Cardiopulmonary Resuscitation (CPR): Definition And Steps

Cardiopulmonary resuscitation

Cardiopulmonary resuscitation (CPR) is used to restore blood flow to the brain immediately following a cardiac event. When CPR is performed correctly within 2 minutes following a cardiac event, chances of survival double.

Definition of Terms:

- Clavicle- collar bones; located below the shoulders on the front side of the body
- Manubrium- upper part of the sternum
- Sternum- breast bone; located along the middle or central part of the chest
- Xiphoid process- bony prominence located at the lower end of the sternum; has the potential to break off due to lack of attachment to ribs -- this breaking may lead to pneumothorax.
- Pneumothorax- collapsed lung that occurs when air leaks into lungs and chest wall; caused by injury via blunt trauma or penetration; a potentially life threating complication of incorrect hand placement during compression stage of CPR.
- Rib fracture- injury that occurs when one or more of the bones in the rib cage cracks; common but not usually life threatening complication of incorrect hand placement during the compression stage of CPR; typically takes 1-2 months to heal based on severity.
- AED- medical device that is used to check heart rate and rhythm; is capable of delivering a shock to facilitate or restore sinus (normal) heart rhythm.\
- Chest compressions – manual application of pressure; facilitates blood circulation
- Chest recoil- re-expansion of the chest; allows more blood to enter the heart during chest compressions

Steps

Step 1: Identify the situation

- First, approach the unconscious person.
- Next, tap on the persons shoulders, try to get their attention by asking “is everything okay?”.
- If no response is given, proceed to step 2.

Step 2: Call 911

- Call 911.
- You can even ask another bystander to help with this step.

Step 3: Correct positioning

- Place the person on their back gently, making sure the skull does not hit the ground.
- Kneel beside the person. Either side is fine.
- Using both hands, elevate the head to allow for an open airway.

Step 4: Assume the position

- First, identify the clavicles, or collar bones. They are located slightly below the tops of the shoulders.
- Second, keeping your hands placed on the clavicles, identify the manubrium by moving your hands to the middle of the chest.
- Third, inch your fingers down until you are able to identify the sternum. You will feel a raised structure as you move down. Once you feel the downward angle of this structure, your hands will be placed over the sternum. (Figure 1.1)
- Next, place the heel of one of your hands on the persons sternum. Simultaneously, move your other hand and inch down until you feel another small bump. This is called the xiphoid process. Place two fingers on the xiphoid process. (Figure 1.1)
- Lastly, move your fingers off of the xiphoid process and place your hand over top of the hand you placed first, interlocking them. Your hands should be in the middle of the chest over the sternum.
- Before starting compressions, be sure your hands are located over the sternum and not the xiphoid process, as there is a potential of pneumothorax if hands are incorrectly placed. This can potentially be fatal to the victim.
- 1 out of every 250,000 deaths per minute can be contributed to CPR (American Heart Association, 2002).
- Be careful not to compress too deep, as complications such as organ damage can arise.

Step 5: Start compressions

- With your hands interlocked as shown in Figure 1.2, preform one set of 30 compressions in 15 seconds by pushing hard and fast in the center of the chest at a depth of 2 inches.
- Allow for chest recoil by lifting your hands slightly between sets of compressions.
- If you hear cracking, do not be alarmed. This likely is due to broken ribs which is common in giving CPR and adequate pressure is better than not enough. Lack of adequate pressure leads to death.
- Continue giving sets of 30 chest compressions at a rate of 120 compressions per minute until help arrives.

References:

1. American Heart Association (2002) Heart disease and stroke statistics: 2003 update, Dallas, TX: American Heart Association. Available at: www.americanheart.org/presenter:jhtml?identifier-1928