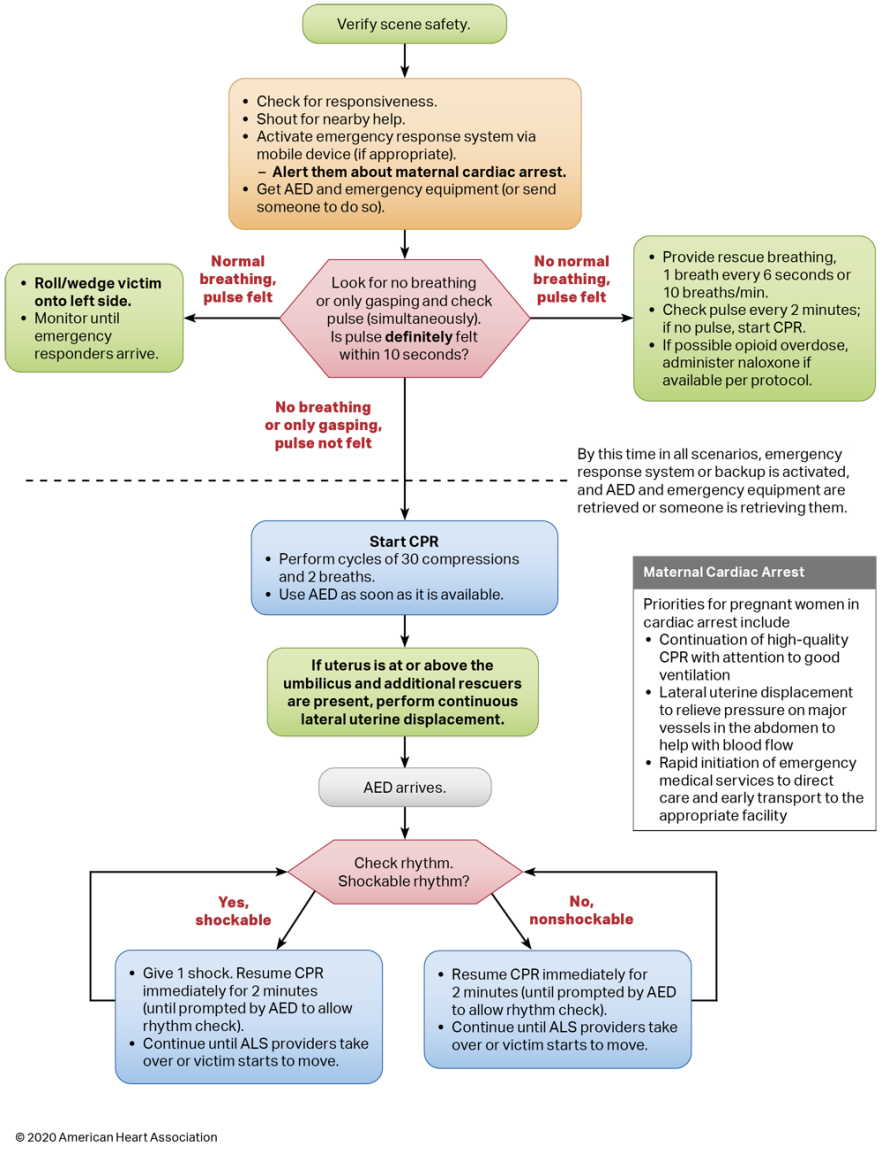
Adult BLS - Pregnancy



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	***If a mobile device is available, phone emergency services***		
	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	***Witnessed collapse*** Follow steps for adults and adolescents on the left ***Unwitnessed collapse*** Give 2 minutes of CPR Leave the victim to activate the emergency response system and get the AED Return to the child or infant and resume CPR; use the AED as soon as it is available	
Compression-ventilation ratio *without advanced airway*	***1 or 2 rescuers*** 30:2	***1 rescuer*** 30:2 ***2 or more rescuers*** 15:2	
Compression-ventilation ratio *with advanced airway*	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)	***1 rescuer*** 2 fingers or 2 thumbs in the center of the chest, just below the nipple line ***2 or more rescuers*** 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

Additional sources

1. https://youtu.be/hizBdM1Ob68?si=I8Uysgqdawhr3nsp (how to do CPR video).
2. https://youtu.be/Plse2FOkV4Q?si=iHJo5-WCSGpjAylY (how to do CPR video 2).
3. https://youtu.be/DUaxt8OlT3o?si=928P8uJcKBNaP4XQ (3D animation inside the body during CPR).

اذا شعرت ان حياتك في خطر، او ان المرض يهدد صحّتك او ان مالك الذي جمعته قد بات قاب قوسين او ادنى من التبدد والتلف فاعلم انك بحاجة الى ان تعلم ان من أسماء ربك سبحانه "الحفيظ" وانه ينبغي عليك ان تجدد ايمانك بهذا الاسم العظيم، وانه قد جاء الوقت المناسب لتتفكّر فيه وتتأمل ،فهو وحده من يحفظ حياتك ويحفظ صحتك ويحفظ مالك ويحفظ كل شيء في هذه الحياة.

VERSIONS	SLIDE #	BEFORE CORRECTION	AFTER CORRECTION
V1→ V2			
V2→V3			

امسح الرمز و شاركنا بأفكارك لتحسين أدائنا !!