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Cardiopulmonary Resuscitation



What is Cardiopulmonary Resuscitation (CPR)?

It is a process in which the rescuer performs both lung and heart resuscitation. Lung resuscitation is achieved through delivering air and oxygen via artificial respiration (rescue breaths), while heart resuscitation is accomplished through manual compression on the patient's chest to pump blood.



What is Cardiac and Respiratory Arrest?

Cardiac arrest is when the heart stops beating, resulting in the cessation of blood circulation. Symptoms of cardiac arrest include loss of consciousness, cessation of breathing, and absence of a pulse.

Respiratory arrest is when breathing stops, leading to the cessation of airflow to the lungs and the body in general. Symptoms of complete respiratory arrest include loss of consciousness and cessation of breathing.



What's Basic Life Support?

In Basic Life Support (BLS), there's an acronym, CABD (Circulation, Airway, Breathing and Defibrillate), used to guide providers in helping patients with respiratory and cardiac distress.



How do I provide first aid (resuscitation) to a person suffering from cardiac or Respiratory arrest?

Before starting Cardiopulmonary Resuscitation, make sure:

- ❖ Make sure the scene is safe.
- ❖ Assess the responsiveness by speaking to them and gently shaking them.
- ❖ Check if they're breathing normally by observing their chest and torso.



How do I provide first aid (resuscitation) to a person suffering from cardiac or Respiratory arrest?

If they don't respond, follow these steps:

- If you're alone, immediately call for help and bring an AED.
- If there's someone else with you, have them call for help and get the AED while you keep assessing.
- ❖ Then, lay the person flat on a hard surface.
- ❖ Now, let's talk about the first step of CAB-D, which is circulation.



How do I provide first aid (resuscitation) to a person suffering from cardiac or Respiratory arrest?

Check for the carotid pulse in the patient's neck for 5-10 seconds (no more than 10 seconds).

- ❖ If the patient has a pulse: move on to the airway and rescue breathing part of the algorithm. Give 10 rescue breaths per minute (1 breath every 6 seconds) and check the pulse again every 2 minutes.
- ❖ If there's no pulse: start 5 cycles of CPR. Each cycle includes 30 chest compressions followed by 2 rescue breaths, lasting about 2 minutes.



How do I provide first aid (resuscitation) to a person suffering from cardiac or Respiratory arrest?

During chest compressions, aim for 100 to 120 compressions per minute:

- ❖ Place the person lying on his back on a stable surface.
- ❖ Sit on your knees next to the person's neck and shoulders.
- ❖ Place the palm of one hand on the middle of the affected person's chest between his nipples.
- ❖ Place your other hand on the tip of the first hand.
- ❖ Keep your elbows straight, and place your shoulders directly on top of your hands.



How do I provide first aid (resuscitation) to a person suffering from cardiac or Respiratory arrest?

- ❖ Push the chest directly down **5 cm - 6 cm**. Use your whole body weight, not only your arms, when performing compressions.
- ❖ Press firmly at a rate of **100 to 120 compressions** per minute.
- ❖ If you are not trained in CPR, maintain repeated chest compressions until there are signs of movement, or until the emergency team takes over the case. If you have received training in CPR, continue working to open the airway and provide rescue breaths to the injured person.



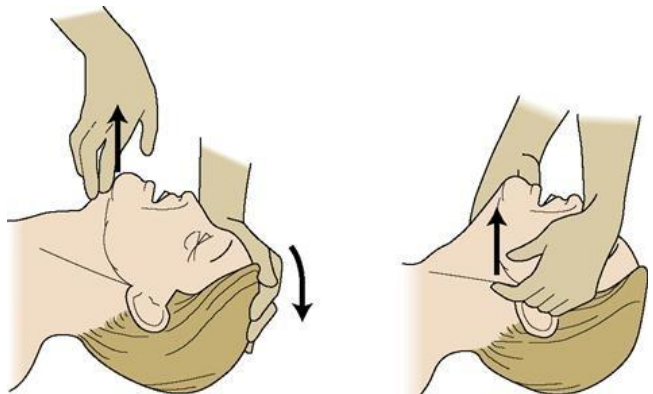
How to open the airway?

❖ Jaw Thrust maneuver:

Use this if the collapse wasn't seen, or if there's drowning or trauma, because this maneuver is used when there might be a neck injury. Place your fingers under the jaw and push it forward.

❖ Head Tilt-Chin Lift maneuver:

Use this if the collapse is seen and there's no sign of a neck injury. Press the patient's forehead to tilt the head back, and at the same time, use your fingers to lift the chin forward and upward from under the chin.



How to give rescue breaths?

During the "check for responsiveness" step, carefully observe the patient's chest and torso for any signs of movement. Look out for abnormal breathing or gasping.

1. If the patient is breathing well, continue to keep the airway clear and position them in the recovery position. Only use this position if it's unlikely to worsen any injuries. The recovery position, also called lateral recumbent or 3/4 prone position, helps keep the airway clear in an unconscious person. Make sure to stabilize the neck if there's a neck injury and avoid using the recovery position if it might harm the patient.



How to give rescue breaths?

2. If the patient is not breathing or is breathing poorly:
 - ❖ If they have a pulse: start rescue breaths immediately.
 - ❖ If they don't have a pulse:
 - ✓ Start CPR and move to the "Circulation" step.
 - ✓ If available, use a barrier device. Close the patient's nose and create a seal over their mouth with your mouth, a pocket mask, or a bag mask.
 - ✓ Each rescue breath should last about 1 second.
 - ✓ Watch for the chest to rise and allow air to exit the patient.



How to use a defibrillation?

Once the Automated External Defibrillator (AED) arrives:

❖ Power

- Turn on the AED immediately! (Early defibrillation is crucial for surviving cardiac arrest and should be done without delay).
- Follow the AED's spoken instructions.

❖ Attachment

- Apply the pads to the patient's skin as shown in the diagram on the pads.



How to use a defibrillation?

❖ Analysis

- Pause CPR briefly to allow the AED to analyze the heart rhythm.

When the sticker is attached to the patient's chest, the automated external defibrillator (AED) measures the patient's heart rhythm and determines whether a shock is necessary for the patient.



How to use a defibrillation?

- ✚ If an electric shock is needed, the device tells the user to stand back and press the shock delivery button. The automated external defibrillator (AED) is programmed not to deliver an electric shock if it is not necessary.
- ✚ If an electric shock is not needed:
 - Start with 5 rounds of CPR.
 - After 5 cycles, check the heart rhythm again.



How to use a defibrillator?

✚ If an electric shock is needed:

- Make sure no one touches the patient or touches a conductive surface.
- Press the electric shock button once everyone is sure there is no touching.
- Then, continue **5 cycles** of CPR.



Resources and references:

All pictures used from [canva.com](https://www.canva.com)

Review and audit:

Content of this booklet has been reviewed by Emergency Medicine
Department consultants at King Fahad University Hospital.

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