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Basic First Aid For Cardiac Arrest

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Abstract

A heart attack may increase the likelihood of experiencing cardiac arrest. Cardiac arrest can happen suddenly and without warning. CPR serves as an emergency intervention for the immediate management of a heart attack and Cardiac arrest if the heart stops beating. CPR is essential for maintaining the circulation of oxygenated blood to the brain and other vital organs until professional medical assistance can restore the heart's function. **Keywords:** Heart Attack, Cardiac Arrest, Cardiopulmonary Resuscitation, Vital Organs, Oxygenated Blood, Compressions, Airway, Breathing.

Introduction

A heart attack is a blockage in the heart's coronary arteries that prevents blood from reaching the heart muscle. A heart attack can cause the heart muscle to become damaged and die if left untreated. A heart attack may increase the likelihood of experiencing cardiac arrest. Common symptoms encompass chest discomfort, difficulty in breathing, feelings of nausea, and dizziness.

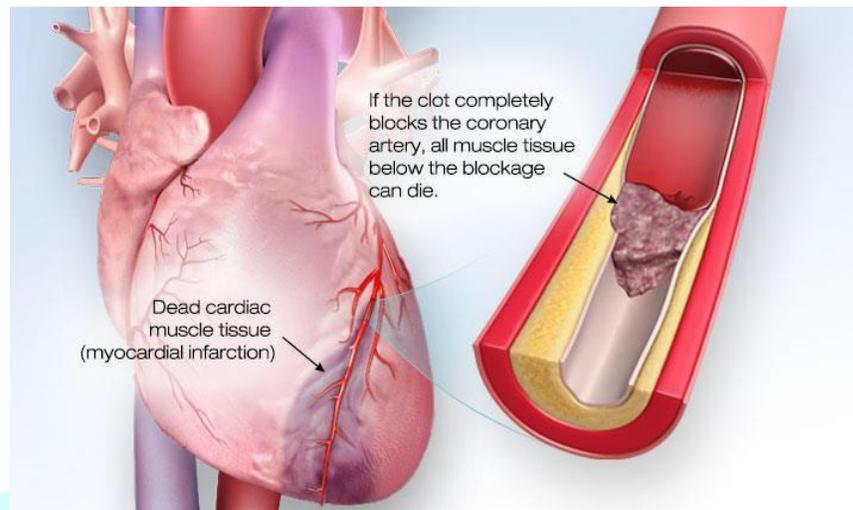
Cardiac arrest occurs due to an electrical malfunction that causes the heart to cease beating. Cardiac arrest can happen suddenly and without warning. Symptoms include sudden loss of consciousness, no breathing, and no pulse. This condition can be life-threatening within minutes. Therefore, bystanders must call for assistance and initiate Cardiopulmonary resuscitation (CPR) promptly. The likelihood of survival significantly increases when immediate help is provided.

Chain of Survival

The concept of a chain of survival comprises several essential "links":

- Early recognition. Identifying a medical issue prior to the onset of cardiac arrest can enable the rescuer to avert its occurrence. Timely recognition of a cardiac arrest is crucial for survival, as the likelihood of survival diminishes by approximately 10% for each minute the patient remains in cardiac arrest.
- Early CPR enhances the circulation of blood and oxygen to critical organs, which is vital in addressing a cardiac arrest. Specifically, maintaining an adequate supply of oxygenated blood to the brain reduces the risk of neurological impairment.
- Early defibrillation is crucial for effectively managing ventricular fibrillation and pulseless ventricular tachycardia.
- Early advanced care.

- Early post-resuscitation care, which may involve procedures such as percutaneous coronary intervention.
- The absence or delay of any link in this chain significantly reduces the chances of survival.



Indications to perform CPR

The following signs suggest that a person may need CPR:

- No detectable pulse or heartbeat
- Complete cessation of breathing
- The individual is unresponsive or unconscious.

How to perform CPR in adults?

Prior to initiating CPR, it is essential to:

- Ensure that both you and the individual in distress are positioned away from any traffic, fire, or other potential dangers.
- Loudly inquire if the person is alright to assess their responsiveness.
- If there is no response, immediately call 911 or request that a bystander make the call.
- If possible, ask someone to retrieve an AED, which is commonly found in public areas.
- Carefully place the individual on their back and determine if they are breathing by listening for breath sounds or observing the rise and fall of their chest.
- Assess for a pulse on the individual's neck.
- If a pulse is absent, commence CPR.

Steps to initiate CPR -

For healthcare providers and those trained: conventional CPR using chest compressions and mouth-to-mouth breathing at a ratio of 30:2 compressions-to-breaths. In adult victims of cardiac arrest, it is reasonable for rescuers to perform chest compressions at a rate of 100 to 120/min and to a depth of at least 2 inches (5 cm) for an average adult, while avoiding excessive chest compression depths (greater than 2.4 inches [6 cm]).

Remember to spell C-A-B

The American Heart Association uses the letters C-A-B to help people remember the order to perform the steps of CPR.

- **C:** Compressions
- **A:** Airway
- **B:** Breathing

1. Compressions: Restoring Blood Circulation

The American Heart Association advises initiating CPR by applying firm and rapid pressure to the chest, a process known as compressions. This recommendation for hands-only CPR is applicable to both untrained individuals and first responders.

Compressions involve applying firm and rapid pressure to the individual's chest using your hands. This technique is the most critical component of cardiopulmonary resuscitation (CPR). To perform CPR compressions effectively, adhere to the following steps:

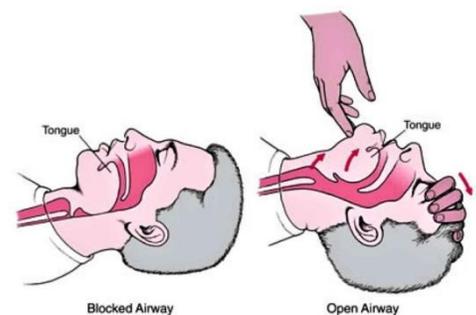
1. Position the individual on their back on a stable surface.
2. Place the lower palm of one hand over the center of the chest, specifically between the nipples.
3. Position your other hand on top of the first hand, ensuring that your elbows remain straight and your shoulders are aligned directly above your hands.
4. Apply downward pressure on the chest, ensuring a depth of at least 2 inches (5 centimeters) but not exceeding 2.4 inches (6 centimeters). Utilize your full body weight rather than relying solely on your arms during compressions.
5. Compress the chest forcefully and rapidly, aiming for a rate of 100 to 120 compressions per minute. Allow the chest to recoil fully after each compression.
6. If you have not received CPR training, continue with chest compressions until you observe any signs of movement or until professional medical assistance arrives. If you are trained in CPR, proceed to the rescue breathing phase.



2. Airway: Ensure the airway is clear

If you are certified in CPR and have performed 30 chest compressions, proceed with the following steps to secure the individual's airway. This technique is known as the head-tilt, chin-lift maneuver.

- Place your palm on the individual's forehead.
- Carefully tilt the head backward.
- With your other hand, gently elevate the chin to facilitate airway opening.



3. Breathing: Administering Rescue Breaths

Rescue breathing can be performed through mouth-to-mouth or mouth-to-nose techniques, particularly when the mouth is severely injured or cannot be opened. After ensuring the airway is open using the head-tilt, chin-lift maneuver, adhere to the following steps:

1. For mouth-to-mouth breathing, pinch the nostrils closed and create a seal by covering the person's mouth with yours.
2. Prepare to deliver two rescue breaths. Administer the first breath, lasting one second, while observing for chest rise.
3. If the chest rises, proceed with the second breath.
4. If the chest does not rise, repeat the head-tilt, chin-lift maneuver and then provide a second breath. A cycle consists of **thirty chest compressions followed by two rescue breaths**; take care to avoid excessive breaths or forceful inhalation.
5. Maintain chest compressions to facilitate blood circulation.
6. Once an automated external defibrillator (AED) becomes available, adhere to the device's instructions. Administer one shock, then continue chest compressions for an additional two minutes before delivering a second shock. If you lack training in AED usage, a 911 operator or another emergency medical professional may guide you through the process. If an AED is not accessible, proceed to step 7.
7. Continue performing CPR until there are indications of movement or until emergency medical personnel arrive.



When to stop CPR?

If a pulse is detected, the individual should cease CPR immediately.

Recovery following a cardiac arrest

The process of recovery following a cardiac arrest is critical, as this medical emergency can result in fatality if not addressed promptly. Upon admission to the hospital, a physician will conduct a series of tests to identify the underlying cause of the cardiac arrest and initiate appropriate treatment upon diagnosis. Patients may require surgical intervention or may be prescribed medication.

Upon discharge from the hospital, patients will receive recommendations from the physician regarding necessary lifestyle modifications aimed at minimizing the risk of future cardiac arrest or related complications. Regular follow-up appointments may be arranged with a cardiologist, who will assess the functionality of the heart's electrical system and formulate a treatment strategy to ensure the maintenance of normal electrical activity.

Prevention

Maintaining cardiovascular health can contribute to the prevention of sudden cardiac arrest. Consider implementing the following measures:

- Adopt a nutritious diet.
- Engage in regular physical activity.
- Avoid smoking and the use of tobacco products.
- Schedule routine medical examinations.
- Undergo screenings for heart-related conditions.
- Manage blood pressure and cholesterol levels effectively.

Conclusion

When the heart ceases to beat, the body is deprived of oxygen-rich blood, leading to a critical situation. CPR serves as an emergency intervention for the immediate management of a heart attack and Cardiac arrest if the heart stops beating. CPR is essential for maintaining the circulation of oxygenated blood to the brain and other vital organs until professional medical assistance can restore the heart's function.

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