American Heart Association®

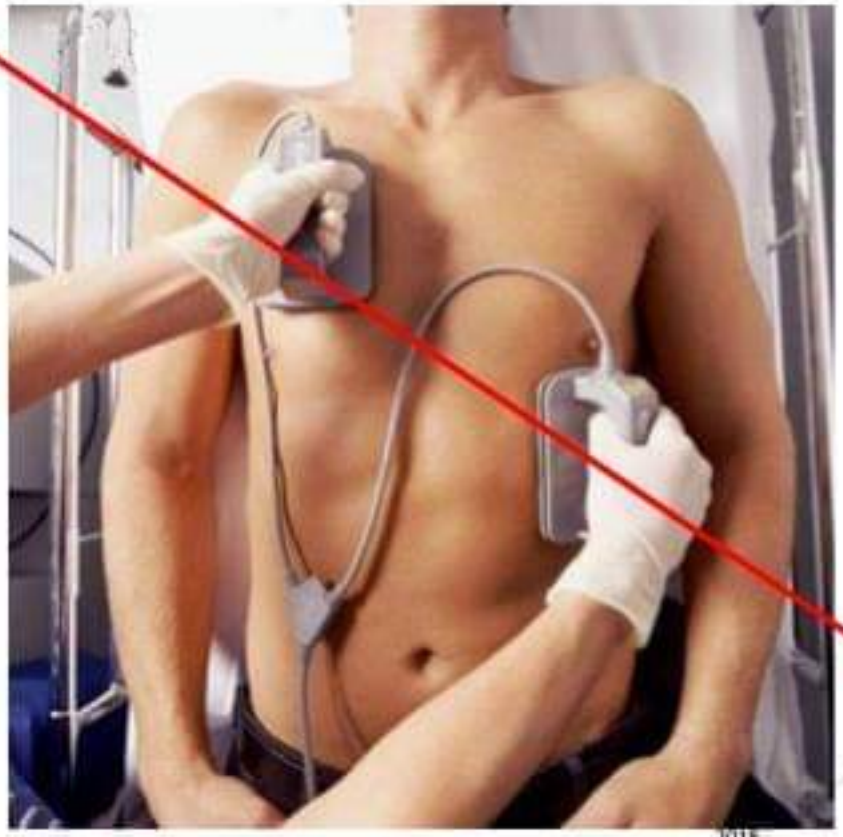
First Aid/CPR

Fb/Nurse Info

Hands Positioning

- Hands in center of the chest.
- Lower half of breastbone
- Second hand on top of the first.
- Not on lowest part of breastbone.
- Applies to both lay and healthcare providers.

Delivering Shock



Do Not Move the Victim Until CPR is given and Qualified Help Arrives.....

- Unless the Scene dictates Otherwise:

- Threat of fire or explosion
- Victim must be on a hard surface
- Place victim level or head slightly lower than body

Even with Successful CPR- most Won't Survive Without ACLS

- A C L S includes

- Defibrillation
- Oxygen
- Drug Therapy
- Airway Equipment

Survey/observe the Scene

Responsiveness

- Tap the Shoulder and shout
- "Are You OK? "

Activate E M S

- Activate EMS (if unresponsive)
- Call 108 - come back and let me know what they said (another can stay by the phone)
- You may have to make the call **108**

Position on Back & hard surface

- All body parts rolled over at the same time
- Always be aware of head and spinal cord injuries
- Support Neck and Spinal Column

CPR is as easy as

C - A - B

Compressions
Push hard and fast on the center of the victim's chest

Airway
Tilt the victim's head back and lift the chin to open the airway

Breathing
Give mouth-to-mouth rescue breaths

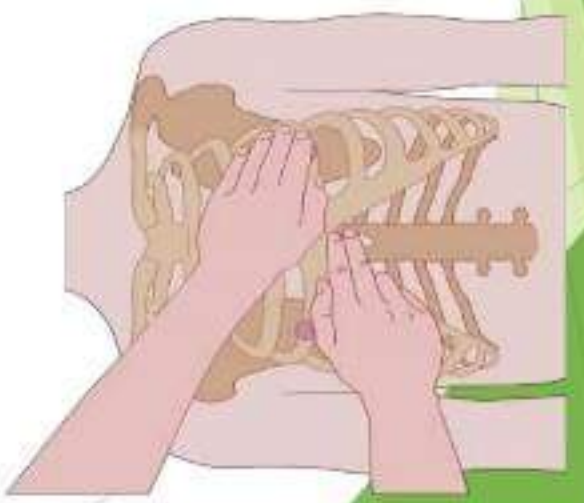
Early chest compression can immediately circulate oxygen that is still in the bloodstream. By changing the sequence, chest compressions are initiated sooner and the delay in ventilation should be minimal.

2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations

- **C-A-B Sequence 2015 (Updated):** Although the amount and quality of supporting data are limited, it may be reasonable to maintain the sequence from the 2010 Guidelines by initiating CPR with C-A-B over A-B-C. Knowledge gaps exist, and specific research is required to examine the best sequence for CPR in children.

C = Circulation - Compressions

- After giving Breaths--------
- Locate proper hand position for chest compressions
- Place heel of one hand on center of chest between the nipples



Compressions

- Using both hands—give 30 chest compressions
  - Count 1—2- 3---4 --
  - Depth of compressions
  - 2 inches or 5 cms.

A = AIRWAY

- OPEN THE AIRWAY

- HEAD TILT
- CHIN LIFT
- JAW THRUST

B - Check for Breathing

- LOOK - LISTEN
- FEEL FOR BREATHING
- No longer than 10 seconds

B

Breathing

- If the Victim is not breathing, give two breaths (1 second or longer)
- Pinch the nose
- Seal the mouth with yours
- If the first two don't go in
- Re-tilt and give two more breaths

  (if breaths still do not go in

  suspect CHOKING

CHILDREN

- For Children : 1/2/ to 1/3 of Chest Depth.
- Use 1 or 2 hands (keep one hand on forehead if possible)

Give 30 compressions

C P R

- After 30 Chest compressions give :
- 2 slow breaths
- Continue until help arrives or victim recovers
- If the victim starts moving : Check breathing

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

Two Partner CPR

- Rescuer 1:
  - RAP ABCD
- Rescuer 2:
  - place hands for compressions
- Compression rate: 30:2
- Switch off when tired
- 1 and 2.....4 and change

Checking for CPR Effectiveness

- Does chest rise and fall with rescue breaths?
- Have a second rescuer check pulse while you give compressions

Why CPR may fail ?

- Delay in starting
- Improper procedures (ex. Forget to pinch nose)
- No ACLS follow-up and delay in defibrillation
  - Only 15% who receive CPR live to go home
  - Improper techniques
- Terminal disease or unmanageable disease (massive heart attack)

Injuries with C P R

- Rib fractures
- Laceration related to the tip of the sternum
  - Liver, lung, spleen

Complications of CPR

- Vomiting
  - Aspiration
  - Place victim on left side
  - Wipe vomit from mouth with fingers wrapped in a cloth
  - Reposition and resume CPR

Mouth to Mouth Barrier Devices

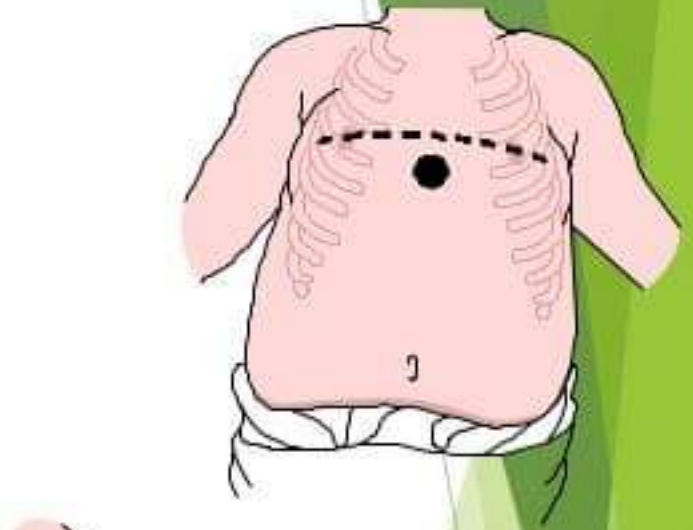
- Masks
- Shields

C P R for Infants (Under 1 Year of Age)

- Same procedures -- (RAP ABCD) except:
- Seal nose and mouth or nose only
- Give shallow "puffs"

C P R : Infants

- RAPAB
- Give CPR
  - Press sternum 1/2 to 1/3 depth of the chest
  - Use middle and ring finger
- 30 compressions to 2
- If alone, resuscitate for 2 minutes then call 911



Rescue Breathing

Mouth to mouth

Chest compressions with Fingers

Choking : Conscious Infants

- Position with head downward
- 5 back blows

  (check for expelled object)
- 5 chest thrusts

  (check for expelled object)
- Repeat

Choking : Unconscious Infant

- If infant becomes unconscious:
- RAP ABC
- When the first breaths don't go in, check for object in throat then try 2 more breaths.
- If neither set of breaths goes in, suspect choking
- Begin 30 compressions
- Check for object in throat (no blind finger sweep)
- Give 2 breaths

What are our metrics of performance?

5 KEY ASPECTS OF GOOD CPR!

- ***RATE***
  - *100-120*
  - *110 ideal*
- ***DEPTH***
  - *2"*
- ***RELEASE/RECOIL***
  - *Complete*
- ***UNINTERRUPTED***
  - *3 second goal*
  - *80% compression fraction*
- ***DECREASED VENTILATION***
  - *6-10/min*

Understanding Chest Compressions

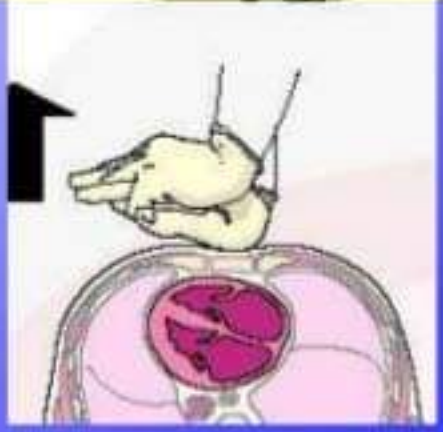
Compression

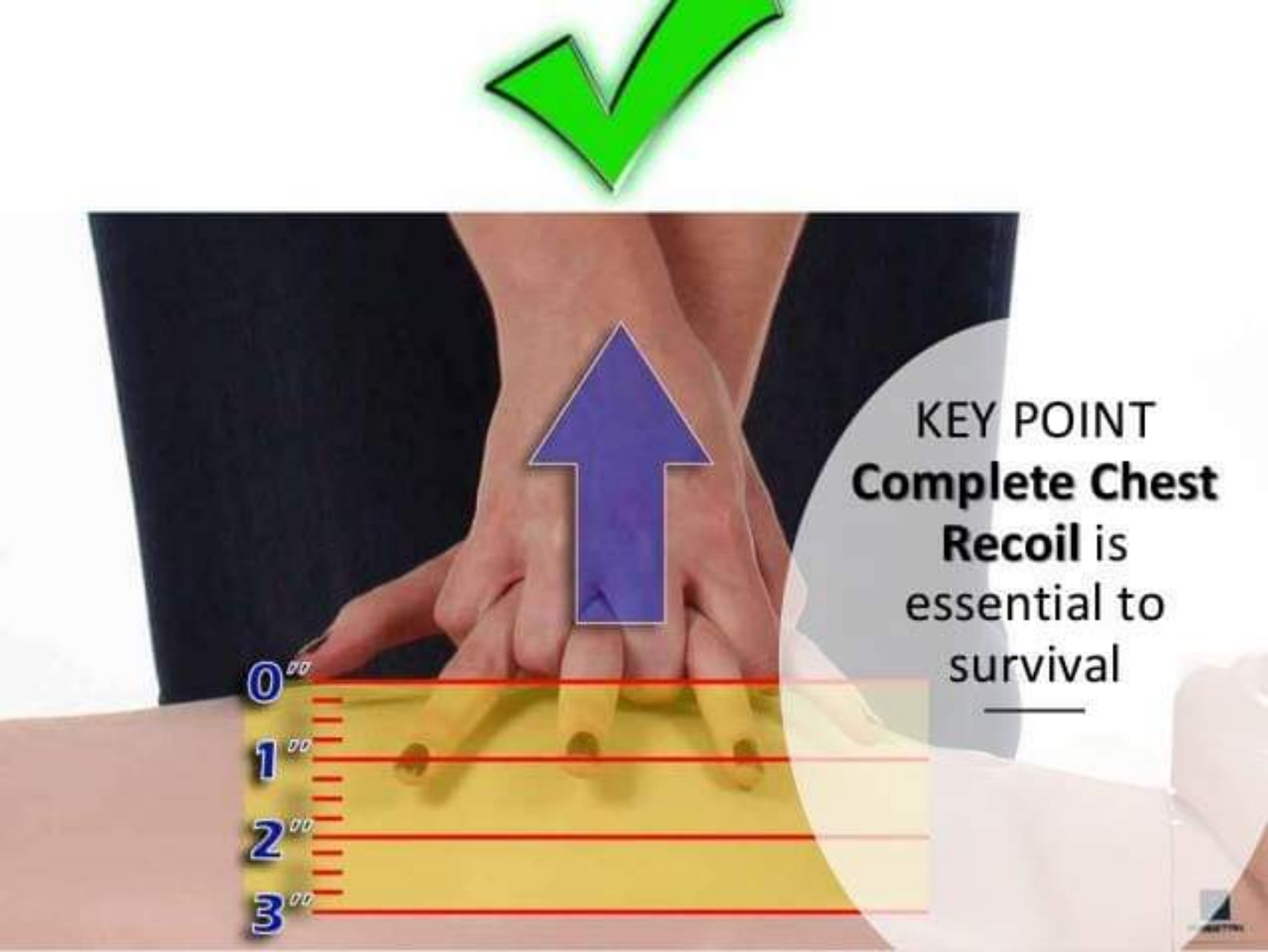
- Increased intrathoracic pressure
- Compression of heart and lungs

Complete chest recoil is critical

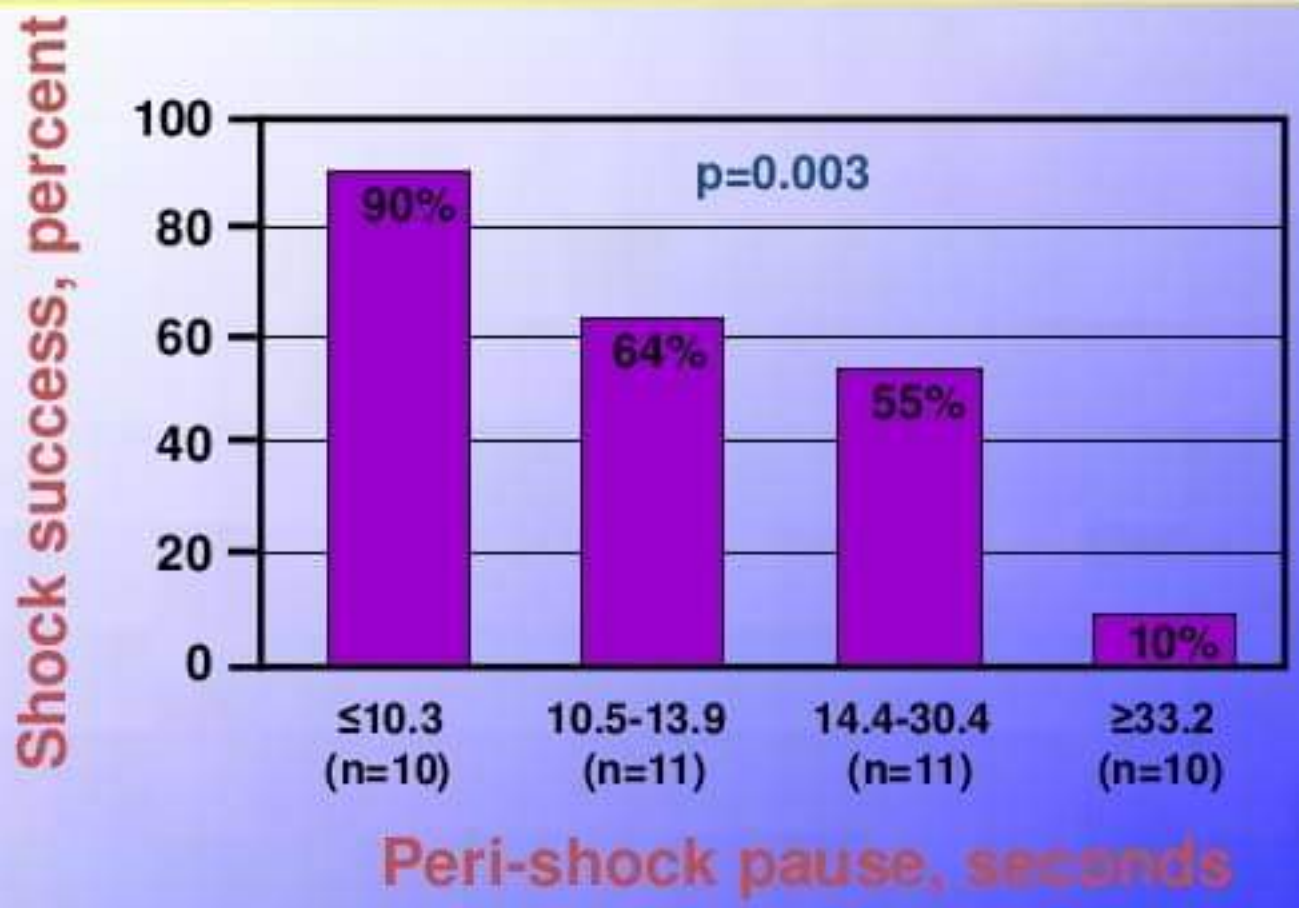
Decompression (recoil)

- Decreased intrathoracic pressure
- Refilling of heart and lungs



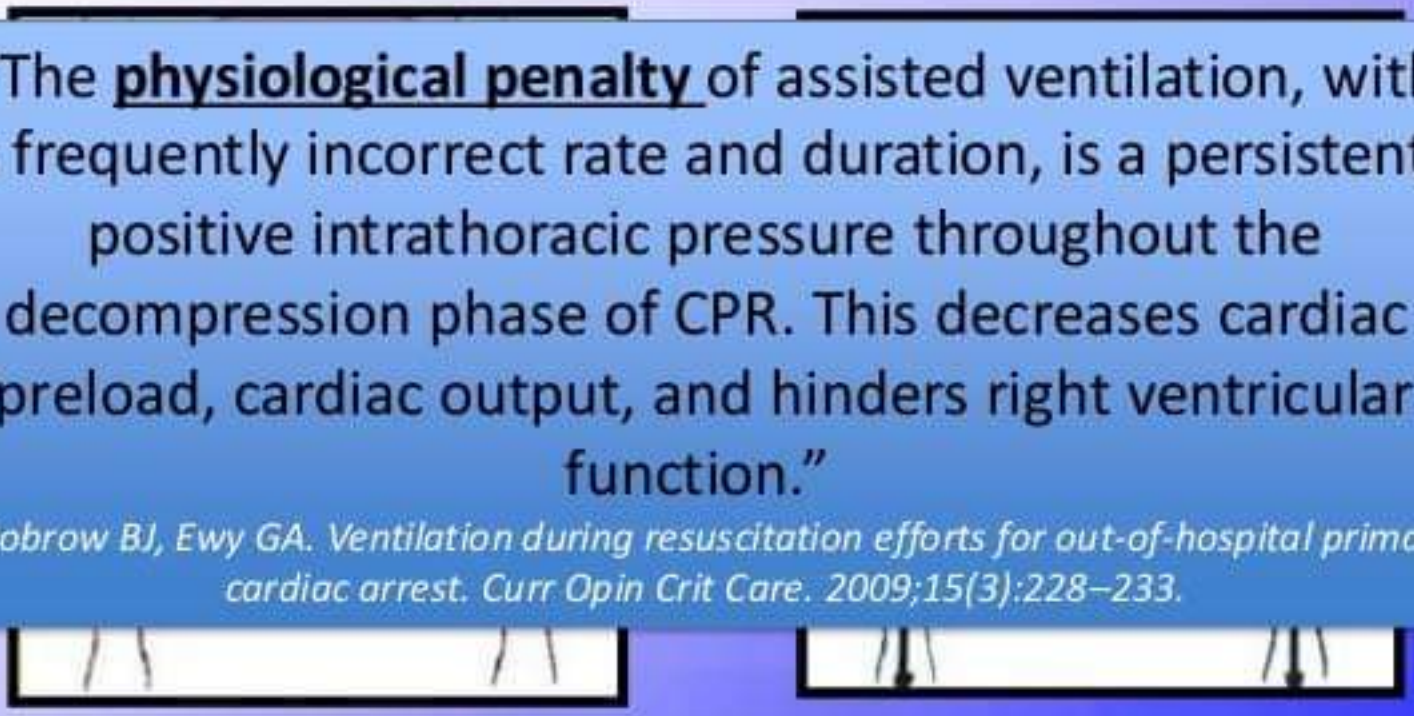

0"
1"
2"
3"
KEY POINT
Complete Chest Recoil is essential to survival

Defibrillation success and pre-shock pauses



Edelson et al, 2006

Poor Recoil = Increased Intrathoracic Pressure

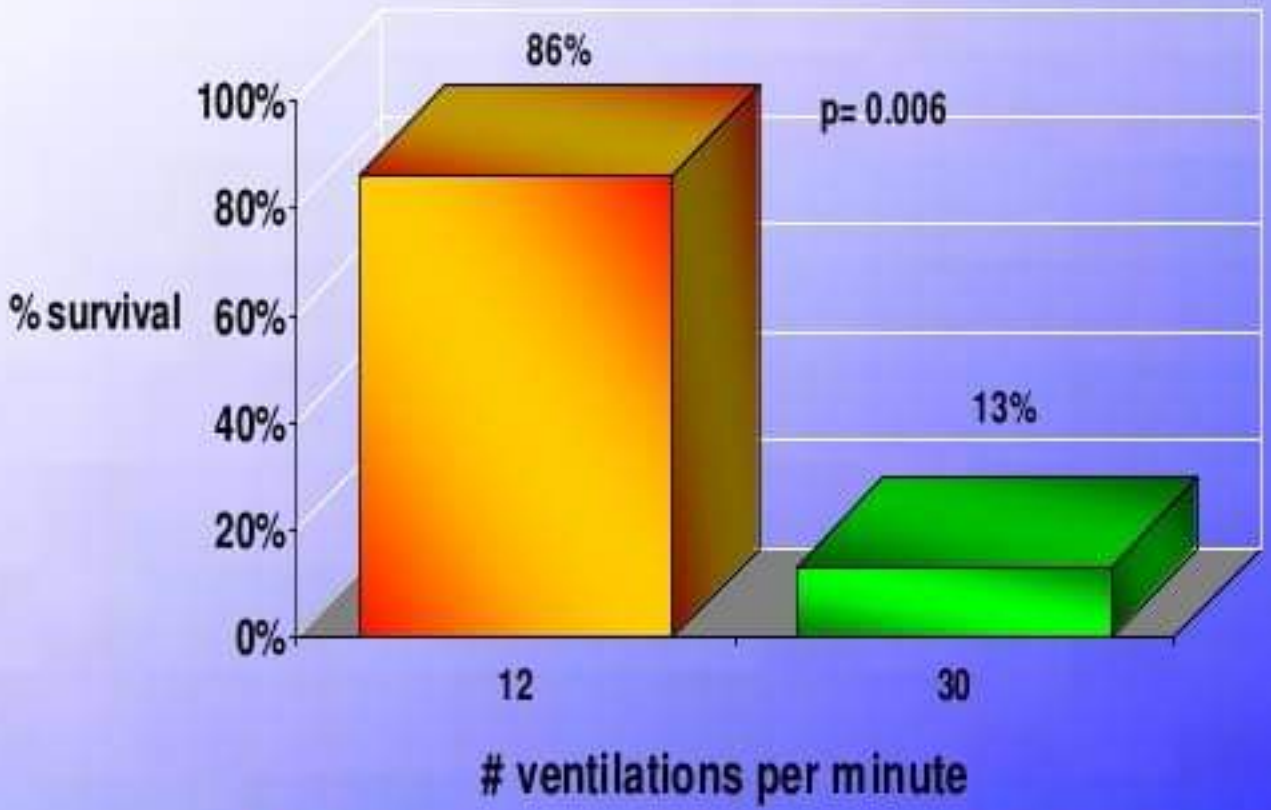


"The **physiological penalty** of assisted ventilation, with its frequently incorrect rate and duration, is a persistently positive intrathoracic pressure throughout the decompression phase of CPR. This decreases cardiac preload, cardiac output, and hinders right ventricular function."

- Bobrow BJ, Ewy GA. Ventilation during resuscitation efforts for out-of-hospital primary cardiac arrest. Curr Opin Crit Care. 2009;15(3):228–233.


Get Control
of your
ventilations

Hyperventilation during CPR = Decrease in Survival



Aufderheide et al. *Circulation* 2004; 109:1960-5

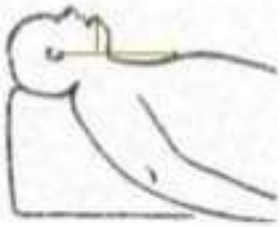
~~Minimal~~ ***Better*** Ventilations

Seal

Adjuncts

2 people

Position



Careful Squeeze

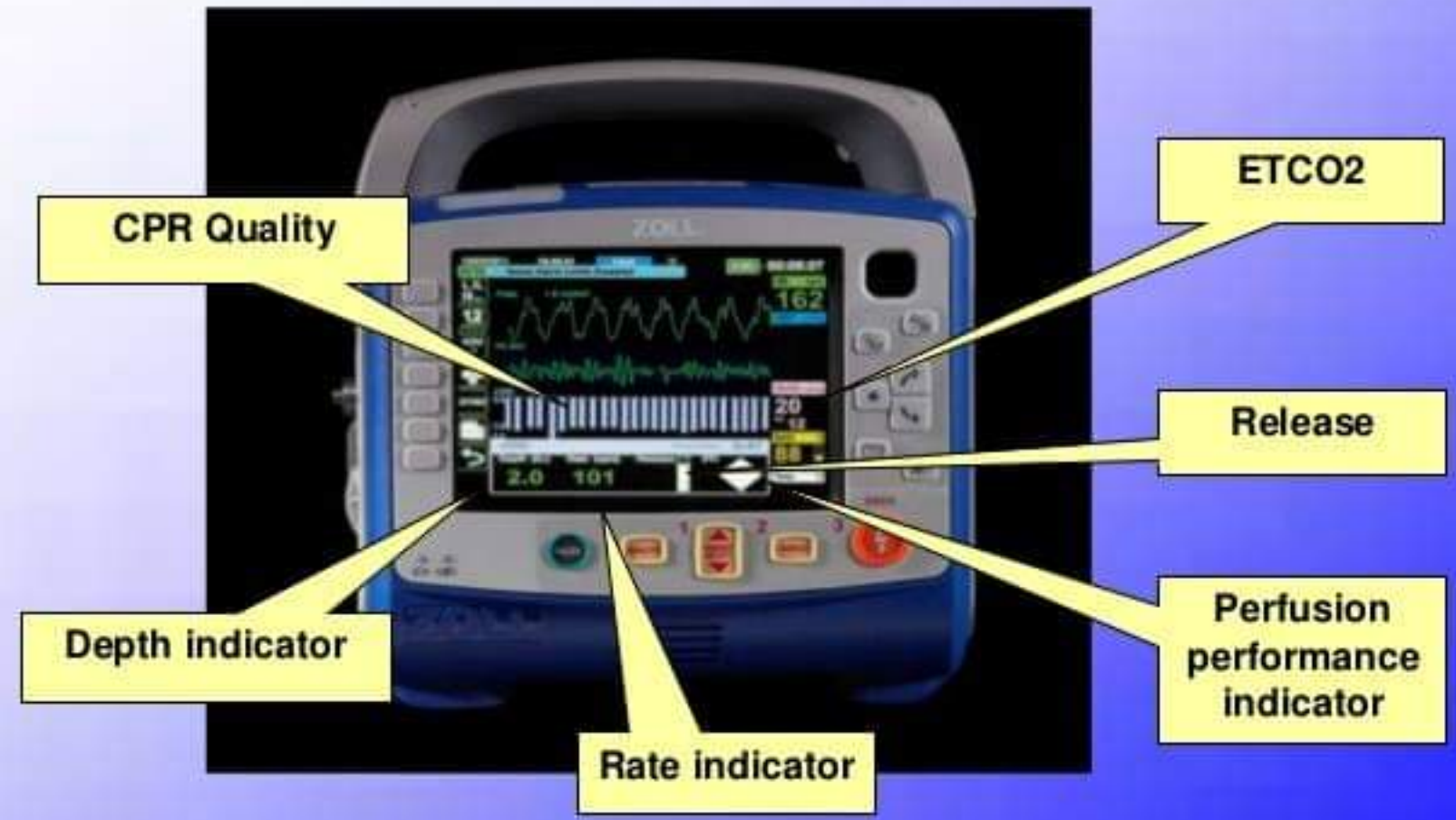
Keep It Up

HT @cptjcook

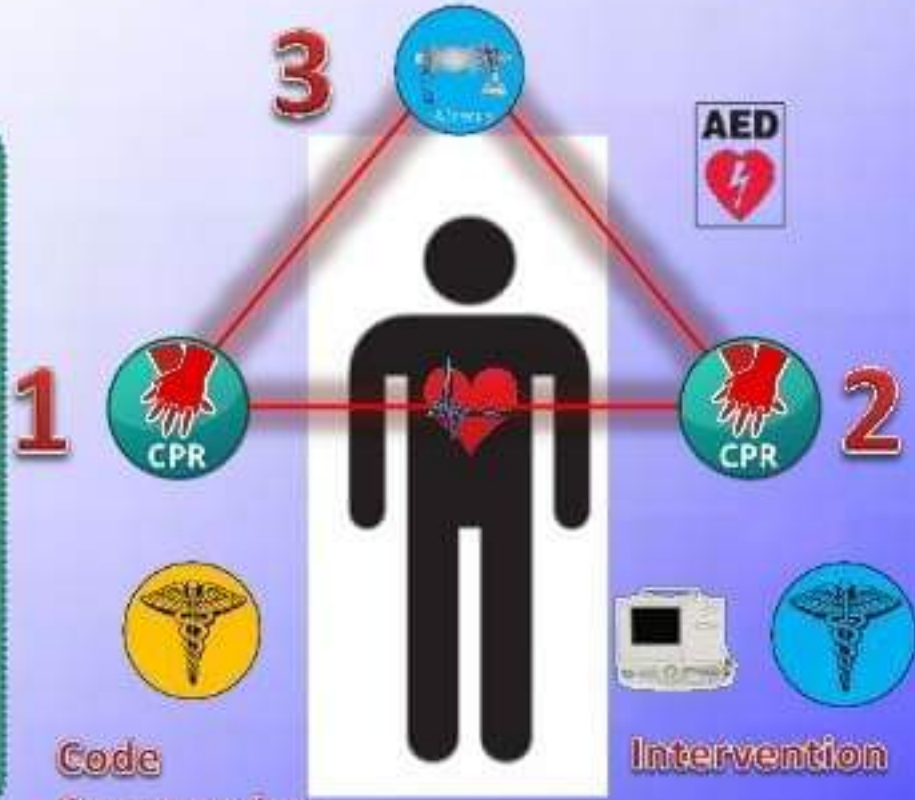
Ya

Focus on Compressions not Ventilation!!!

Zoll Dashboard Display



Positions for ACP/A.C.C.E.S.S. High Performance CPR – BLS + ALS Intergration



COMPRESSIONS

- ☐ Position 1/2 (alternating)
- ☐ Performs high-quality compressions*:
- ☐ Hand placement on lower half of sternum
- ☐ 200 compressions @ 110/minute
- ☐ Approximately 2 minutes per cycle
- ☐ Complete recoil after each compression
- ☐ Calls "180" and counts down.
- ☐ Compresses at least 2 inches (5 cm)
- ☐ **Complete Recoil**
- ☐ "Hovers: when alternating and during pauses
- ☐ Peri-shock pauses to under 3 seconds.

AIRWAY

- ☐ **Position 1/2 (alternating)** ventilates at a rate of 1 breath every 6-10 seconds (6-10/minute)
- ☐ Delivers breaths asynchronously with compressions with short "upstroke" ventilations
- ☐ **Position 3** establishes a good 2 handed seal and:
- ☐ Maintains proper head/airway position including ear to sternal notch
- ☐ Inserts adjunct as needed based on scope of practice **without stopping compressions.**
- ☐ Visible chest rise with each breath

TEAM LEADER/ Code Commander

Every resuscitation must have a team leader

☐ Assigns roles PTA , ☐ Makes treatment decisions ☐ Monitors performance

☐ Assumes responsibility for roles not assigned. ☐ Communicates status on radio and in person

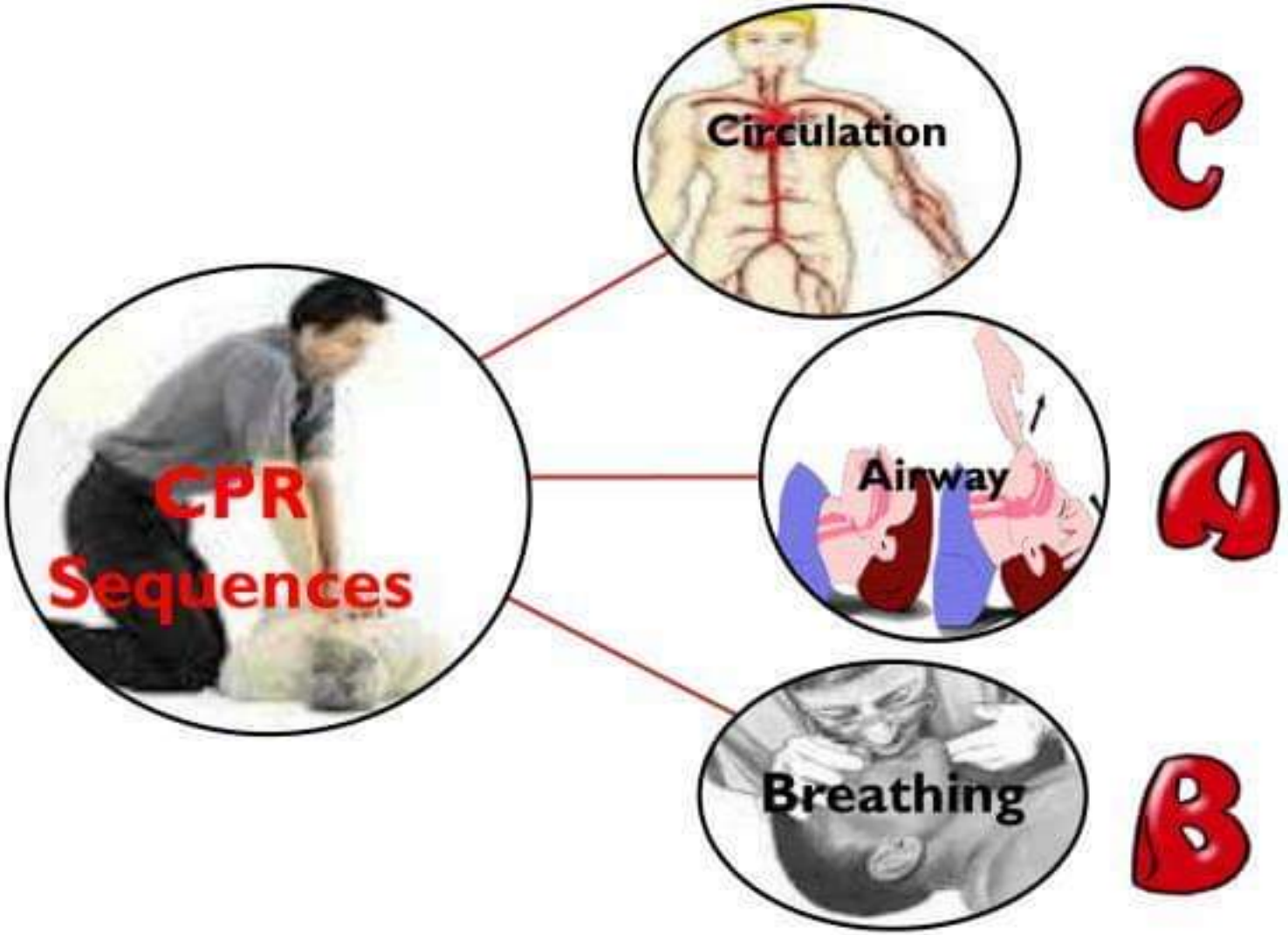
☐ Should be highest certification. ☐ Often Intervention Medic.

Intervention Medic

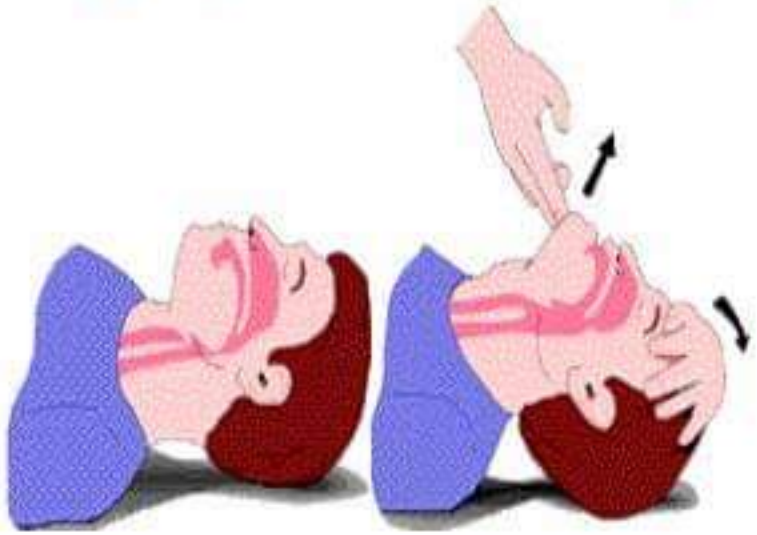
☐ IO/IV Access ☐Administer Medications ☐May run manual defibrilator ☐Communicates with team

ALL INTERVENTIONS SECONDARY TO BLS TEAM EFFORTS

CPR Sequences :-CAB



A: Airway (Maintain Open airway)



Head Tilt Chin Lift procedure

- An unconscious victim airway may become narrowed or blocked .
- This is due to muscular control being lost .allowing the tongue to fall back and block the airway
- See video. .\..\..\..\Video\ASHI CPR and AED - Opening an Airway for CPR - YouTube.flv

B:Breathing for a Victim:-

Mouth to Mouth

Mouth to Mask

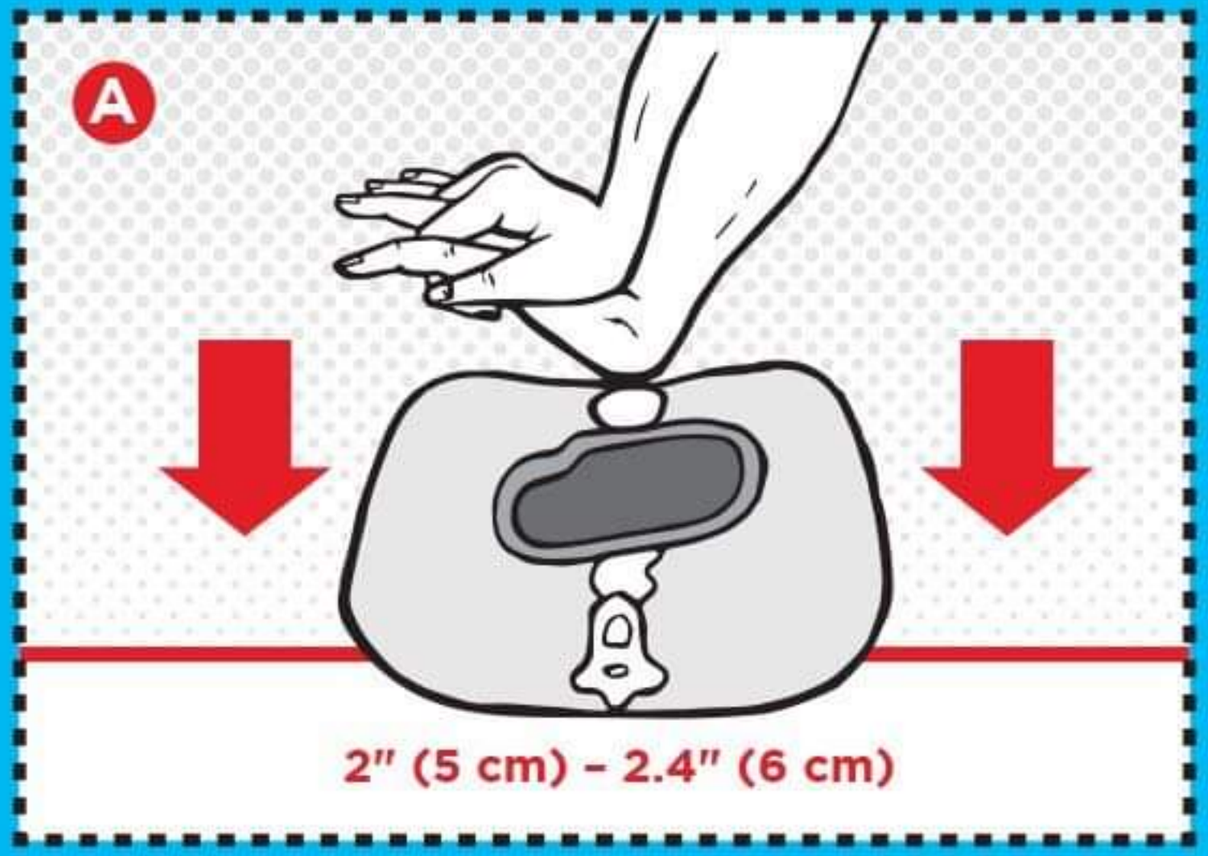
Advanced breathing
(Bag Resuscitation Mask)

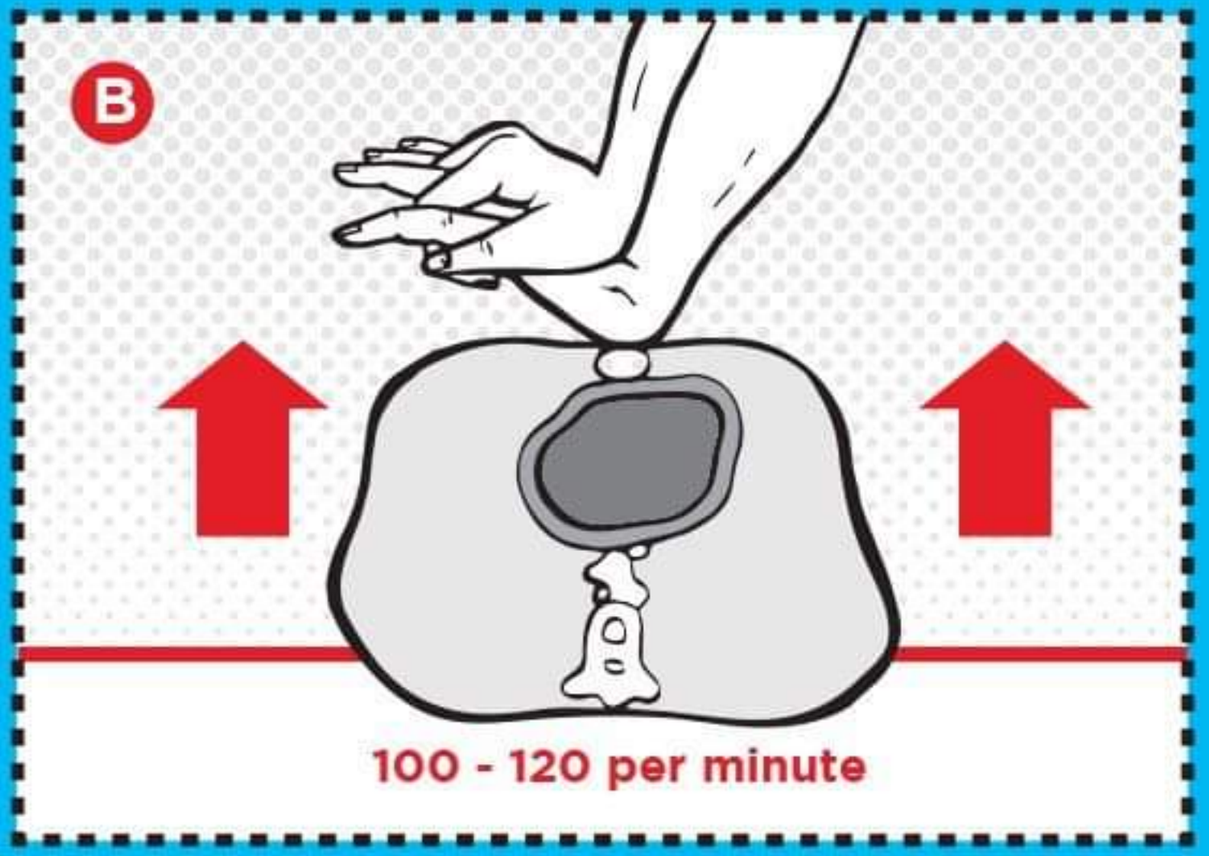
The air reaches the air sac (alveoli) in the lungs, and oxygen is then transferred to the tiny blood vessels within the lungs .

When you remove your mouth from the victim's mouth, the chest falls and air containing waste product is exhaled.

B: Breathing for a Victim

Look for Chest Movement and rise





CHEST COMPRESSIONS:

At least 2" (5 cm) and not more than 2.4" (6 cm)

COMPRESSION RATE:

Between 100 and 120 compressions per minute

AHA 2015 GUIDELINES FOR CARDIOPULMONARY RESUSCITATION AND EMERGENCY CARDIOVASCULAR CARE

NHCPS.COM

Hands-Only CPR

Hands-Only CPR is CPR without mouth-to-mouth breaths. It is recommended for use by people who *see a teen or adult over the age of 8 suddenly collapse* in an "out-of-hospital" setting (such as at home, at work or in a park). It consists of two easy steps:

- Call 9-1-1 (or send someone to do that).
- Push hard and fast in the center of the chest.

Keep pushing until trained help arrives.

Push to the Beat

- The song, "Stayin' Alive" has more than 100 beats per minute, which is the rate you should push on the chest during CPR. As you perform CPR, just keep that tune in your head and push to the beat.

Why Learn Hands-Only CPR?

- Sudden cardiac arrest is a leading cause of death. Nearly 400,000 out-of-hospital cardiac arrests occur annually in the United States.

- When a teen or adult has a sudden cardiac arrest, survival depends on immediately getting CPR from someone nearby.

- Only 89 percent of people who suffer an out-of-hospital cardiac arrest die because they don't receive immediate CPR from someone on the scene.

- It is now required in the State of Texas that all high school graduates are trained in CPR.

Q: Who should receive Hands-Only CPR?

A: Hands-Only CPR is recommended for use on adults who suddenly collapse. The American Heart Association (AHA) recommends conventional CPR (that is, CPR with a combination of breaths and compressions) for all infants and children, for adult victims who are found already unconscious and not breathing normally, and for any victims of drowning or collapse due to breathing problems.

Q. Do I need to take a training course to learn how to do Hands-Only CPR?

A. CPR is a psychomotor skill. The AHA continues to recommend that you take a CPR course to practice and learn the skills of CPR, including giving high-quality chest compressions. People who have had CPR training are more likely to give high-quality chest compressions and are more confident about their skills than those who have not been trained (or have not trained in the last 5 years). Even a very short CPR training program that you can do at home, like the AHA's 22-minute CPR Anytime™ program, provides skills training and practice that can prepare you to perform high quality chest compressions.

Q. Do I still need to learn "conventional" CPR with mouth-to-mouth breathing?

A. The AHA still recommends that you learn conventional CPR that includes mouth-to-mouth breathing. There are many medical emergencies that cause a person to be unresponsive and to stop breathing normally. In those emergencies, CPR that includes mouth-to-mouth breathing may provide more benefit than Hands-Only CPR. Some examples include:

- Unresponsive infants and children
- Adult victims who are found already unconscious and not breathing normally
- Victims of drowning or collapse due to breathing problems

Q: Is Hands Only CPR as effective as conventional CPR?

A. Hands-Only CPR performed by a bystander has been shown to be as effective as conventional CPR (CPR that includes breaths) in the first few minutes of an out-of-hospital sudden cardiac arrest. Provision of conventional CPR may be better than Hands-Only CPR for certain victims, though, such as infants and children, adults who are found in cardiac arrest or victims of drowning or collapse due to breathing problems. Any attempt at CPR is better than no attempt.

Q: If I was trained in conventional CPR that includes breathing (30 compressions to 2 breaths, or 30:2 CPR) and I see an adult suddenly collapse, what am I supposed to do?

Call 911 and start CPR.

If you *ARE CONFIDENT* in your ability to provide CPR that includes breaths with high-quality chest compressions with minimal interruptions, then provide either the conventional CPR that you learned (CPR with a 30:2 compression to ventilation ratio) OR Hands-Only CPR. Continue CPR until an AED arrives and is ready for use or EMS providers take over care of the victim.

If you *ARE NOT CONFIDENT* in your ability to provide CPR that includes breaths with high-quality chest compressions with minimal interruptions, then provide Hands-Only CPR. Continue Hands-Only CPR until an AED arrives and is ready for use or EMS providers take over care of the victim.

Q. If I was trained in conventional CPR that includes breathing (30 compressions to 2 breaths, or 30:2 CPR), how long should I do Hands-Only CPR before switching to conventional CPR?

A. At this point, there is not sufficient data to provide a specific recommendation. Trained rescuers will take over when they arrive at the victim's side. Those rescuers will follow the local protocol, which most often involves providing conventional CPR (in other words, CPR with breathing) and the use of specialized equipment. In the meantime, you should give the victim high-quality chest compressions with minimal interruptions. If you are confident in your ability to give breaths with minimal interruptions in chest compressions, then give either Hands-Only CPR or conventional CPR.

Q. What should I do if I am getting tired from giving chest compressions before more help arrives?

A. Continue to provide hard and fast chest compressions with minimal interruption to the best of your ability. We realize that giving good quality chest compressions at 100 times per minute is hard work. Most people will get tired after only a few minutes of delivering any type of CPR. If someone else is nearby, ask that person to take over chest compressions after about 2 minutes or about 200 compressions. If you are alone, then just do your best.

Q. Not all people who suddenly collapse are in cardiac arrest. Will CPR seriously hurt them?

A. Adults who suddenly collapse and are not responsive are likely to have sudden cardiac arrest and their chance of survival is nearly zero unless someone takes action immediately. You should call 911 and start giving hard and fast chest compressions in the center of the chest, with minimal interruptions. If sudden cardiac arrest *is* the cause of the collapse, Hands-Only CPR is an easy, effective way for *any* bystander to *more than double* the victim's chance for survival. If an adult has collapsed for reasons *other than* sudden cardiac arrest, Hands-Only CPR could still help by causing the person to respond (begin to move, breathe normally or speak). If that occurs, Hands-Only CPR can be stopped. Otherwise, chest compressions should continue until EMS providers arrive

Q. Can you break people's ribs doing CPR?

A. Yes. A 2004 review of scientific literature showed that conventional CPR can cause fractures of ribs and/or the breastbone (sternum) in at least 1/3 of cases. In a related study of people who had received such injuries from CPR, the fractures did not cause any serious internal bleeding and, thus, mortality. On the other hand, the chance of surviving an out-of-hospital cardiac arrest is *near zero* for a victim who does not immediately receive high quality chest compressions with minimal interruptions, followed by additional therapy within minutes (a defibrillating shock and/or more advanced care from EMS personnel).

Q: Is there a danger in jumping in and giving CPR without being trained?

A. On average, any attempt to provide CPR to a victim is better than no attempt to provide help.

Q. Why don't adults who suddenly collapse need mouth-to-mouth breathing in the first few minutes after their cardiac arrest?

A. When an adult suddenly collapses with cardiac arrest, their lungs and blood contain enough oxygen to keep vital organs healthy for the first few minutes, as long as someone provides high quality chest compressions with minimal interruption to pump blood to the heart and brain.

B – Check For Breathing

Look, listen and feel for breathing

No longer than 10 seconds second

-If the victim is breathing:

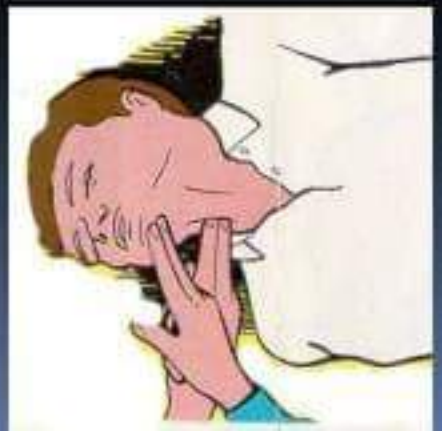
Place in recovery position

-If the victim is NOT breathing:

Ask for help and Give 2 rescue breaths for fife times then check for signs of circulation

How to check for circulation:

- Maintain a head tilt with one hand on the victim's forehead
- Locate the trachea with 2 or 3 fingers of the other hand
- Slide these fingers where you can feel the carotid pulse
- Palpate for at least 5 seconds and no more than 10 seconds



- **If signs of circulation exist:**

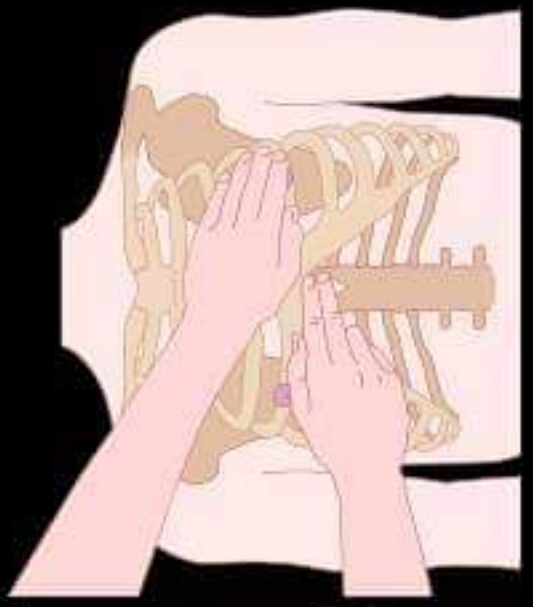
Continue rescue give 1 breath every 3 seconds, every 2 minutes recheck pulse.

- **If victim start to breath** turn him into recovery position
- **If signs of circulation are absent:**

  Begin giving chest compressions (start CPR)

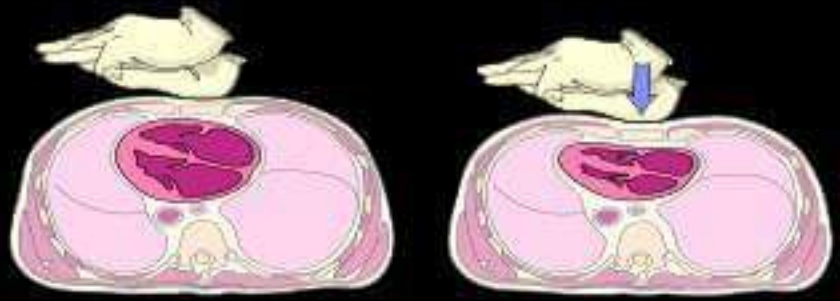
Compressions

- Make sure the victim is lying on his back on hard surface
- Put the heel of one hand on the center of the victim's bare chest between the nipples
- Put the heel of your other hand on top of the first hand.
- Straighten your arms & position your shoulders directly over your hands.



Chest compression continue:

- Push hard and fast 1.5 to 2 inches with each compression
- At the end of each compression, allow the chest to recoil completely
- Deliver compression at a rate of 100 compression per minute



Rate of compression to breathing:

Compression rate for adult :

30:2

When Can I Stop CPR?

- Victim survive
- Trained help arrives
- Cardiac arrest longer than 30 minutes

How to place in recovery position