Basic Life Support

CDEM
Center for Disaster and Emergency Management

LEARNING OBJECTIVES

With the knowledge and skills that you will learn in Basic Life Support, **YOU CAN SAVE A LIFE.**

BLS Components

recognize emergencies such as sudden cardiac arrest (SCA) and know how to respond to them.

- ✓ CPR for victims of all ages
- ✓ CPR in a team setting
- ✓ Learn how to use an AED
- ✓ How to relieve choking

BLS consist of these main parts

- ✓ Chest Compression
- ✓ Airway
- ✓ Breathing
- ✓ Defibrillation

BASIC LIFE SUPPORT

- ✓ An emergency procedure that consists of recognizing respiratory or cardiac arrest or both and the proper application of CPR to maintain life until a victim recovers or advanced life support is available.
- ✓ Includes automated external defibrillation
- ✓ Series of noninvasive assessments & interventions

CARDIO PULMONARY RESUSCITATION

What is CPR?

An emergency life-saving procedure or technique of Basic Life Support (combination of chest **Compression** and **Ventilation**) for the purpose of oxygenation of the heart, lungs and brain when someone's breathing and heartbeat suddenly stopped functioning and until advance medical treatment arrive and restore the normal cardiopulmonary function.

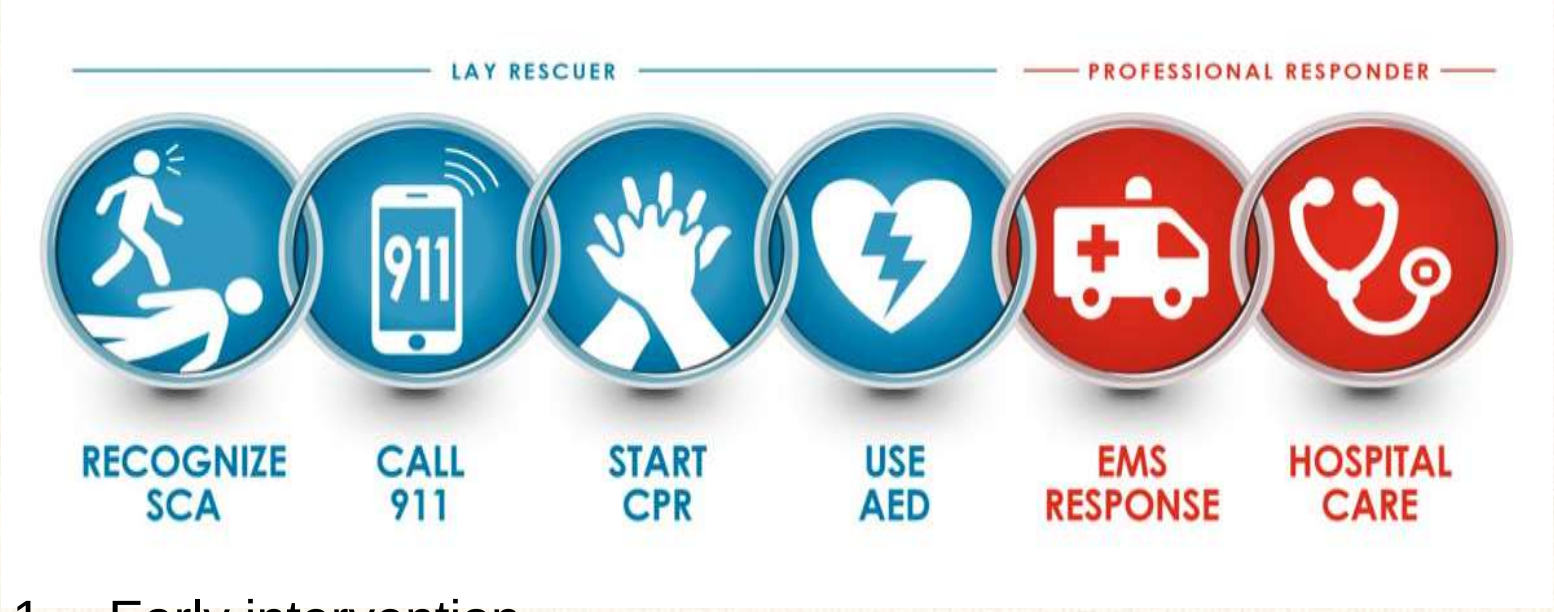
CPR 5 MAIN COMPONENTS

Five main components of high-performance CPR have been identified:

1. Chest **Compression** Fraction (**CCF**)
2. Chest **Compression** Rate
3. Chest **Compression** Depth
4. Chest Recoil (Residual Leaning)
5. Ventilation.

These CPR components were identified because of their contribution to blood flow and outcome.

CHAIN OF SURVIVAL



1. Early intervention
2. Immediate recognition of cardiac arrest and activation of the emergency response system or emergency medical service (EMS)
3. Early CPR with an emphasis on chest compressions
4. Rapid defibrillation
5. Effective advanced life support
6. Integrated post–cardiac arrest care

TIME IS GOLD!!!

TIME IS CRITICAL!!!

0 – 1 min: cardiac irritability

0 – 4 min: brain damage not likely

4 – 6 min: brain damage possible

6 – 10 min: brain damage very likely

More than 10 minutes: irreversible brain damage

Without Oxygen, brain cells begin to deteriorates or die in 4 to 6 minutes.
NO OXYGEN… BRAIN CELLS DIE

Doing Cardio Pulmonary Resuscitation (CPR) “RESETS” the clock.

WHEN TO CPR?

- ✓ In the absence of breathing and pulse in an unresponsive victim
- ✓ If the victim has agonal gasps
- ✓ If victim is in cardiac arrest

HOW TO APPROACH VICTIM?

H- Hazard

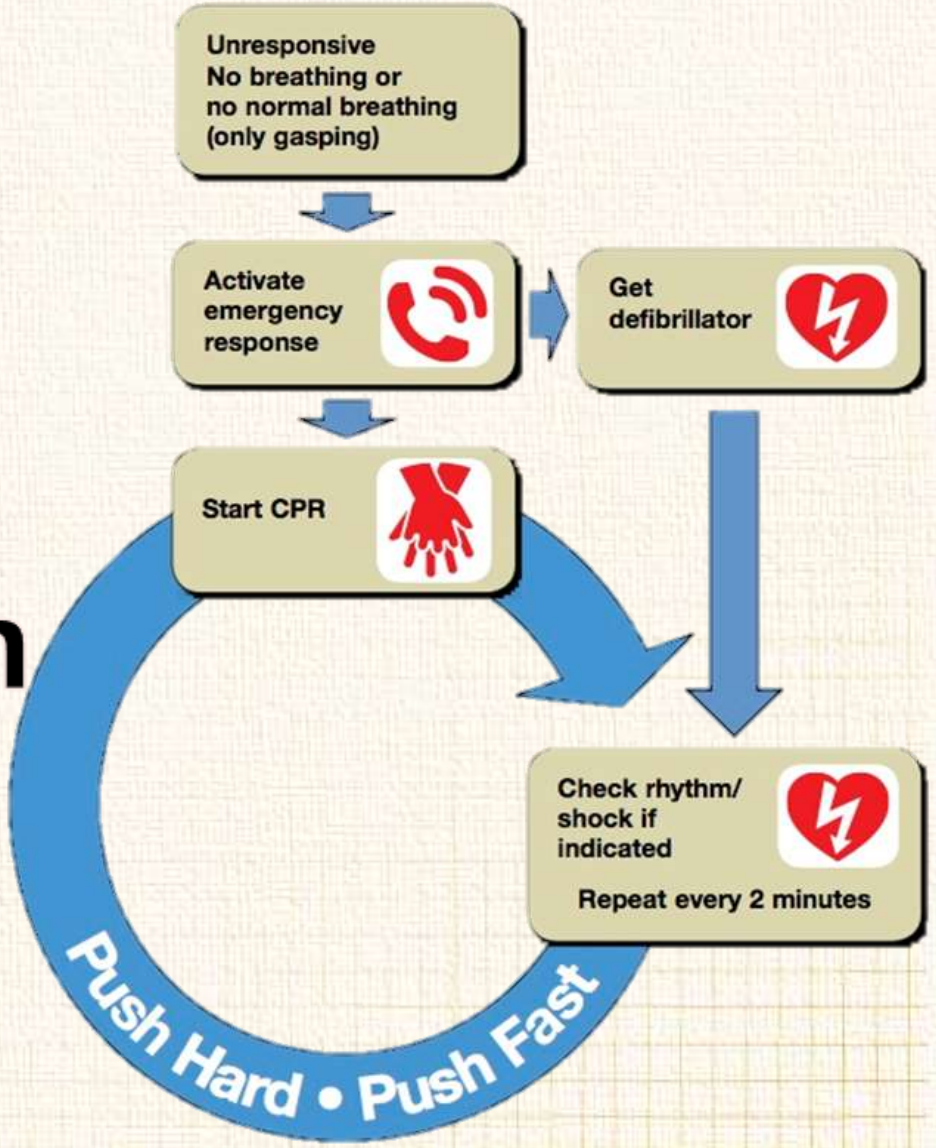
H- Hello

H- Help

C- Circulation

A- Airway

B- Breathing



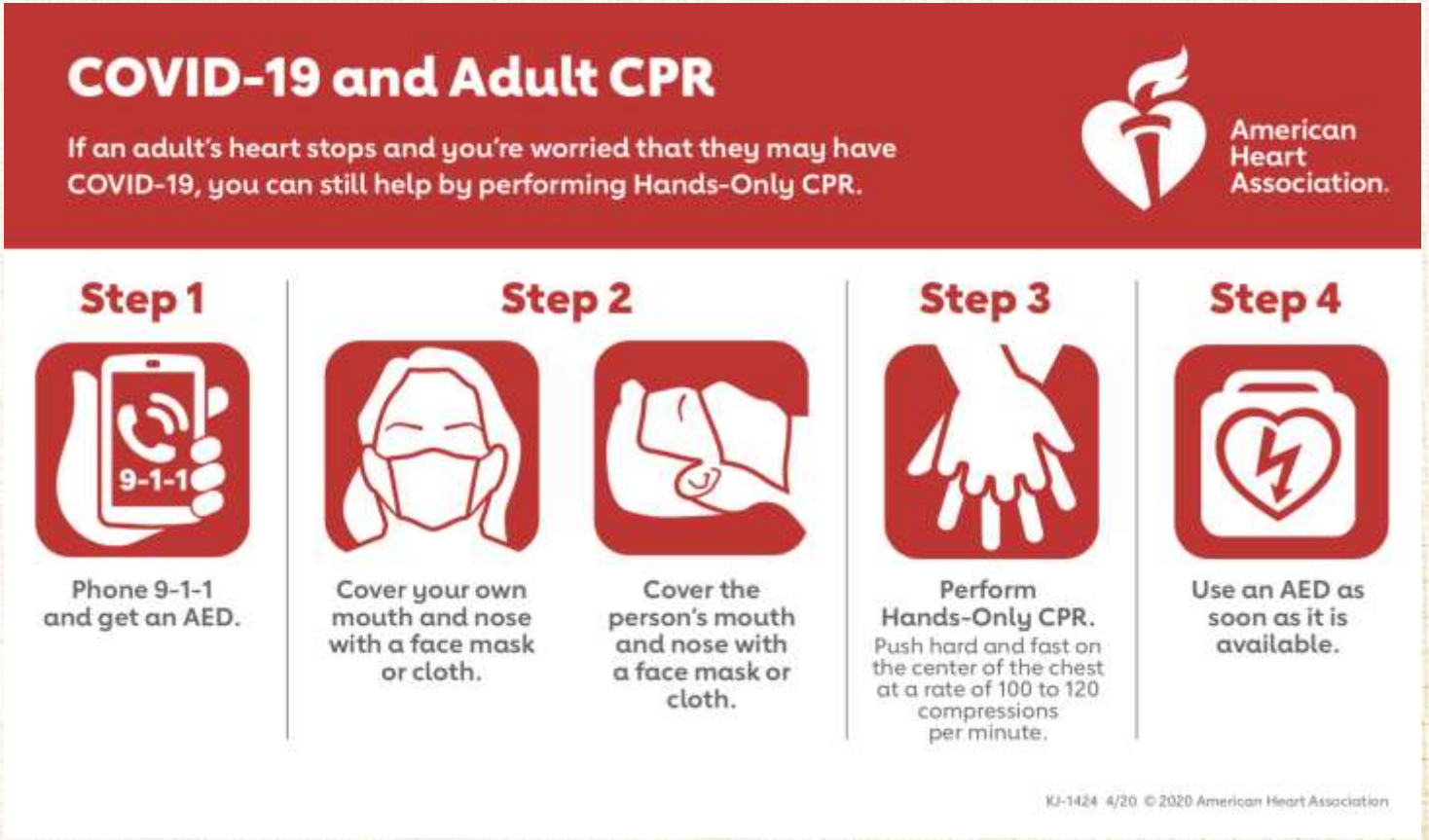
HAZARD

- ✓Safety First (90:10)
- ✓Survey the scene for possible hazards.
- ✓Make sure the scene is safe for you and the victim.

Body Substance Isolation (BSI)

PRECAUTION

"Initial assessment should begin from a distance of at least 6 feet from the patient, if possible. Patient contact should be minimized to the extent possible until a facemask is on the patient," according to CDC guidance cited by the AHA.



HELLO

General Impression
Level of Consciousness

- Tap the victim's shoulder and shout,

Note:

- make sure you introduce yourself.
- don't forget to ask consent.

CIRCULATION

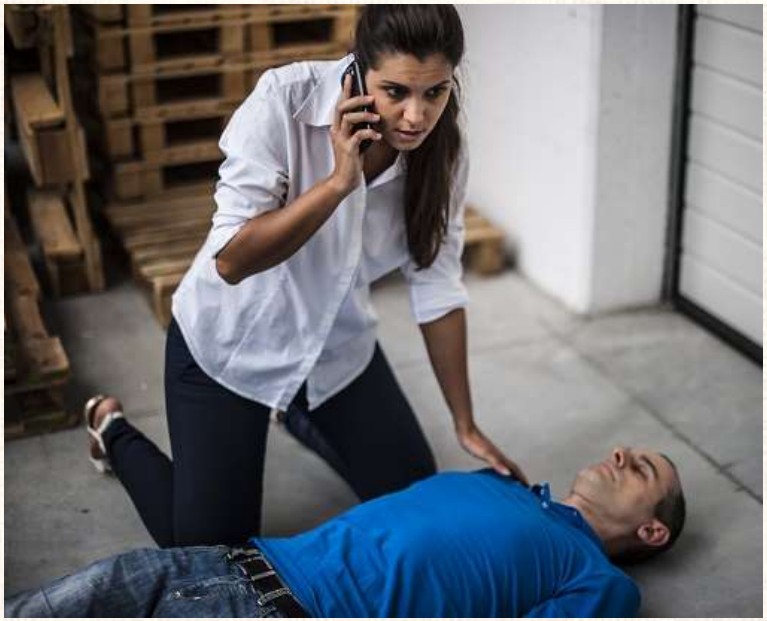
Check for **carotid pulse**, not more than 10 seconds.

- ✓ locate the trachea, using 2-3 fingers
- ✓ slide these 2 fingers into the groove between the trachea and the muscles at the side of the neck, where you can feel the carotid pulse.

If you do not definitely feel a pulse within 10 seconds,
START CHEST COMPRESSION!

HELP

If the patient is ***Unresponsive, CALL FOR HELP,*** you must activate the emergency response system.

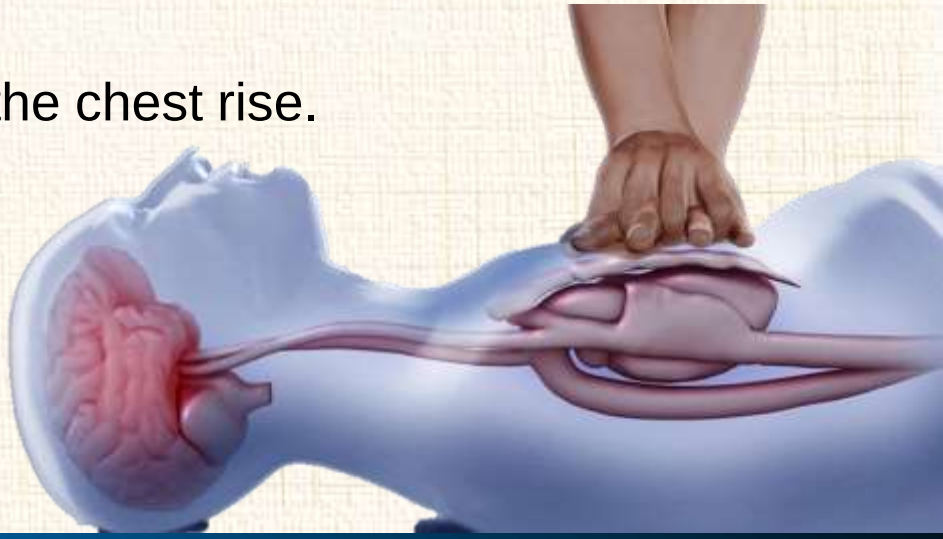


POSITION OF VICTIM & RESCUER

- ✓ Supine and on a firm surface.
- ✓ Head & neck should be in the same plane.
- ✓ Rescuer kneeling at victim's thorax side to perform both rescue breathing & chest compression.

HIGH QUALITY CPR

1. Start compressions within 10 seconds of recognition of cardiac arrest.
2. PUSH HARD, PUSH FAST : compress at a rate of ***at least 100/min with a depth of at least 2 inches (5cm) for adults, approximately 2 inches (5cm) for children and approximately 1 ½ inches (4cm) for infants.***
3. Allow complete chest recoil.
4. Minimize interruptions in compressions (try to limit interruptions to <10 seconds)
5. Give effective breaths that make the chest rise.
6. Avoid excessive ventilation.



CATEGORIES OF CPR TREATMENT

ADULT:

✓30 compression, 2 blows, 5 cycles (1 OR 2 RESCUERS)

CHILDREN and INFANT:

✓30:2 Single rescuer

✓15:2 2 rescuers

HANDS ONLY CPR

✓100 compression per minute (Push Hard, Push Fast)

HANDS ONLY CPR

H azard

H ello

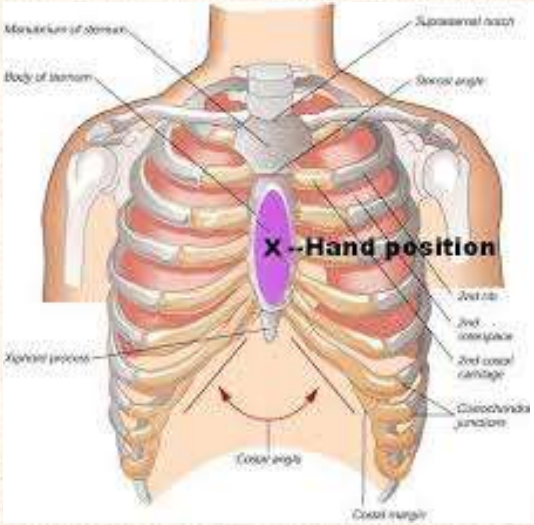
H elp!!!

C irculation Check

C ompression for 2 minutes
(100 compressions per minute)

CHEST COMPRESSIONS ALERT

- ✓Be careful with your hand and body position
- ✓For adults, children and infant, keep your fingers off patient's chest
- ✓Do not give compressions over bottom tip (xiphoid process) of breastbone
- ✓When compressing, keep elbows straight and hands in contact with patient's chest at all times



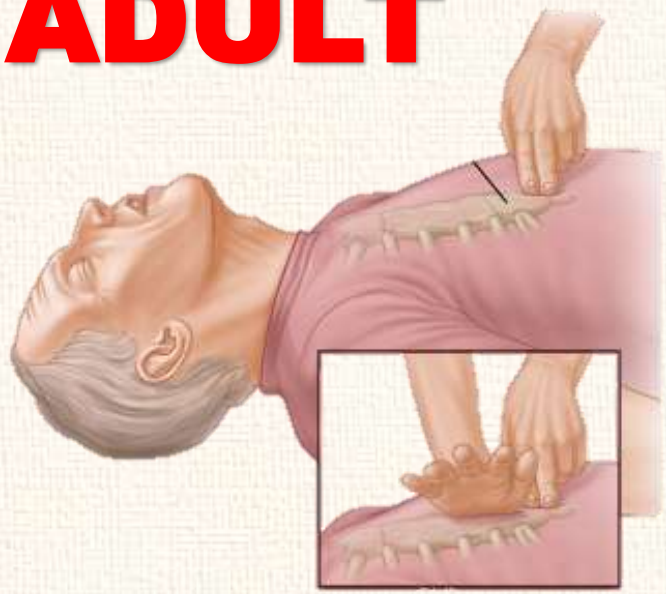
HAND PLACEMENT

Finding the position of the heart massage

The two finger upper side from the xiphisternal tip (Xiphoid Process).

HAND PLACEMENT & OPPRESSION

ADULT

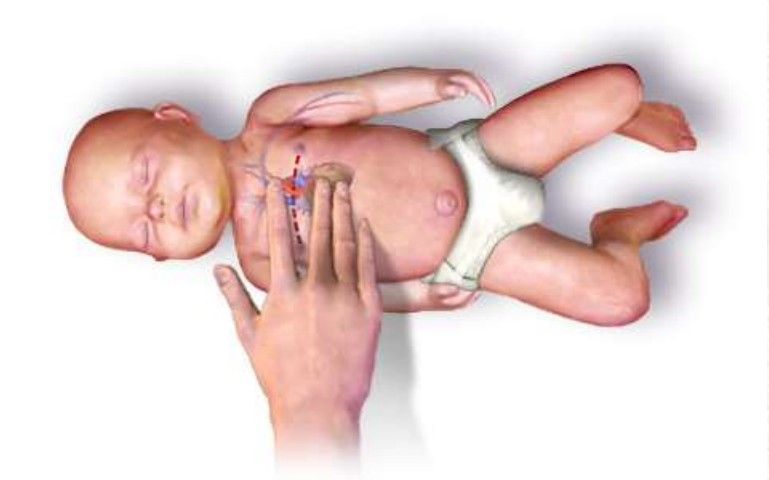


HAND PLACEMENT & OPPRESSION

CHILD

HAND PLACEMENT & OPPRESSION

INFANT

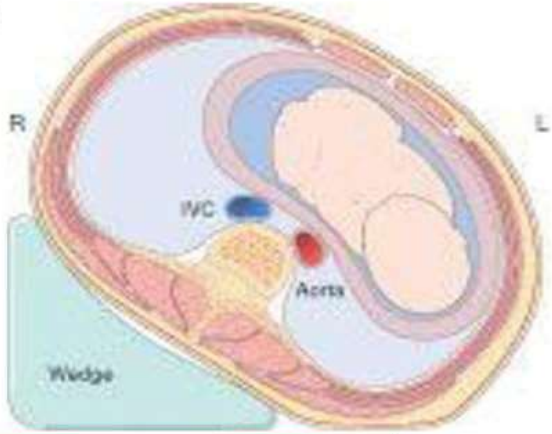


HAND PLACEMENT & OPPRESSION

PREGNANT

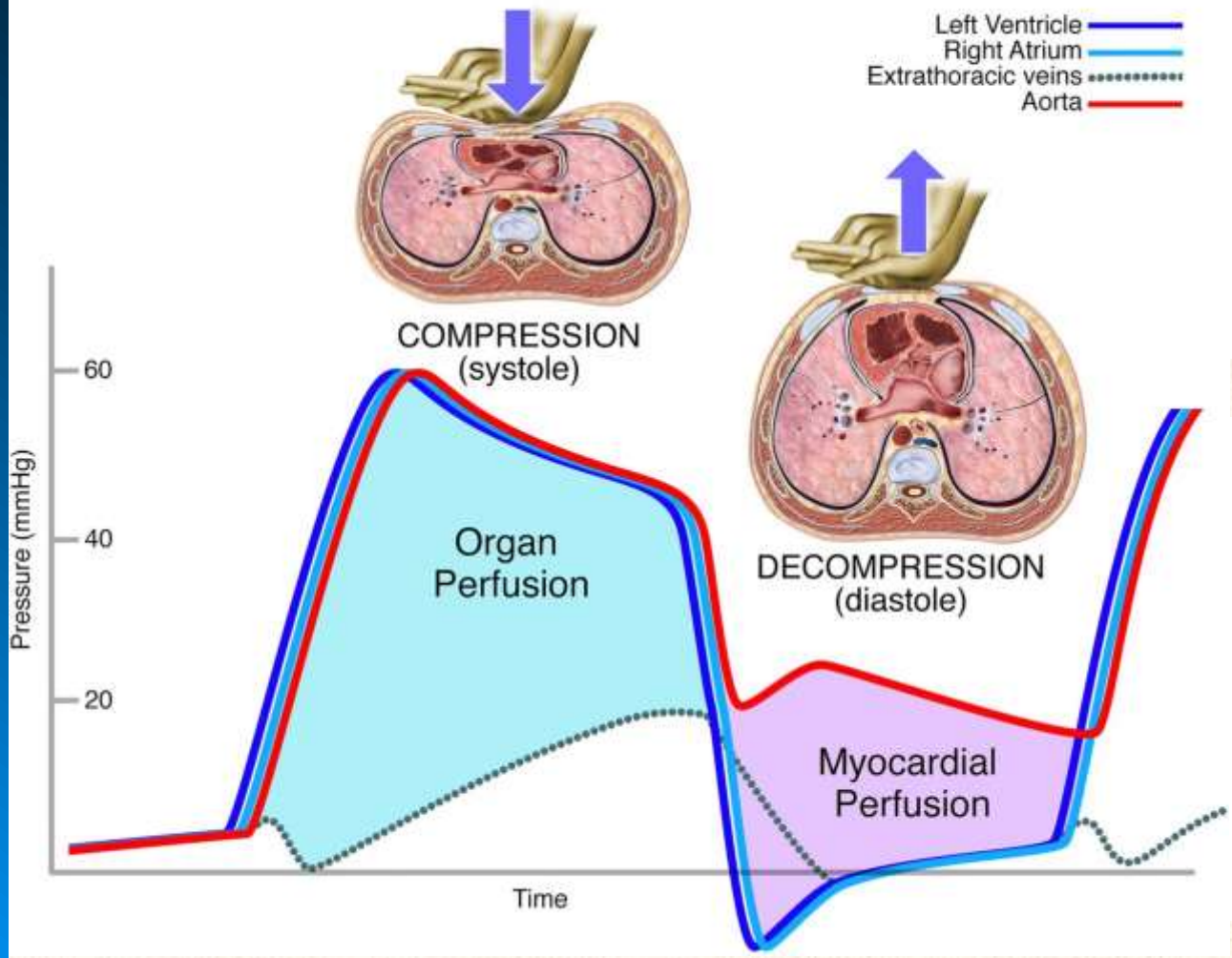
Left lateral tilt - 30 degrees using wedge (hard) of predetermined angle. Eg. Cardiff wedge

Manual left uterine displacement, with the patient in supine, also relieves aortocaval compression .



Patient in a 30° left-lateral tilt using a firm wedge to support pelvis and thorax

COMPRESSION & DECOMPRESION



Compression

Compression of the chest results in direct mechanical compression of the heart and increases intrathoracic pressure, both of which circulate blood forward. The chest is compressed 1.5 – 2" at a rate of 100/min.

Decompression

Allow complete chest recoil after each compression to maximize the vacuum in the thoracic cavity to force blood flow back to the heart

Incomplete recoil reduces the vacuum created during chest wall decompression

TYPES OF CHEST COMPRESSIONS

Adult

press down
2 inches

Child

press down
2 inches

Infant

press down
1.5 inches

Perform 30 chest compressions at a rate of 100 per minute, letting the chest rise between each

CPR COMPRESSION & VENTILATION

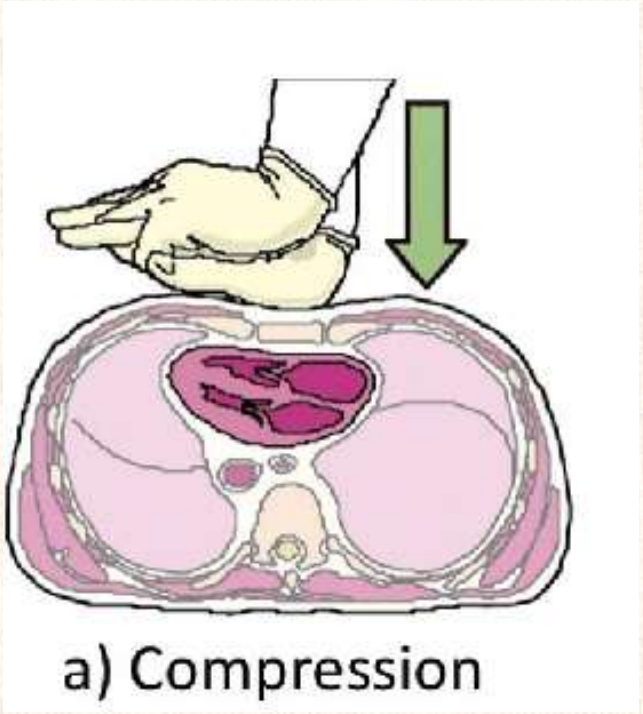
Give 30 chest compressions at rate of 100 per minute then give 2 ventilations

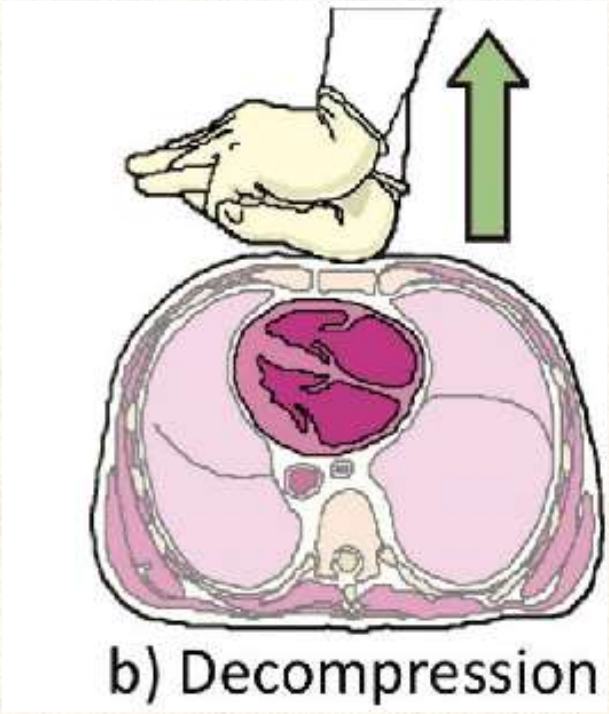
CHEST COMPRESSIONS

Proper Techniques for Chest Compressions

- ✓ Place heel of hand in the center of the chest with the heel of the other hand on top.
- ✓ Interlace your fingers or lift them off the victim's chest.

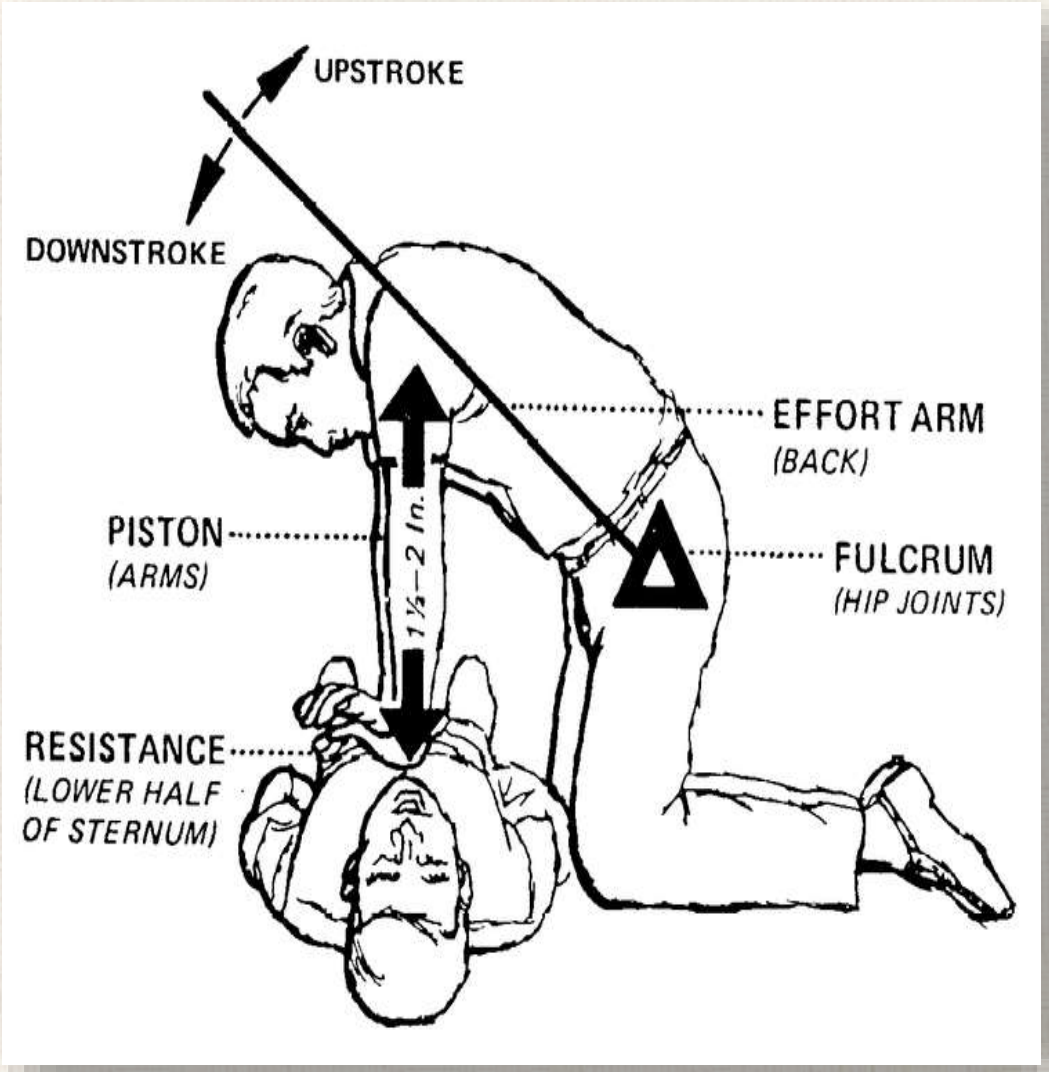
CHEST COMPRESSIONS





Compress chest hard and fast, but let chest recoil completely between compressions. Minimize amount of time used giving ventilations between sets of compressions.

CHEST COMPRESSIONS



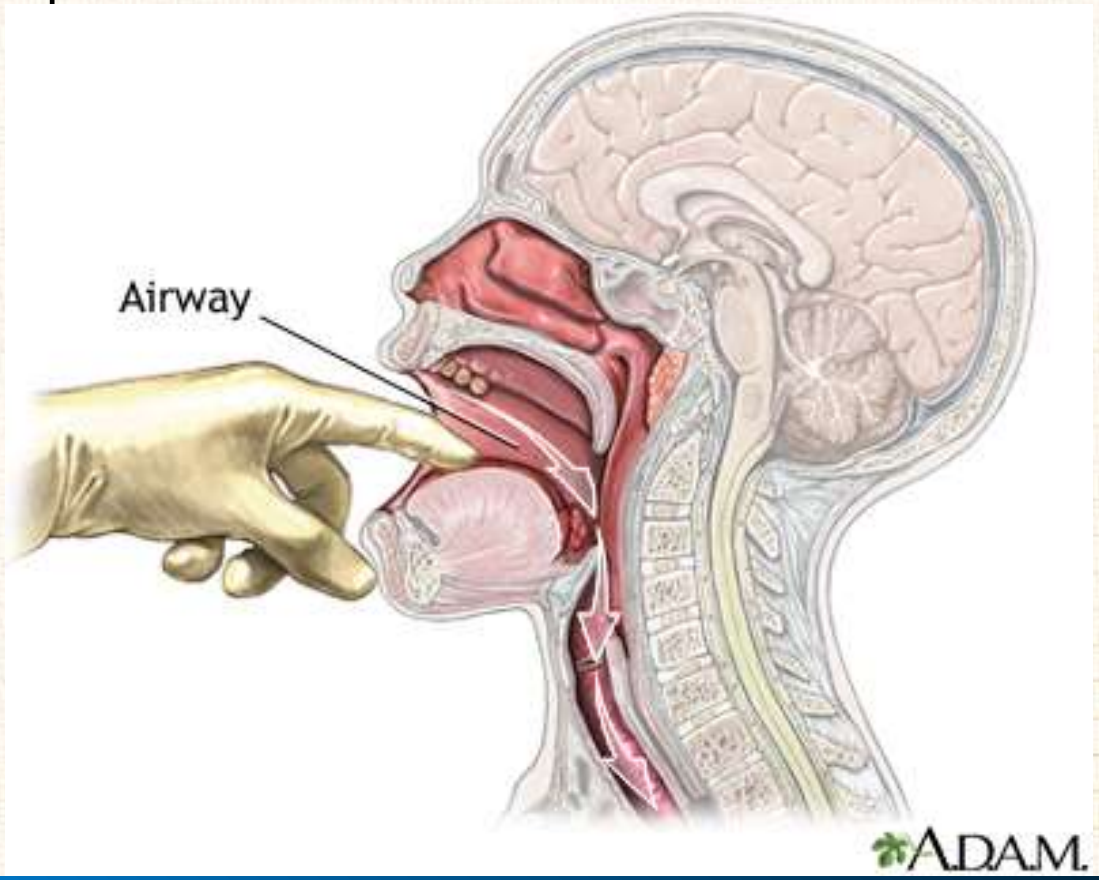
- ✓Position your body directly over your hands.
- ✓Shoulders should be above the hands.
- ✓Elbows should be straight.
- ✓Look down on your hands.

ROLES OF EACH RESCUER

Rescuer	Location	Actions
Rescuer 1	At the victim's side	- Performs chest compressions - Counts out loud - Switches duties with Rescuer 2 every 5 cycles or 2 minutes, taking less than 5 seconds to switch
Rescuer 2	At the victim's head	- Maintains an open airway - Gives breaths, watching for chest rise & avoiding hyperventilation - Encourages Rescuer 1 to perform compressions that are fast & deep enough & to allow full chest recoil between compressions - Switches duties with Rescuer 1 every 2 minutes, taking less than 5 seconds to switch

AIRWAY

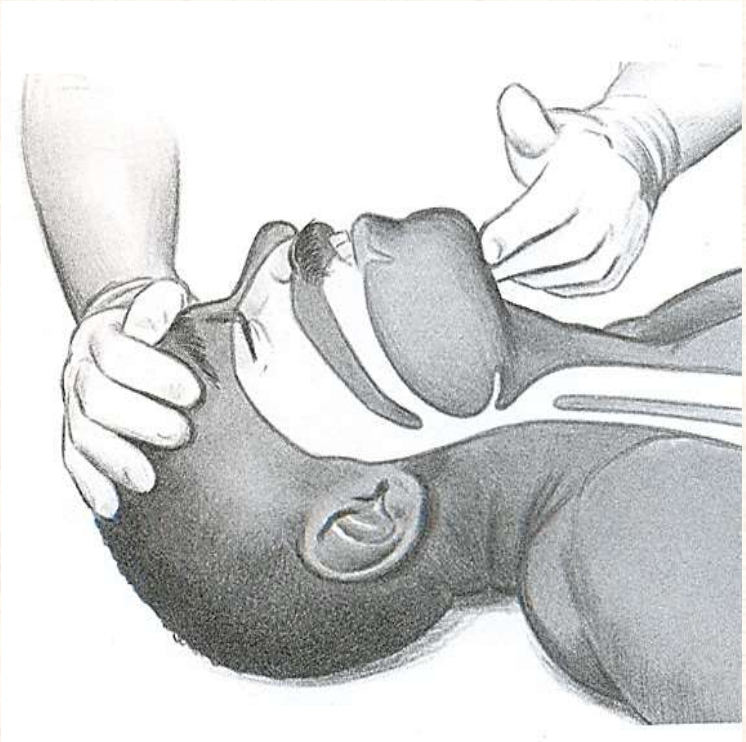
- ✓ First thing is to check in initial assessment
- ✓ You may need to open airway, maintain its patency, or clear it when it is compromise



CHECK AIRWAY FOR PATENCY

- ✓Open mouth with gloved hand
- ✓Listen for sounds indicating liquid in airway
- ✓Look inside for fluids, solids, or objects
- ✓Clear using finger sweep or suction

HOW TO OPEN THE AIRWAY?

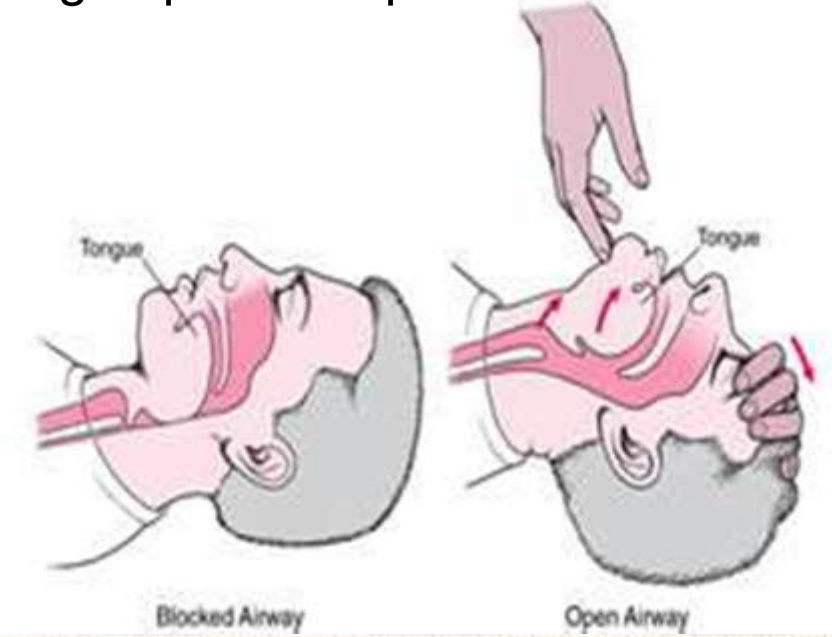


Head-tilt Chin lift

Jaw Thrust Maneuver

HEAD TILT-CHIN LIFT

- ✓Simple, safe, easily learned and effective
- ✓Choice unless trauma to neck is suspected
- ✓Place your hand on victim's forehead
- ✓Gently tilt head back
- ✓With your fingertips under point of victim's chin, lift chin to open airway



JAW THRUST MANEUVER

- ✓For suspected trauma to the neck
- ✓Place one hand on each side of victim’s head
- ✓Rest elbows on the surface on which the victim is lying
- ✓Grasp angles of victim’s lower jaw & lift with both hands

BREATHING

If the patient has positive (+) pulse, check the patient's breathing, if negative (-) breathing perform **RESCUE BREATHING**

- ✓ **ADULT** = 24 breaths every 5-6 seconds in 2 minutes
- ✓ **CHILDREN and INFANT** = 40 breaths every 3-5 seconds in 2 minutes

Start with a blow, end with a blow.

CAUTION:

Use bag valve mask (bvm) or improvise ventilator in performing rescue breathing

BREATHING

- ✓ Look for adequate breathing in adults
- ✓ Look for presence or absence of breathing in children and infants

L. L. F. BREATHING METHOD

Check breathing (Look, Listen, & Feel)

- ✓Look and Feel for the rise and fall of the chest
- ✓Listen to the gargling sound or snore by using a stethoscope

Evaluation should take at least 5 seconds & **NOT** last more than 10 seconds

ADULT BLS SEQUENCE

If adequate breathing is NOT detected within 10 seconds or patient has occasional gasps

Give 2 rescue breaths; each over 1 sec

- ✓Enough volume to produce visible chest rise
- ✓Avoid rapid or forceful ventilations

Position at Top of Victim's Head: Head-tilt-chin-lift

Position at Top of Victim's Head: Jaw Thrust


Two Man Operator


One Man Operator

ADULT BLS SEQUENCE

If with adequate breathing

Position the patients in a Recovery or Lateral Recumbent Position

Pregnant women: always **put** an unconscious **pregnant woman** in **recovery position** on her left **side**. This prevents compression of the Inferior vena cava by the uterus, which **could** be fatal for both the **mother** and the child.

A. E. D.

A-UTOMATED
E-XTERNAL
D-EFIBRILLATOR

A. E. D.

Be sure that:

- ✓ **There is no gas leak in area**
- ✓ **You and the patient are in a safe place**
- ✓ **You have your personal protection equipment**

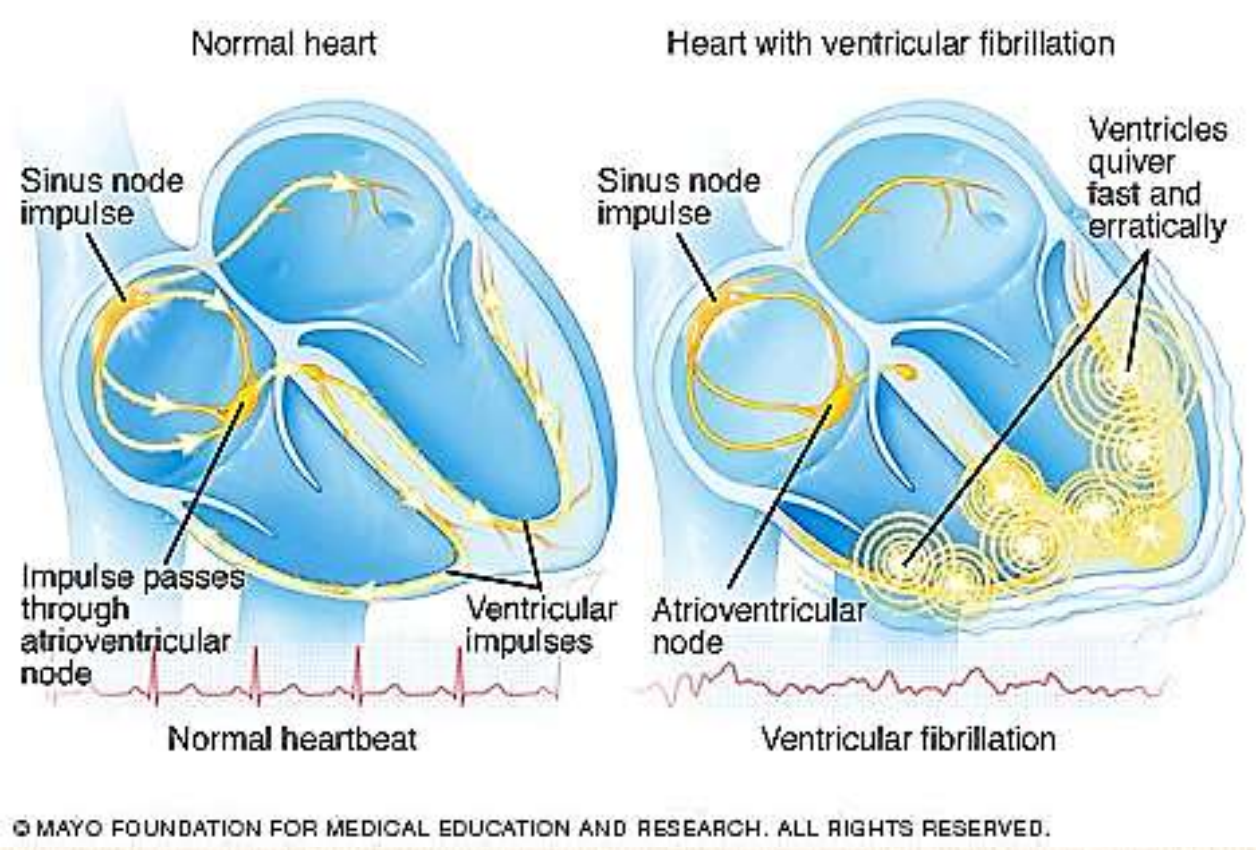
A. E. D.

A. E. D.

A. E. D.

VENTRICULAR FIBRILLATION

- ✓ Most common rhythm found in adults with witnessed non-traumatic sudden cardiac death.
- ✓ Treatment of choice: DEFIBRILLATION.
- ✓ Higher survival rate if an immediate bystander perform CPR plus defibrillation occurs within 3-5 minutes.



WHEN DO YOU STOP CPR?

S – spontaneous breathing and pulse is present (ROSC).

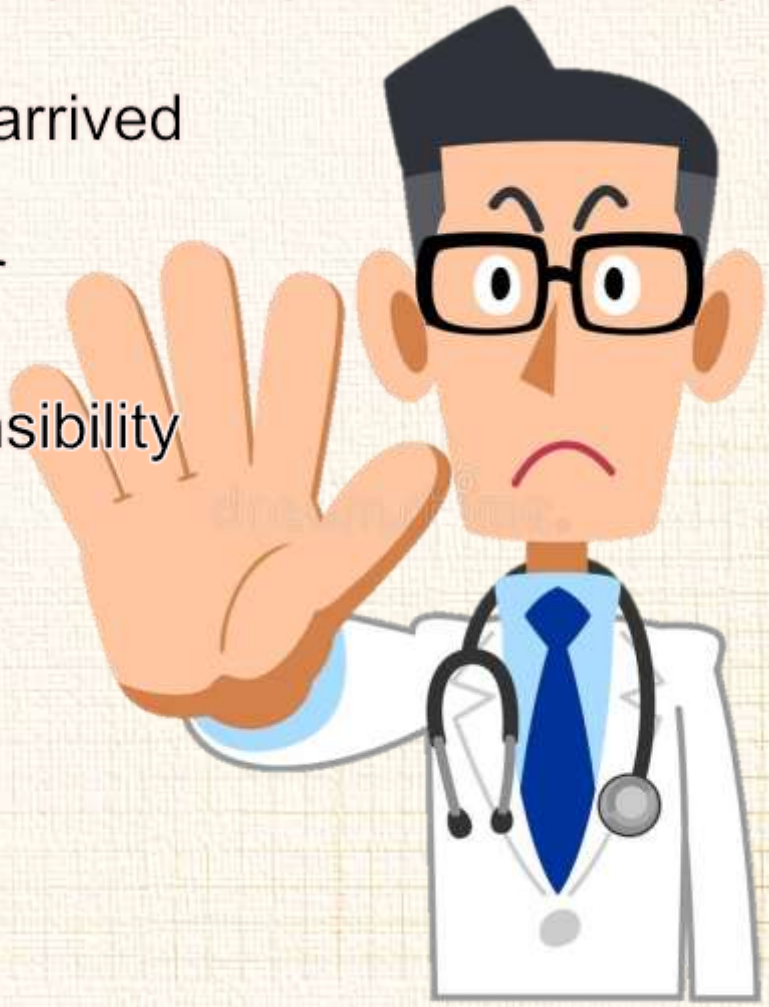
T – trained advance rescuers arrived

O – over exhaustion of rescuer

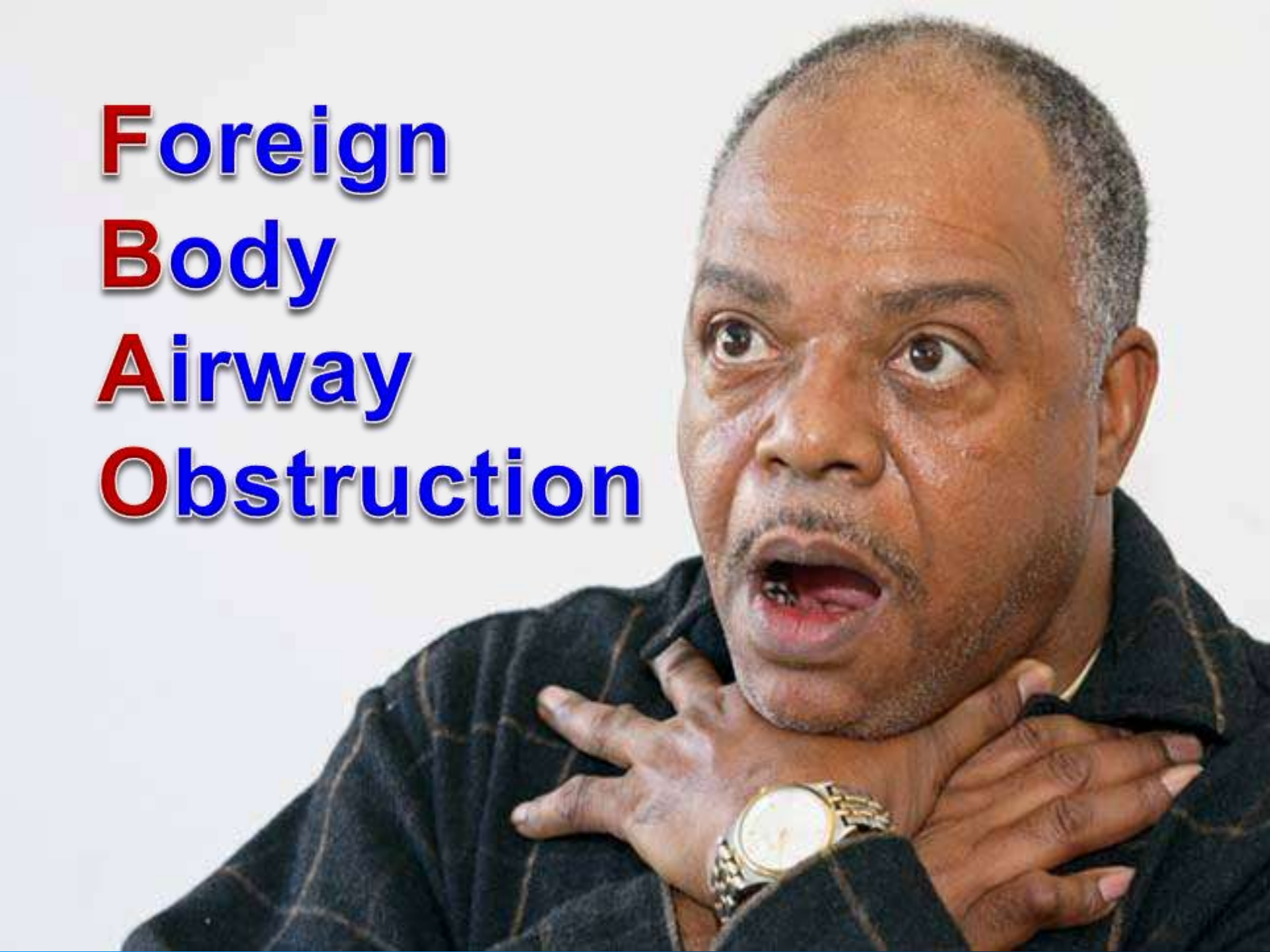
P – physician assumes responsibility

I – if the scene is unsafe.

T – there is a DNR order

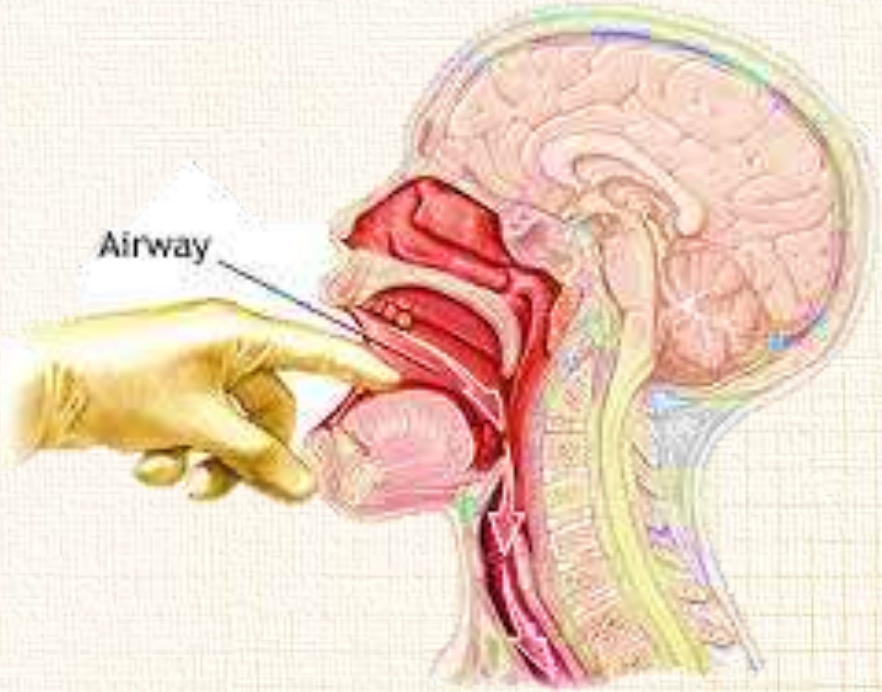


Foreign Body Airway Obstruction



ASSESSING AIRWAY OBSTRUCTION

- ✓Most cases in adults occur while eating
- ✓Most cases in infants and children occur while eating/playing
- ✓Often someone is present recognizing choking event while patient responsive



MILD OBSTRUCTION

✓Victim is coughing forcefully

✓Victim is getting some air

- Wheezing or high pitched sounds with breath

✓ Do not interrupt coughing or attempts to expel object

MILD AIRWAY OBSTRUCTION

- ✓Victim is still getting some air into lungs around object
- ✓Victim may be able to cough out object

SEVERE OBSTRUCTION

- ✓Victim getting little air or none
- ✓Victim may look frantic and be clutching at throat
- ✓Victim may have pale or bluish coloring around mouth and nail beds
- ✓Victim may be coughing weakly and silently or not at all
- ✓Victim cannot speak

SEVERE AIRWAY OBSTRUCTION

- ✓Victim is getting no air at all.
- ✓Victim will soon become unresponsive.
- ✓Heart will soon stop.

FBAO IN INFANTS & CHILD

- ✓ Most child deaths from FBAOs occur under age 5, mostly in infants.
- ✓ Foreign bodies include:
  - Toys and other small objects
  - Pieces of popped balloons
  - Food such as hot dogs, round candies, nuts, and grapes
- ✓ Suspect FBAO in an infant/child with onset of respiratory distress associated with coughing, gagging, stridor or wheezing.
- ✓ If responsive infant can cry/cough, watch carefully to see if the object comes out.

FBAO MANAGEMENT

Care for FBAO

- ✓ Depends on whether patient is responsive or unresponsive; whether the obstruction is mild or severe
- ✓ For *responsive, choking patient who is coughing*, encourage coughing
- ✓ For *responsive, choking patient who cannot speak or cough forcefully*, give abdominal thrusts (Heimlich maneuver).
- ✓ For *unresponsive patient with an FBAO,* if ventilations do not go in, ensure additional EMS personnel have been summoned and begin CPR

Skills:

Foreign Body Airway Obstruction (Adult or Child)

SKILLS FOR FBAO MANAGEMENT

Responsive Patients

Ask for consent, tell patient what you intend to do, and give abdominal thrusts

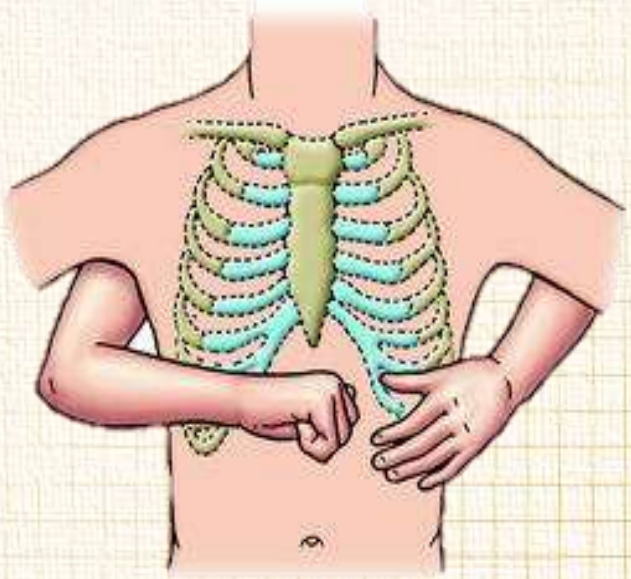
- ✓ With child/someone much shorter than you, kneel behind patient
- ✓ If patient is much taller than you, ask patient to kneel/sit

When severe obstruction is not cleared, patient will become unresponsive within minutes

SKILLS FOR FBAO MANAGEMENT

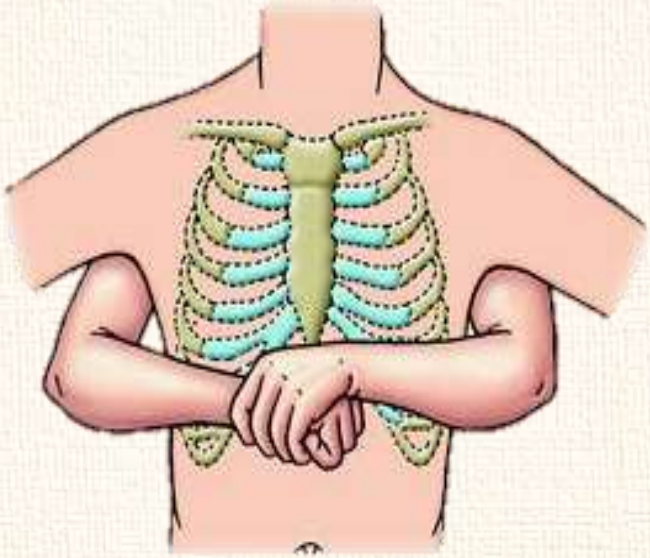
Abdominal Thrust

- ✓ Stand behind victim.
- ✓ One leg between victim's legs.
- ✓ Head to one side.
- ✓ Put both hands around upper part of abdomen
- ✓ Lean victim forwards
- ✓ Clench fist & place it thumb side against victim's abdomen between the umbilicus & xiphoid

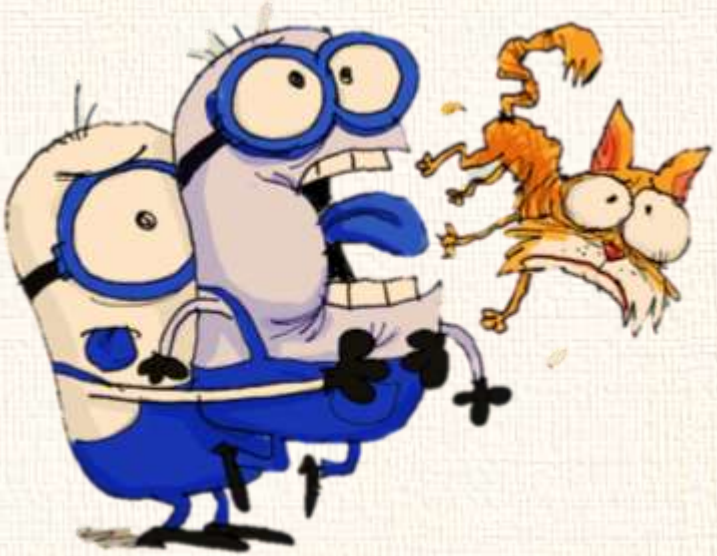


SKILLS FOR FBAO MANAGEMENT

Abdominal Thrust



- ✓ Grasp this hand with the other
- ✓ Pull sharply inwards & upwards
- ✓ Repeat until object is expelled or victim becomes unresponsive



SKILLS FOR FBAO MANAGEMENT

Abdominal Thrust

If you find a **CONSCIOUS** choking victim lying on the ground, do abdominal thrusts in the supine position.

SKILLS FOR FBAO MANAGEMENT

Abdominal Thrust

If you find yourself choking and alone, give yourself abdominal thrusts to try expel the object.

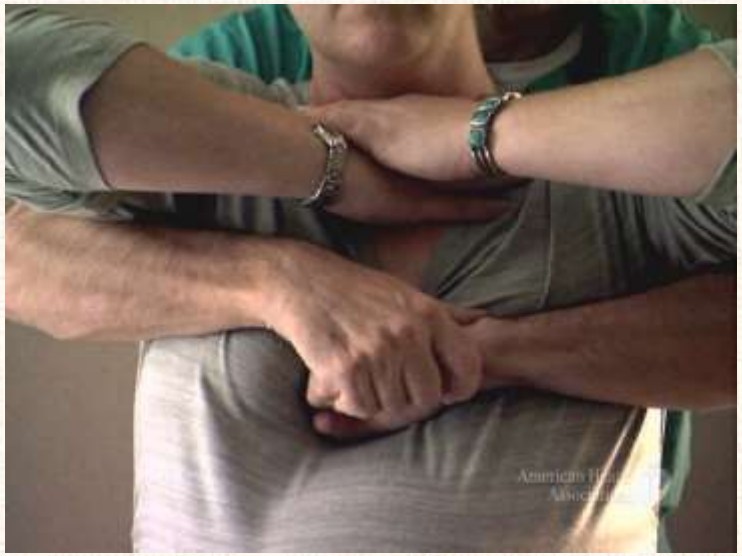
- ✓Place your clench fist above the navel while fist with the other hand
- ✓Lean over a the back of a chair or other object that are sturdy
- ✓Push your fist towards yourself with an upward thrust until you expel the object

SKILLS FOR FBAO MANAGEMENT

Chest Thrust

Do chest thrusts if:

- ✓Abdominal thrusts are NOT effective
- ✓Rescuer is unable to encircle obese victim's abdomen
- ✓Victim is in late stages of pregnancy



SKILLS FOR FBAO MANAGEMENT

Management of Airway Obstructions in Unresponsive Patients

- ✓Make sure additional EMS personnel have been called
- ✓Check for the safety of the victim and you from danger.
- ✓Use PPE
- ✓Provide CPR
- ✓Begin by opening airway
- ✓When opening patient’s mouth, look first for an object in mouth
- ✓If you see an object in mouth, remove it with finger sweep
- ✓Then give 2 breaths and check for a pulse

SKILLS FOR FBAO MANAGEMENT

Unresponsive Patient

- ✓ If patient's head is positioned to open airway but patient is not breathing, give 2 ventilations
- ✓ If first breath doesn't go in, try again and give a second breath
- ✓ If it still does not go in, assume that there is obstructed airway

SKILLS FOR FBAO MANAGEMENT

CPR for Airway Obstructions in Unresponsive Patients

- ✓ Chest compressions given in CPR may expel object
- ✓ While giving CPR, each time you open mouth, check to see if object is visible, and remove it if so

SKILLS FOR FBAO MANAGEMENT

Recovery Position

Skills:

Foreign Body Airway Obstruction (Infant)

SKILLS FOR FBAO MANAGEMENT

Unresponsive Infant when Encountered

- ✓ Open airway; check for breathing
- ✓ If not breathing, give 2 breaths
- ✓ If first breath doesn't go in, try again and reposition the head to open the airway then give a second breath
- ✓ If second breath doesn't go in and blows back, assume an airway obstruction
- ✓ Then open the airway to check for any airway blockage and if the object is visible to your eyes do a finger swipe by using your pinky finger or use suction to remove that blockage and if it is not visible then provide CPR to expel the object.

SKILLS FOR FBAO MANAGEMENT

Responsive Choking Infant Who Cannot Cry/Cough

✓Ensure that additional EMS personnel have been summoned

✓Give alternating back slaps or chest thrusts to expel object

✓If Choking Infant Becomes Unresponsive

- Give CPR, start with chest compressions
- Check for object in mouth, remove any object you see by finger swipe of suction

SKILLS FOR FBAO MANAGEMENT

Give up to 5 back slaps between shoulder blades

SKILLS FOR FBAO MANAGEMENT

Roll Infant Face Up.

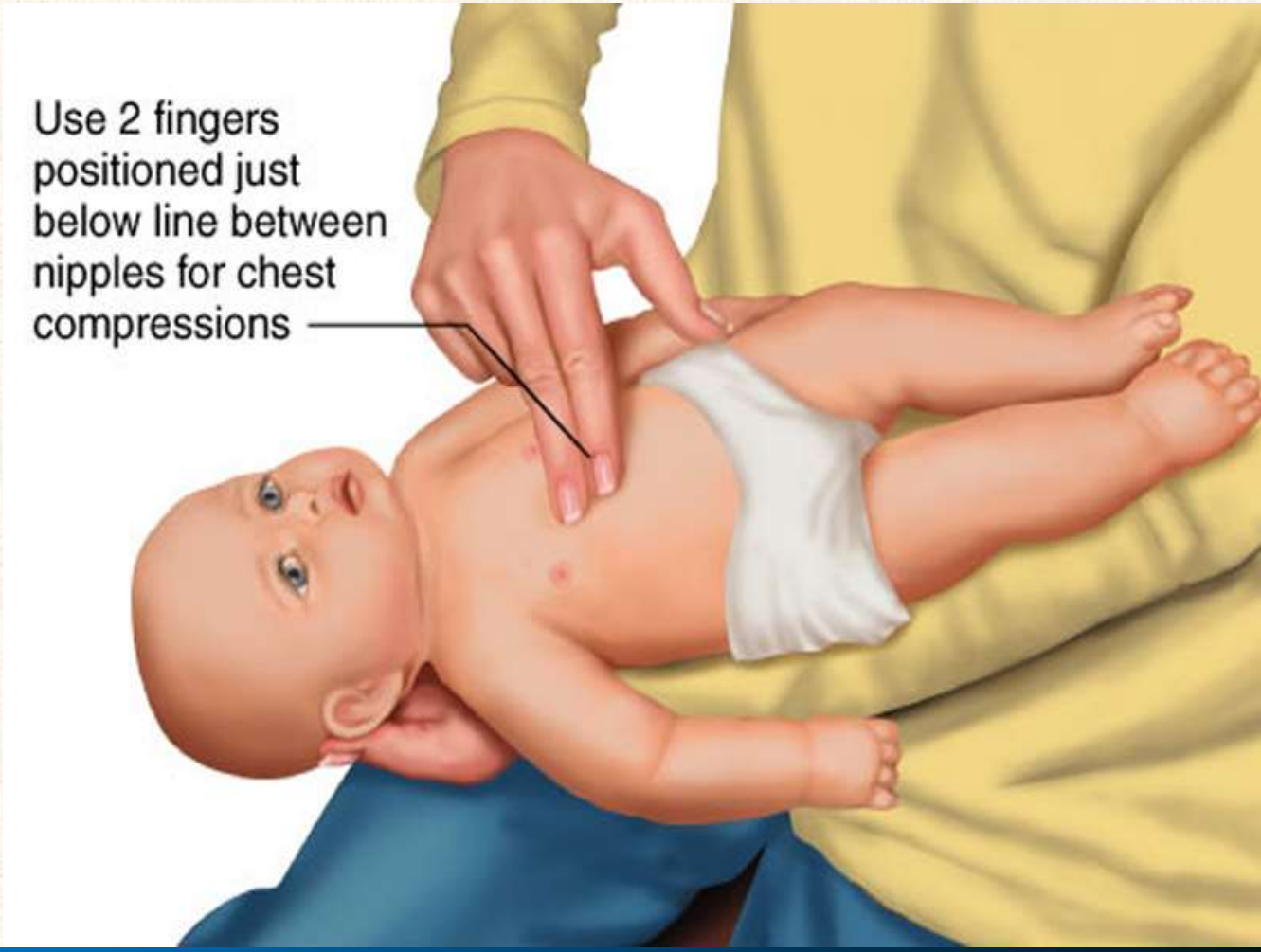
SKILLS FOR FBAO MANAGEMENT

Check for expelled object. If not present, continue with next step.

SKILLS FOR FBAO MANAGEMENT

Give 5 chest thrusts. Check mouth for expelled object.

Repeat back slaps and chest thrusts as necessary.



SKILLS FOR FBAO MANAGEMENT

Infant Recovery Position

- ✓ Hold the baby in your arms head lower than stomach.
- ✓ Put the back of your hand under their mouth and nose to keep checking that they are breathing
- ✓ If you are unsure, wet the back of your hand as it makes it more sensitive
- ✓ Call for Emergency Medical Service

Thank You and Good Day