

- × Cardiovascular diseases (CVDs) are the number one cause of death globally. CVDs are projected to remain the single leading cause of death.
- × 30% of all global deaths died from CVDs in 2008 (coronary heart disease > stroke > other CVDs).
- × Low-income countries → (80% of CVD deaths, men=women), while middle-income countries → (=20% of CVD deaths).
- × The number of people who die from CVDs (heart disease and stroke) will increase to reach 23.3 million by 2030.

**Sudden cardiac death (SCD)** accounts for up to 50% of CVD deaths in the US and other developed countries.

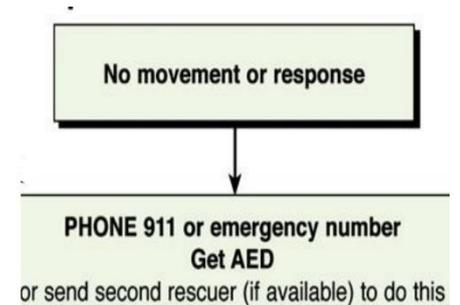
SCD: acute and natural death from cardiac causes within a short period (often within an hour of onset of symptoms). Time and mode of death are unexpected, and often death occurs in patients without any prior potentially fatal conditions.

Mode of death → mostly **arrhythmias** (Ventricular tachycardia (VT), ventricular fibrillation (VF), or VT degenerating into VF (in 85% of cases). Bradyarrhythmia accounts for the remaining 15%.

The incidence of SCD is higher among men than women. The incidence also increases with age. In old patients, SCD accompanies reduced left ventricular function and symptomatic heart failure.

**Atherosclerotic coronary artery disease** is the leading cause of SCD. 40% to 86% of patients who survived SCD, had more than 75% cross-sectional coronary stenosis.

- ✓ 5% to 15% of cardiac arrest patients are resuscitated and discharged from the hospital without any associated neurologic deficits. Survival from SCD often depends on:
  1. Immediate cardiopulmonary resuscitation (CPR)
  2. Automated external defibrillators (AEDs)
- ✓ **External chest compressions** in combination with **mouth-to-mouth ventilation** form the basis of **modern CPR**.
- ✓ Basic life support (BLS) consists of **cardiopulmonary resuscitation (CPR)** and, when available, defibrillation (using **AED**).



\*\* In the 2006 AHA guidelines **A-B-C** → In the 2010 AHA guidelines **C-A-B**\*\*

A) **C**hest compressions are the most important element of CPR. (importance: vital organs perfusion)

Coronary perfusion pressure and return of spontaneous circulation (ROSC) are maximized when excellent chest compressions are performed. AHA 2010 BLS Guidelines → push hard and push fast on the center of the chest.

2015 updates:

1. Maintain a rate of at least 100-120 compressions per minute.
2. Compress the chest at least 5 cm-6cm (2-2.4 inches) for adults and (1.5-2) inches or 4cm for children with each down-stroke.
3. Use cell phone to call 911 while on the speaker.
4. No interruptions Except for AED or switch rescuer.
5. Allow the chest to recoil completely after each down-stroke (e.g., it should be easy to pull a piece of paper from between the rescuer's hand and the patient's chest just before the next down-stroke).
6. Minimize the frequency and duration of any interruptions.

B) **A**ir-way obstruction

Tongue is the most common cause of airway block. Use the head-tilt-chin lift maneuver (palms on forehead while fingers on the lower jaw → lift chin forward and tilt head backward).

C) **Breathing:** A bag valve mask (also known as a BVM or Ambu bag) is a hand-held device used to provide positive pressure ventilation to a patient who is not breathing or who is breathing inadequately.

## Bag-Mask E-C Technique

**Above the Head**

**Mask on Face**

**E-C clamp technique**

*Nasal bridge= guide for correct position*

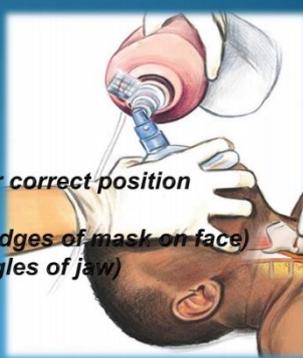
*Tilt head*

*Make a "C" (pressing edges of mask on face)*

*Form an "E" (lifting angles of jaw)*

*Open airway*

**Squeeze the bag**



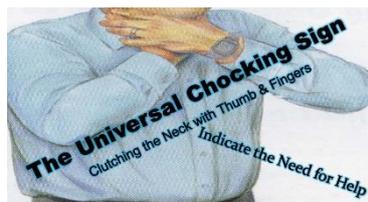
- The conventional **laryngoscope** has been the most popular device as a viewing instrument in the majority of tracheal intubations. Today, the conventional laryngoscope consists of a handle containing a light source, and a set of blades.

- Proper ventilation for adults includes the following:

1. Give 2 ventilations after every 30 compressions for patients without an advanced airway.
2. Give each ventilation over no more than one second.
3. Provide enough tidal volume to see the chest rise.
4. Avoid excessive ventilation.
5. Give 1 asynchronous ventilation every 8 to 10 seconds (8 to 10 per minute) to patients with an advanced airway (e.g., supraglottic device, endotracheal tube) in place.

So, before beginning basic life support (BLS), ensure that the scene is **safe**, then activate emergency medical services (EMS), get an automated external defibrillator (AED), and start CPR.

Relieving choking

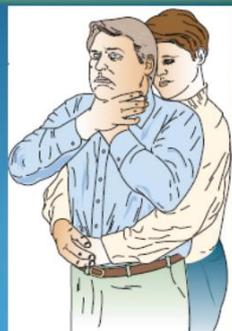


### Relieving Choking in Responsive Adults & Children

Abdominal Thrusts (Heimlich Maneuver)  
With Victim Standing or Sitting

**Steps:**

- Behind + Stand/ Kneel**  
+ Wrap arms around waist
- Fist + Thumb against abdomen**  
(between navel & breastbone)
- Gasp fist + Quick upward thrust**
- Repeat until object expelled**  
OR victim unresponsive



**Examine for Complications**  
(damage to internal organs)  
**NOT for Infants**

### Relieving Choking in Responsive Infants

**Up to 5 Back Slaps**

- (heel + middle back between shoulder blades)
- Free hand on back + Palm on head (first arm as above)
- Turn infant as a unit with Support + Hold on back

**Up to 5 Chest Thrusts**

- (quick downward + just below nipple line + 1 per sec)

**Repeat Cycle**

- until obstruction removed
- OR unresponsive



### Relieving Choking in UnResponsive Adults & Children

Abdominal Thrusts (Heimlich Maneuver)  
With Victim Lying Down



**Examine for Complications**  
(damage to internal organs)  
**NOT for Infants**

### Relieving Choking in Responsive Pregnant & Obese Victims

Chest Thrusts

