



FACULTY OF NURSING SCIENCES

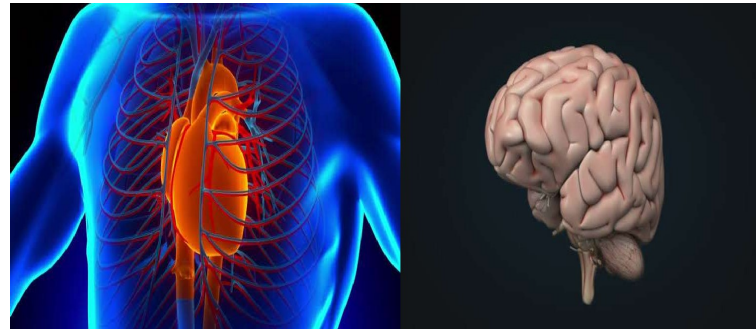
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CARDIO PULMONARY RESUSCITATION(CPR)

MSN

CARDIOPULMONARY RESUSCITATION (CPR)



OVERVIEW

- Understand the facts about the heart
- The causes and symptoms of cardiac arrest
- The techniques of performing high quality CPR
- The algorithm to be practiced while providing CPR

OBJECTIVES

- Understand the facts about the heart
- Define CPR
- Know about the causes and symptoms of cardiac arrest
- Recognize the techniques of performing high quality CPR
- Note down the algorithm to be practiced while providing CPR

INTERESTING FACTS ABOUT HEART

- Our heart beats 100,000 times a day
- A woman's average heartbeat is faster than a man's by almost 8 beats a minute
- Cancer of the heart is very rare, because heart cells stop dividing early in life
- The human heart is not on the left hand side of the body, it's in the middle

INTERESTING FACTS ABOUT HEART

- When the body is resting, it takes just 6 seconds for blood to travel from the heart to the lungs and back – and only 8 seconds for it to go to the brain and back
- The human heart is not 'heart shaped', in fact a cow's heart is closer to the heart shape we use to indicate the heart
- Happiness and a strong sense of emotional vitality helps lower your risk of heart disease

INTRODUCTION

“Knowledge of life saving techniques is an important aspect in

saving human lives”

CARDIO PULMONARY RESUSCITATION

- **CARDIO** = HEART
- **PULMONARY** = LUNGS
- **RESUSCITAION** = TO
REVIVE

CPR – BASIC LIFE SUPPORT

- **Cardio-pulmonary resuscitation**
- **BLS** – level of medical care which is used for the victims of life- threatening illnesses or injuries until they can be given full medical care at a hospital.



PURPOSES

- To maintain Blood **circulation** by external cardiac massages (C)
- To maintain an open and clear **airway** (A)
- To maintain **breathing** by external ventilation (B)
- To **save life** of the Patient.
- To provide **basic life support** till medical and advanced life support arrives.

INDICATIONS

Cardiac Arrest

- Ventricular fibrillation (VF)
- Ventricular tachycardia (VT)
- Asystole
- Pulse less electrical activity
- Pulseless bradycardia

CONTRA INDICATION

- **Absolute Contraindication** to CPR is a do-not-resuscitate (DNR) order or other advanced directive.
- **Relative contraindication** to perform CPR is if a clinician justifiably feels that the intervention would be medically futile.

CHAIN OF
SURVIVAL



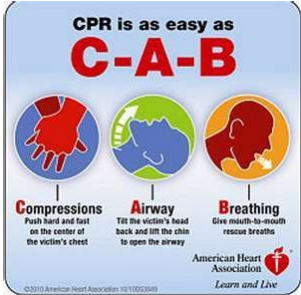


WHAT'S THE CHANGE ??

- The 2010 AHA (American Heart Association) Guidelines for CPR and ECC (Emergency Cardiovascular Care) recommend a change in the BLS sequence of steps from A-B-C (Airway, Breathing, Chest compressions) to C-A-B (Chest compressions, Airway, Breathing).

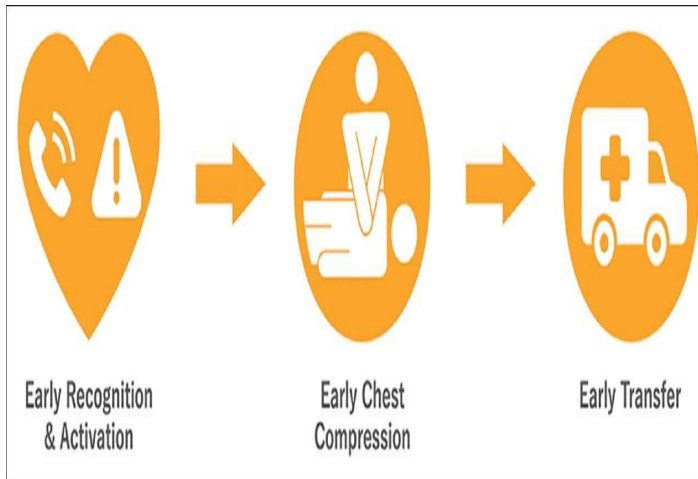
A Change From A-B-C to C-A-B

- **A**_{IRWAY}
- **B**_{REATHING}
- **C**_{IRCULATION}
N



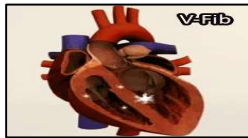
WAIT, WATCH AND WORK---WHY???

- Inappropriate and delayed resuscitation – adverse outcome
- The mortality in sudden cardiac arrest – 4280/100,000
- 70 % of out-of-hospital cardiac arrest occur at home
- 90% of people who suffer out-of-hospital cardiac arrest die.
- Every single minute delay reduces the chance of survival
- 70% of them who resides in rural areas with high illiteracy rate.
- Cultural hesitancy to give mouth- mouth respiration.

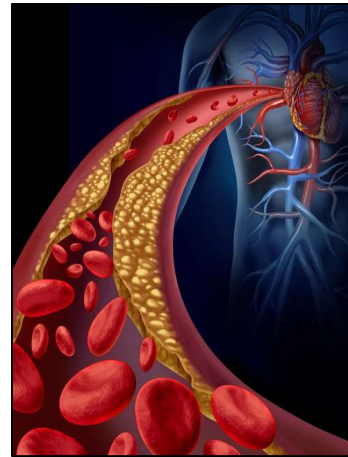


Differences between Cardiac Arrest And Heart Attack

- Cardiac arrest means cessation of heart to stop. It occurs when the heart develops an abnormal rhythm and unable to pump blood.
- Brain damage begins within 4-6 minutes of cardiac arrest.
- Brain damage becomes irreversible within 8-10 minutes of

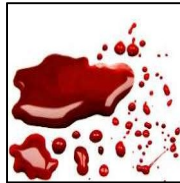


- Heart attack occurs when blood flow to part of the heart muscle is blocked.



Causes of cardiac arrest

- Heart attack
- Drowning
- Allergic reactions
- Drug overdose
- Electric shock
- Severe hemorrhage
- Prolonged seizures
- Stroke



SIGNS AND SYMPTOMS OF CARDIAC ARREST

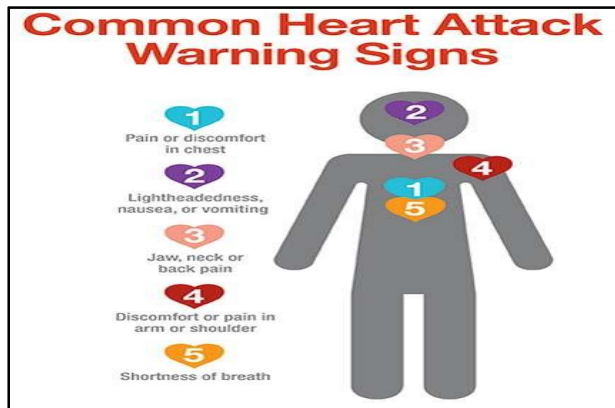
Sudden collapse

Unresponsiveness

Abnormal breathing

Blue discoloration
of the face

SYMPTOMS OF HEART ATTACK



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

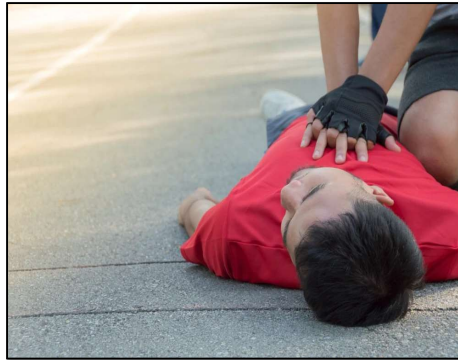
Early chest compression can immediately circulate oxygen that is still in the bloodstream. By changing the sequence, chest compressions are initiated sooner and the delay in ventilation should be minimal.

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

VERIFY SCENE SAFETY



SCENE IS SAFE



CHECK RESPONSE



**DO NOT SHAKE
VIGOROUSLY**

CALL FOR HELP
IMMEDIATELY
ACTIVATE EMS



ASSESS FOR PULSE

- ✓ For breathing, scan the victim's chest for rise and fall
- ✓ Agonal gasps are not normal breathing.
- ✓ Palpate for carotid artery.
- ✓ Locate the trachea, slide 2 or 3 fingers into the groove between trachea and muscles at the side of the neck.



BREATHING

- Scan for the victim's chest for rise and fall for not more than 10 seconds.
- Agonal gasps are not normal breathing. They may be present in the first few minutes of cardiac arrest.

DETERMINE THE ACTIONS....

- **Normal breathing and pulse present –**

Monitor the victim.

- **No breathing, pulse is present –**

Provide rescue breaths, call for ambulance and check pulse for every 2 minutes (1 breath for 5- 6 seconds).

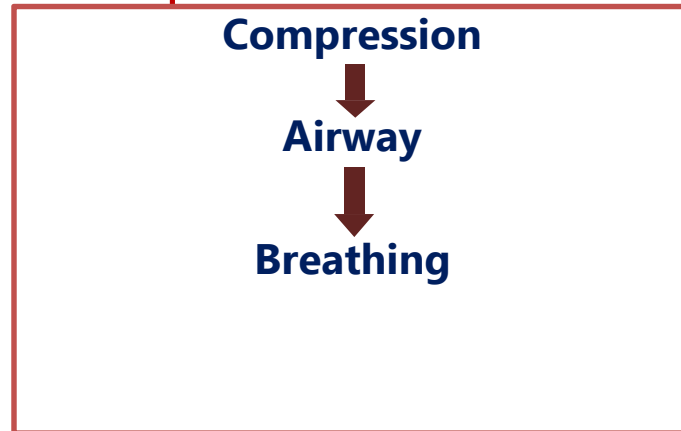
- **No pulse & breathing –** Begin high quality CPR.

COMPONENTS OF CPR

- CHEST
COMPRESSIONS
- AIRWAY
- BREATHING



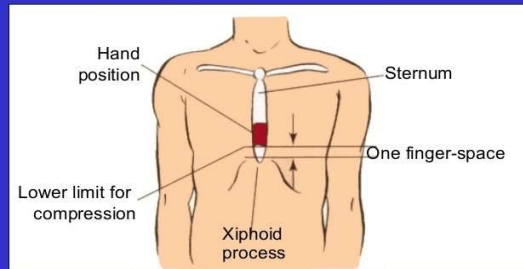
Sequence of CPR



LOCATE THE SITE

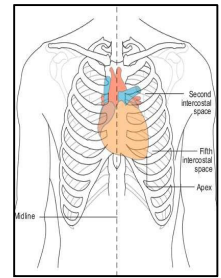
Hand position: lower half of the sternum (breastbone)

For adults and children, the first hand should be placed on the sternum one finger-space from the lower end.



HAND PLACEMENT ON LOWER HALF OF THE STERNUM

- ✓ Hands in the center of the chest
- ✓ Lower half of the breast bone
- ✓ Dominant hand over the non dominant hand



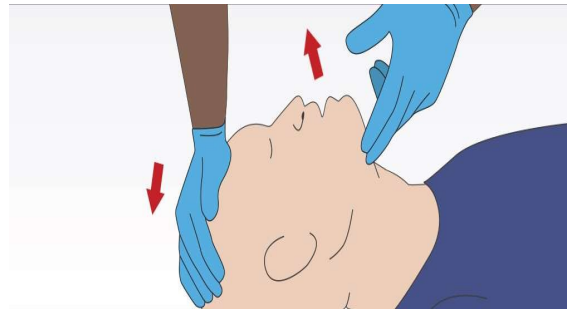
PUSH HARD AND PUSH FAST

ALLOW FULL RECOIL OF
THE CHEST

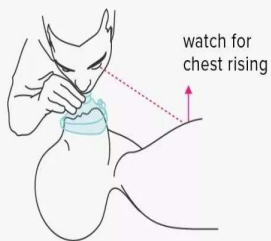


OPENING THE AIRWAY

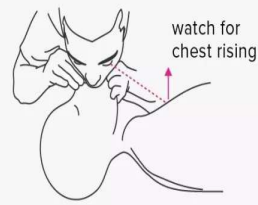
Head tilt chin lift



rescue breaths



OR

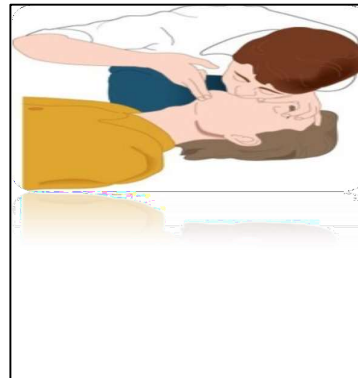


cover nose and mouth
with mask

pinch nostrils shut

2 breaths each time, about **1 second apart**

MOUTH TO MOUTH BREATHING

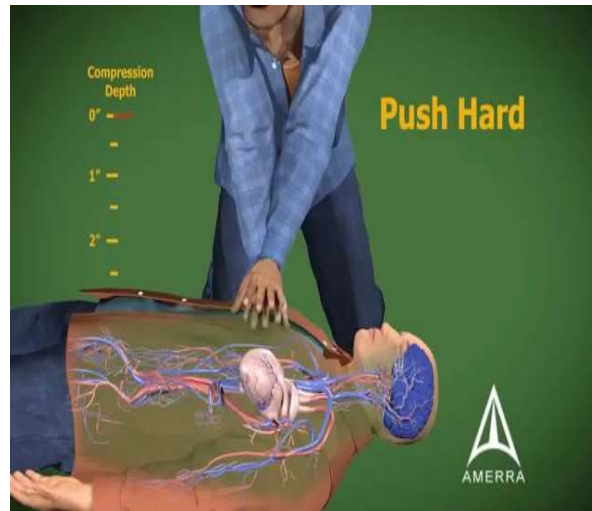


OXYGEN CONTENT OF EXHALED AIR:

- ✓ The air we breathe in contains 21%
- ✓ The air we breathe out has 17%
- ✓ We use little oxygen only which makes the rescue breathes more effective.

HIGH QUALITY CPR:

- Start compressions within 10 seconds of recognition of cardiac arrest
- Push hard and push fast: compress at a rate of 100-120 / min
- Compression depth of about 5cm for adult
- Allow complete chest recoil
- Minimise interruptions
- Give effective breaths & Avoid excessive ventilation.



- Chest compression- 30:2
- Compression rate: 100-120/ min
- Compression depth: 2 inches(5 cm)
- **Hand placement:** 2 hands on the lower half of the sternum
- **Chest recoil:** allow full recoil of chest after each compression; do not lean on the chest after each compression.
- **Minimizing interruption:** limit interruptions in chest compressions to less than 10 secs.

HEIMLICH MANEUVER



WHEN CAN I STOP CPR ?

Victim revives

- Trained help arrives
- Too exhausted to continue
- Unsafe scene
- Physician directed
- Cardiac arrest for more than 30 minutes

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

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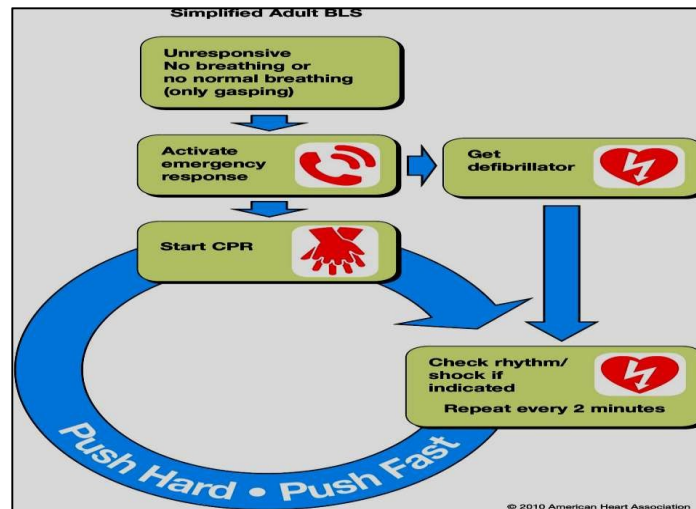
e heart attack)

COMPLICATIONS OF CPR

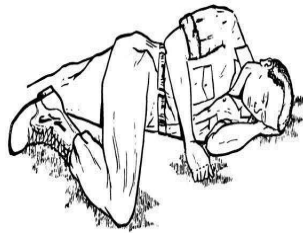
- Coronary vessel injury
- Diaphragm injury
- Hem pericardium
- Hem thorax
- Interference with ventilation

COMPLICATIONS OF CPR

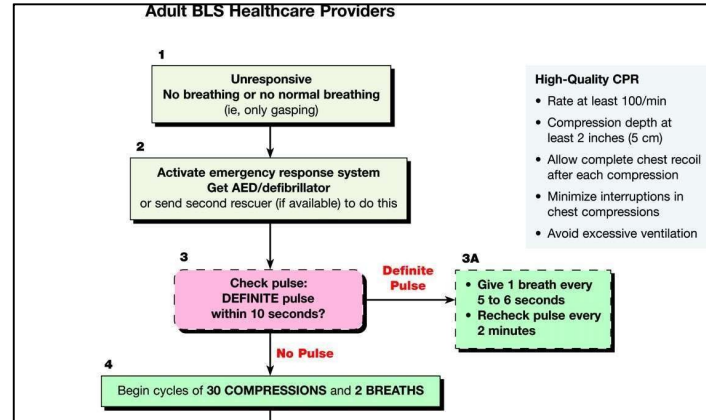
- Liver injury
- Myocardial injury
- Pneumothorax
- Rib fractures
- Spleen injury
- Sternal fracture



- **After getting pulse provide left-lateral position and prepare for shifting the patient to hospital**

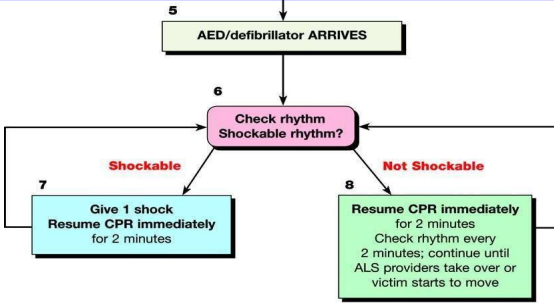


BLS HEALTHCARE PROVIDER ALGORITHM



- High-Quality CPR**
- Rate at least 100/min
 - Compression depth at least 2 inches (5 cm)
 - Allow complete chest recoil after each compression
 - Minimize interruptions in chest compressions
 - Avoid excessive ventilation

BLS HEALTHCARE PROVIDER ALGORITHM



Note: The boxes bordered with dashed lines are performed by healthcare providers and not by lay rescuers

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U CAN SAVE LIVES...



SUMMARY

CPR is an immediate therapy that may be initiated for cardio-respiratory failure. Evidence that an individual is breathless and pulseless is sufficient to warrant immediate resuscitation efforts. Knowledge of CPR enhances the safety of both rescuer and rescuee.

CONCLUSION

CPR is the responsibility of a team of personnel. For patients with cardiac arrest, early appropriate resuscitation, involving CPR, early defibrillation and appropriate implementation of post-cardiac arrest care, leads to improved survival and neurologic outcomes.

REFERENCES

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- <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000732>
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- <https://www.heart.org/en/cpr>

THANK YOU