Cardiopulmonary resuscitation

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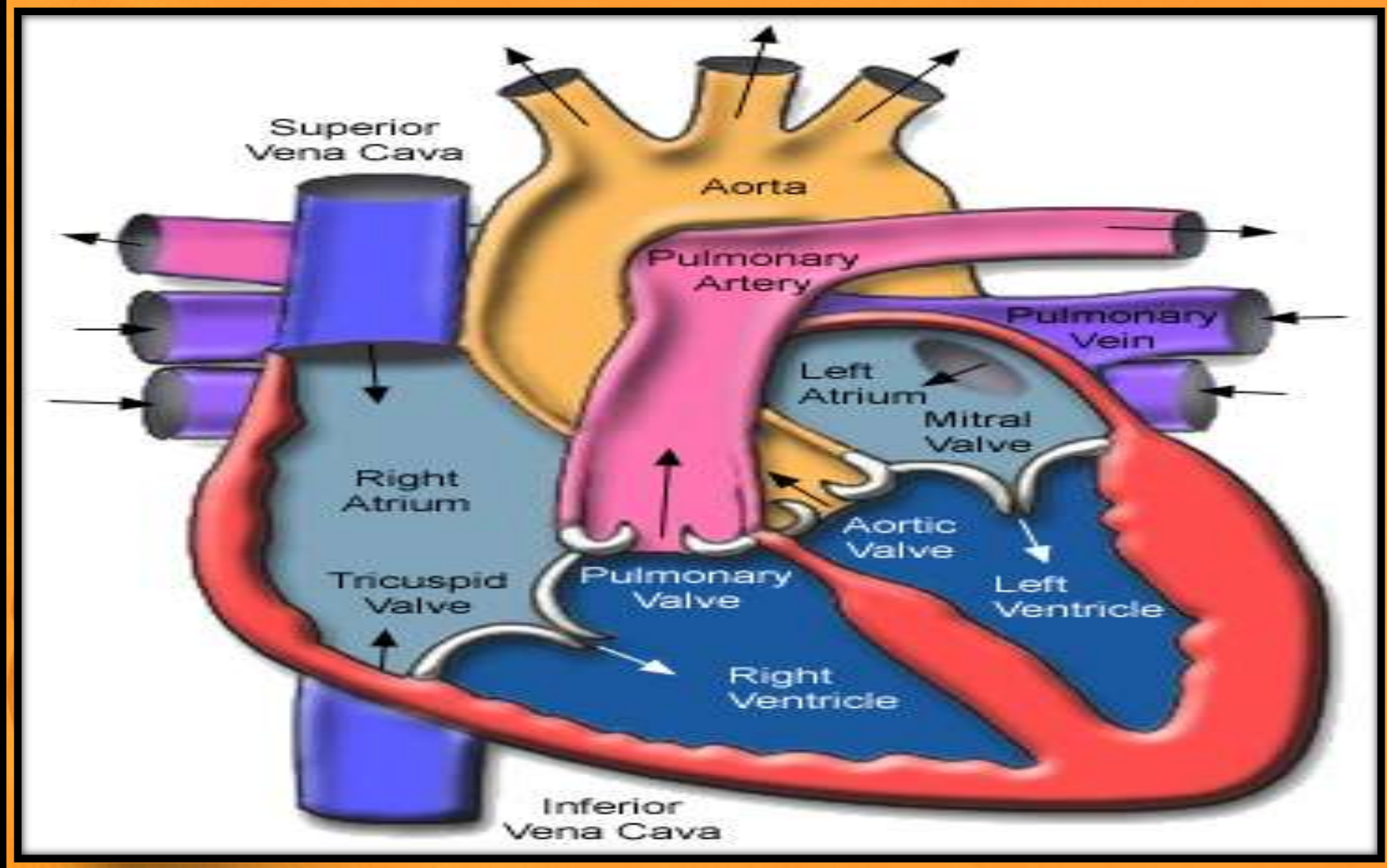
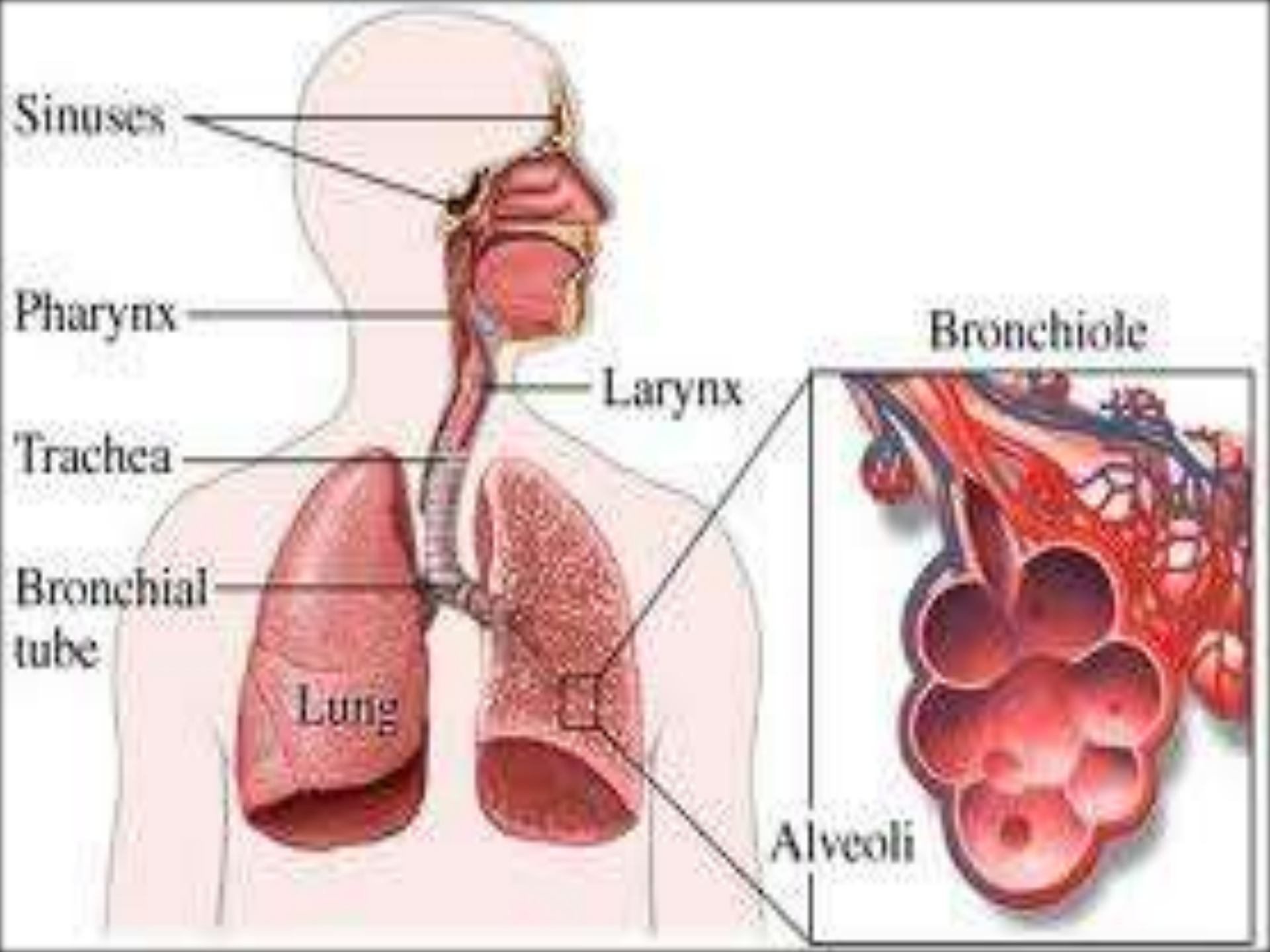
INTRODUCTION

- Cardiopulmonary resuscitation (CPR) is a lifesaving technique useful in many emergencies, including heart attack or near drowning, in which someone's breathing or heartbeat has stopped.

ANATOMY AND PHYSIOLOGY:




Sinuses
Pharynx
Larynx
Trachea
Bronchial tube
Lung
Bronchiole
Alveoli

DEFINITION

- Cardio Pulmonary Resuscitation is a technique of basic life support for oxygenating the brain and heart until appropriate, definitive medical treatment can restore normal heart and ventilatory action.

PURPOSES

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

INDICATION

Cardiac Arrest

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

Respiratory Arresst

- This may be result of following:
- Drowning
- Stroke
- Foreign body in throat
- Smoke inhalation
- Drug overdose
- Suffocation
- Accident, injury
- Coma
- Epiglottis paralysis.

Principles of CPR

- To restore effective circulation and ventilation.
- To prevent irreversible cerebral damage due to anoxia. When the heart fails to maintain the cerebral circulation for approximately four minutes the brain may suffer irreversible damage.

CPR procedure

SEQUENCES OF PROCEDURES PERFORMED TO RESTORE THE CIRCULATION OF OXYGENATED BLOOD AFTER A SUDDEN PULMONARY AND/OR CARDIAC ARREST

CHEST COMPRESSIONS AND PULMONARY VENTILATION PERFORMED BY **ANYONE** WHO KNOWS HOW TO DO IT, **ANYWHERE, IMMEDIATELY, WITHOUT** ANY OTHER **EQUIPMENT**

- Approach safely
- Check response
- Shout for help
- Open airway
- Check breathing
- Call 108
- 30 chest compressions
- 2 rescue breaths

APPROACH SAFELY!

WATCH
OBSERVE

- **Approach safely**
- Check response
- Shout for help
- Open airway
- Check breathing
- Call 108
- 30 chest compressions
- 2 rescue breaths

CHECK RESPONSE

- Approach safely
- **Check response**
- Shout for help
- Open airway
- Check breathing
- Call 112
- 30 chest compressions
- 2 rescue breaths

CHECK RESPONSE

Shake shoulders gently

Ask “Are you all right?”

If he responds

- Leave as you find him.
- Find out what is wrong.
- Reassess regularly.

SHOUT FOR HELP

- Approach safely
- Check response
- **Shout for help**
- Open airway
- Check breathing
- Call 112
- 30 chest compressions
- 2 rescue breaths

OPEN AIRWAY

- Approach safely
- Check response
- Shout for help
- **Open airway**
- Check breathing
- Call 112
- 30 chest compressions
- 2 rescue breaths

OPEN AIRWAY

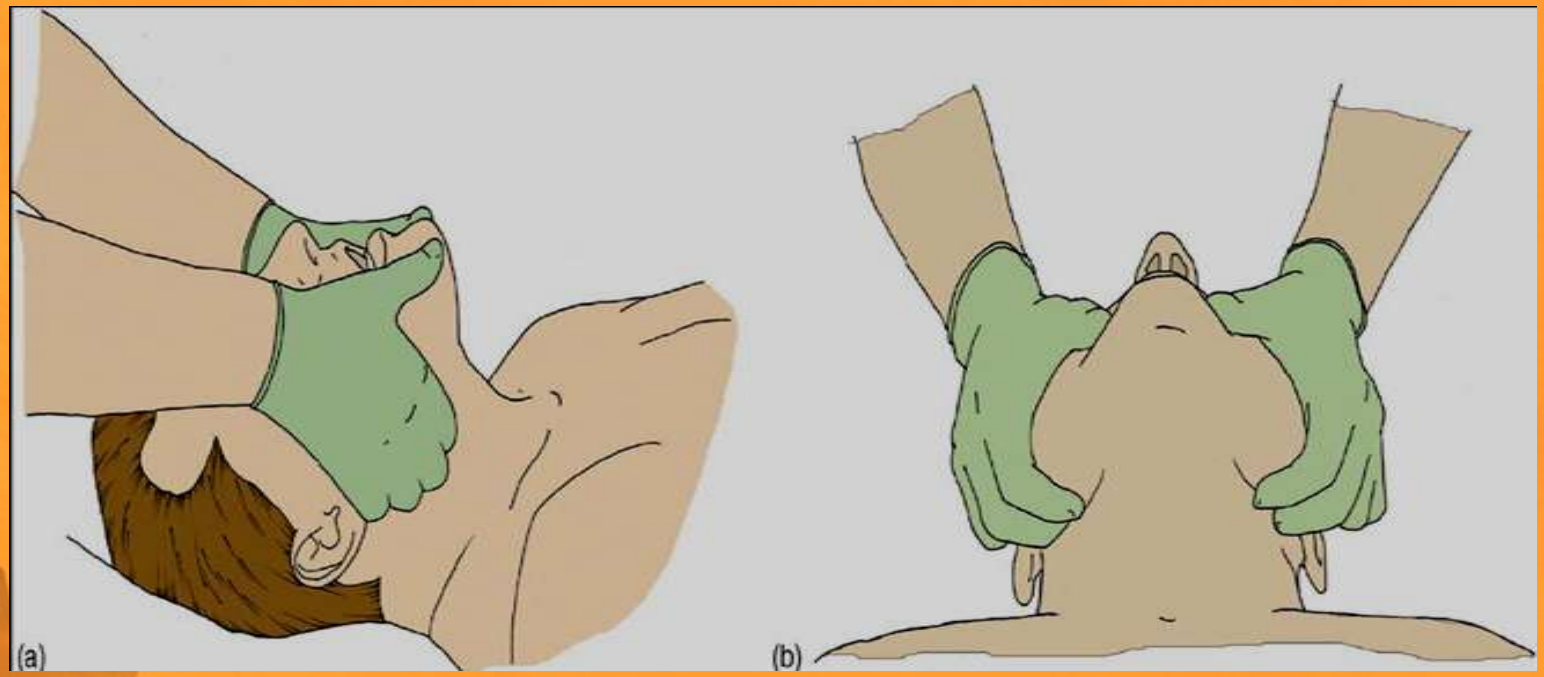
Head tilt and chin lift

- lay rescuers
- non-healthcare rescuers

No need for finger sweep

unless solid material can be seen in the airway

OPEN AIRWAY



Head tilt, chin lift + jaw thrust

CHECK BREATHING

- Approach safely
- Check response
- Shout for help
- Open airway
- **Check breathing**
- Call 108
- 30 chest compressions
- 2 rescue breaths

CHECK BREATHING

- Look, listen and feel for NORMAL breathing
- Do not confuse agonal breathing with NORMAL breathing

AGONAL BREATHING

- Occurs shortly after the heart stops in up to 40% of cardiac arrests
- Described as barely, heavy, noisy or gasping breathing
- Recognise as a sign of cardiac arrest

Approach safely

Check response

Shout for help

Open airway

Check breathing

Call 108

30 chest compressions

2 rescue breaths

30 CHEST COMPRESSIONS

- Approach safely
- Check response
- Shout for help
- Open airway
- Check breathing
- Call 108
- **30 chest compressions**
- 2 rescue breaths

CHEST COMPRESSIONS

- Place the heel of one hand in the centre of the chest
- Place other hand on top
- Interlock fingers
- Compress the chest
  - Rate 100 min^{-1}
  - Depth 4-5 cm (1.5 to 2 inch)
  - Equal compression : relaxation
- When possible change CPR operator every 2 min

RESCUE BREATHS

- Approach safely
- Check response
- Shout for help
- Open airway
- Check breathing
- Call 112
- 30 chest compressions
- **2 rescue breaths**

RESCUE BREATHS

- Pinch the nose
- Take a normal breath
- Place lips over mouth
- Blow until the chest rises
- Take about 1 second
- Allow chest to fall
- Repeat

RESCUE BREATHS

RECOMMENDATIONS:

- **Tidal volume**

  500 – 600 ml

- **Respiratory rate**

  give each breaths over about 1s with enough volume to make the victim's chest rise

- **Chest-compression-only**

  continuously at a rate of 100 min

CONTINUE CPR

POSSIBLE COMPLICATIONS

- Coronary vessel injury
- Diaphragm injury
- Hemopericardium
- Hemothorax
- Interference with ventilation

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

MEDICAL MANAGEMENT

Adrenaline

- Adrenaline (epinephrine) is the main drug used during resuscitation from cardiac arrest.

Atropine

- Atropine as a single dose of 3mg is sufficient to block vagal tone completely and should be used once in cases of asystole. It is also indicated for symptomatic bradycardia in a dose of 0.5mg - 1mg.

Amiodarone

- It is an antiarrhythmic drug.

NURSING MANAGEMENT

- **Maintains airway patency with use of airway adjuncts as required (suction, high flow oxygen with O2 or bag valve mask ventilation).**
- **Assist with intubation and securing of ETT**
- **Inserts gastric tube and/or facilitates gastric decompression post intubation as required.**
- **Assists with ongoing management of airway patency and adequate ventilation**

- **Supports less experienced staff by coaching/guidance e.g. drug preparation**
- **If a shockable rhythm is present (VF/VT) ensure manual defibrillator pads are applied and connected.**
- **If CPR is in progress, prepare and independently double check and label 3 doses of adrenaline**
- **Prepare and administer IV fluids**
- **Document medications administered (including time)**


THANK YOU!
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