

A.5 RESUSCITATION (BASIC CPR)

Reviving someone who is unconscious and/or not breathing or not breathing normally is called resuscitation.

If the victim is not breathing or is not breathing normally, any source of suffocation should be removed and resuscitation is to be started.

Chest compressions with or without rescue breathings are performed by an individual during cardio pulmonary resuscitation (CPR) in an attempt to restore spontaneous circulation.

For untrained or minimally trained first aid providers treating an adult victim, compression-only CPR is recommended. These chest compressions ensure a small but crucial supply of blood to the heart and brain.

For formally trained first aid providers (and professionals) treating an adult victim, compression with breaths is recommended. If the trained first aid provider is unable or unwilling, or in any other circumstance, compression-only CPR may be substituted for compression with breaths.

For babies and children under one year, compressions with breaths are always recommended.

A.5.1 WHAT DO I SEE AND ENQUIRE?

In case of a cardiac arrest (heart stops functioning) you might notice the following signs:

- sudden collapse,
- loss of consciousness,
- no breathing,
- no pulse (however this is not always easy for laypeople to confirm).

A.5.1.1 HOW TO OBSERVE RESPONSIVENESS AND CONSCIOUSNESS?

Unconsciousness occurs when a person is suddenly unable to respond to stimuli like sound or pain, and appears to be asleep. A person may be unconscious for a few seconds (as is the case with fainting) or for longer periods of time.

People who become unconscious do not respond to loud sounds or shaking. They may even stop breathing or their pulse may become faint. This calls for immediate emergency attention. The sooner the person receives emergency first aid, the better it is.

The AVPU scale (an acronym from "alert, voice, pain, unresponsiveness") is a system by which a first aider can measure and record a patient's responsiveness, indicating the level of consciousness. It is based on the casualty's eye opening, verbal and movement (motor) responses.

The AVPU scale has only four possible outcomes:

- A – Alert.

The person is fully awake (although not necessarily oriented). The person will spontaneously open eyes, will respond to voice (although may be confused) and will have bodily motor function.

- V – Responding to voice.

The person makes some kind of response when you talk to him. It could be opening his eyes, responding to your questions or initiating a move. These responses could be as little as a grunt, moan, or slight movement of a limb when prompted by the voice of the rescuer.

- P – Responding to pain.

The patient makes a response of any kind on the application of pain stimulus, such as a central pain stimulus like a rub on his breastbone or a peripheral stimulus such as squeezing his fingers.

Patients with some level of consciousness (a fully conscious patient would not require any pain stimulus) may respond by using their voice, moving their eyes, or moving part of their body (including abnormal posturing).

- U - Unresponsiveness also noted as 'Unconsciousness'.

This outcome is recorded if the patient does not give any eye, voice or motor response to voice or pain.



To check a person's responsiveness/consciousness state check the following:

1. A person who looks around, speaks, responds clearly to questions, feels touch and moves or walks around, is considered alert (A).
2. The person opens his eyes and responds to simple questions:
 - "What is your name?"
 - "Where do you live?"
 - "How old are you?"

The person responds to simple commands:

- "Squeeze my hand."
- "Move your arm/leg/foot/hand."

If the person responds, he is responsive to voice (V).

3. If there is still no response, pinch the person and see if he opens his eyes or moves.

If the person responds to pain, he is responsive to pain (P)

If the person does not react to any of these stimuli, he is in an unconscious state (U).

Note that a person might only partially respond to the stimuli you provide (sound, touch, pain) and might be in an in-between (groggy) state.

! Checking if a casualty is conscious or unconscious should only take a few seconds and should not delay checking for the breathing.

More information on unconsciousness is given in the respective chapter.

A.5.1.2 HOW TO OBSERVE THE BREATHING?

The airway may be narrowed or blocked making breathing noisy or impossible. Reasons for blockage may be:

- Loss of muscular control in the throat may allow the tongue to sag back and block the air passage.
- When the reflexes are impaired, saliva may lie in the back of the throat, blocking the airway.
- Any foreign body in the throat may block the air passage e.g. vomit, blood, dentures etc.

! It is essential to establish a clear airway immediately. Unless you can clearly see that the person is breathing normally, an unconscious person must be turned onto his back to unblock the breathing passage and to check for breathing. Unblocking the breathing passage takes priority over concerns about a potential spinal injury.

To observe the breathing do following:

1. If the person is unconscious and is not on his back, turn him on to his back.
2. Kneel beside the casualty.
3. Lift the chin forwards with the index and middle fingers of one hand while pressing the forehead backwards with the palm of the other hand. This manoeuvre will lift the tongue forward and clear the airways.



4. Observe breathing by listening, feeling and looking
5. After opening the victim's airway, check to see if the victim is breathing.

To do this, place your cheek in front of the victim's mouth (about 3-5 cm away) while looking down his chest (towards his feet).

If desired, you can also gently place a hand on the center of the victim's chest. This allows you to observe whether the victim is breathing in the following ways:

- a. look for chest/abdominal movement,
- b. listen to breathing sounds,
- c. feel the air coming out of the nose or mouth.



In the first minutes after cardiac arrest it often appears as if the person is trying to breathe. It can appear as if the person is barely breathing or is taking infrequent noisy gasps. It is important not to confuse this with normal breathing and you should start resuscitation immediately.



6. If the casualty's chest still fails to rise, first assume that the airway is not fully open. Once the airway is cleared the casualty may begin breathing spontaneously.

Else, clear the airway by removing any visible item that is blocking the airway:

- a. Hook your first two fingers covered with clean cloth/gloves.
- b. Sweep round inside the mouth/ throat.
- c. Check again the breathing.



One should not spend time searching for hidden obstructions. Care should be taken not to push any object further down the throat.



Be careful: do not put your fingers in somebody's closed mouth.

More information on the breathing can be found in the respective chapter.

A.5.1.3 HOW TO OBSERVE THE PULSE?

Feeling the pulse is not always easy. Feeling the pulse during an emergency at the wrist is often unreliable.



The pulse can be felt by placing the finger tips gently on the voice box and sliding them down into the hollow between the voice box and the adjoining muscle.

Do not loose time trying to locate and feel the pulse. The current resuscitation guidelines for laypeople direct that resuscitation (CPR) is to be started when the person is not breathing or not breathing normally and does not require to check the pulse.

More information on the pulse can be found in the respective chapter.

A.5.2 RESUSCITATION OF A PERSON WHO IS NOT BREATHING OR NOT BREATHING NORMALLY

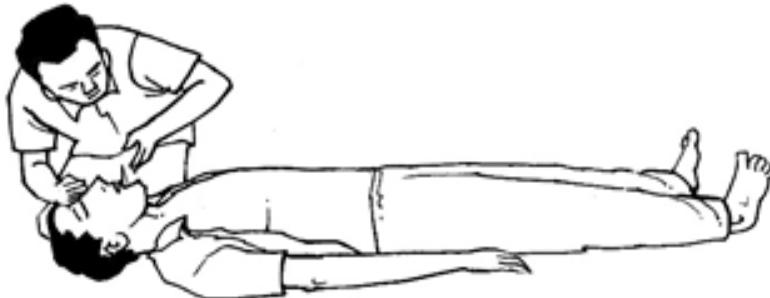
A.5.2.1 SAFETY FIRST AND CALL FOR HELP

1. Make sure there is no danger to you, the person who needs help and bystanders before giving help.
2. The person urgently needs help. Shout or call for help if you are alone but do not leave the person unattended. Ask a bystander to seek help or to arrange urgent transport to the nearest healthcare facility. Tell him to come back to you to confirm if help has been secured.

A.5.2.2 SECURE AN OPEN AIRWAY

! The airway may be narrowed or blocked making breathing noisy or impossible. It is essential to establish a clear airway immediately. Unblocking the breathing passage takes priority over concerns about a potential spinal injury.

3. If the person is not on his back, turn him on to his back.
4. Kneel beside the casualty.
5. Lift the chin forwards with the index and middle fingers of one hand while pressing the forehead backwards with the palm of the other hand. This manoeuvre will lift the tongue forward and clear the airways.



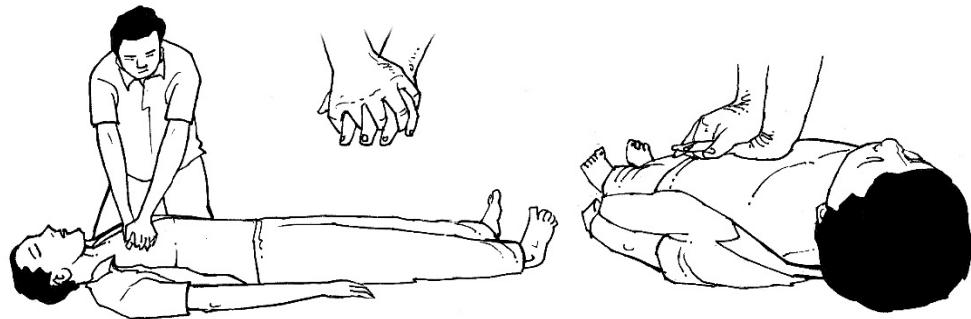
chin lift pic

6. Check for breathing.
 - a. Look for chest/abdominal movement.
 - b. Listen to breathing sounds.
 - c. Feel the air coming out of the nose or mouth.
7. If the casualty's chest still fails to rise, first assume that the airway is not fully open. Once the airway is cleared the casualty may begin breathing spontaneously.
8. Else, clear the airway by removing any visible item that is blocking the airway: Hook your first two fingers covered with clean cloth/gloves and sweep round inside the mouth/ throat.

- !** One should not spend time searching for hidden obstructions. Care should be taken not to push any object further down the throat.
 - !** Be careful: do not put your fingers in somebody's closed mouth.
9. If the breathing restarts, place the patient in the recovery position (see recovery position).
If the casualty still does not breathe, start CPR immediately.

A.5.2.3 CPR: HOW TO GIVE CHEST COMPRESSIONS?

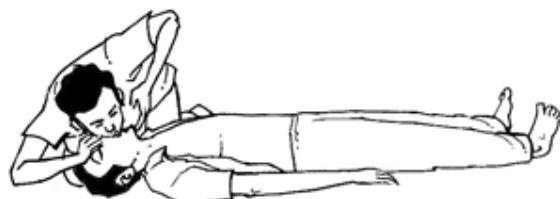
1. Turn the casualty on his back on a hard surface, if not already.
2. Kneel next to the casualty, beside his upper arm.



3. Place the heel of one hand in the center of the person's chest.
 4. Place the heel of the other hand on top of your first hand.
- !** If the person's age is below puberty, only use one hand.
 - !** If the victim is a baby, do not use this technique but apply the technique of CPR for babies and children under the age of one year.
5. Lock your fingers of both hands together.
 - !** Do not apply pressure to the person's ribs. Nor should you press the upper part of the stomach or the bottom end of the breast bone.
 6. Make sure your shoulders are directly above the person's chest.
 7. With outstretched arms, push five to maximum six centimetres downwards.
 8. Release the pressure and avoid leaning on the chest between compressions to allow full chest recoil. The compression and release should be of equal duration.
 - !** Each time you press down allow the chest to rise fully again. This will let blood flow back to the heart.
 9. Do not allow your hands to shift or come away from the breastbone.
 10. Give 30 chest compressions in this way at a rate of 100 compressions a minute (you may go faster, but not more than 120 compressions a minute). This equates to just fewer than two compressions a second.

A.5.2.4 CPR: HOW TO GIVE RESCUE BREATHS?

- (i) If for some reason you cannot or do not want to give rescue breaths, you can just continue giving chest compressions (five to maximum six centimetre deep at a rate of 100 compressions a minute).



1. Put one hand on the person's forehead and tilt back his head.
2. Put your other hand on the bony part of the chin and lift the chin.
3. Then pinch the person's nose with one hand that is on his forehead.
5. Take a normal breath and then put your mouth completely over the person's mouth and seal with your lips. Calmly blow your air into the mouth of the person's for one second. Check if the person's chest rises.
6. If the chest does not rise, take the following steps:

- a. Check if anything is in the person's mouth.

If so, remove any visible items that may block the airway.

- b. Check that the head is well tilted and the chin is lifted properly.

! In any case, make no more than two attempts to blow air into the person.

7. Start another series of 30 chest compressions prior to trying to blow air into the person's mouth again.

! Chest compressions and rescue breaths are tiring to administer. If there are a few trained rescuers present, it is best to alternate with each other.

To ensure that the quality of the chest compressions remains optimal, the rescuers should switch every two minutes:

- The first rescuer gives 30 chest compressions followed by two ventilations and another set of 30 chest compressions and two ventilations.
- Then another rescuer takes over and repeats the above steps and switch again.

The switches should happen with minimal interruption and as quickly and smoothly as possible.

8. Do not interrupt the resuscitation until:

- the victim starts to wake up, moves, opens his eyes and breathes normally;
- help (trained in CPR) arrives and takes over;
- you become too exhausted to continue; or
- the area becomes unsafe for you to continue.

A.5.2.5 HYGIENE

Wash your hands after taking care of the person. Use soap and water to wash your hands. If no soap is available, you can use ash to wash your hands. Alcohol-based sanitizers can also be used, if available.

A.5.3 RESUSCITATION OF BABY/CHILD (LESS THAN ONE YEAR OLD) WHO IS NOT BREATHING OR NOT BREATHING NORMALLY

A.5.3.1 SAFETY FIRST AND CALL FOR HELP

1. Make sure there is no danger to you before giving help.
2. The child needs urgent help. Shout or call for help if you are alone but do not leave the person unattended. Ask a bystander to seek help or to arrange urgent transport to the nearest healthcare facility. Tell him to come back to you to confirm that help has been secured.

A.5.3.2 HOW TO SECURE AN OPEN AIRWAY OF A BABY/CHILD LESS THAN ONE YEAR OLD?



The airway may be narrowed or blocked making breathing noisy or impossible. It is essential to establish a clear airway immediately. Unblocking the breathing passage takes priority over concerns about a potential spinal injury.

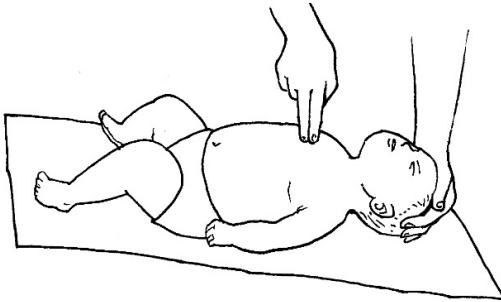
3. Lay the baby/child down on the floor or hard and safe surface.



4. Move the baby's/child head backwards and lift its chin slightly. This manoeuvre will lift the tongue forward and clear the airways.
5. Check for breathing.
 - a. Look for chest/abdominal movement.
 - b. Listen to breathing sounds.
 - c. Feel the air coming out of the nose or mouth.

If the baby still does not breathe, begin CPR immediately.

A.5.3.3 CPR: HOW TO GIVE CHEST COMPRESSIONS ON A BABY/CHILD LESS THAN ONE YEAR OLD?



1. Place three fingers of your hand on the center of the baby's/child's chest on its breastbone (sternum).
2. Remove the bottom finger of the three fingers and compress the chest with the two remaining fingers (middle and index finger) up to one third of the depth from the chest of the baby/child.
3. Repeat these compressions 30 times at a rate of 100 - 120 per minute.

! Do not use the base or palm of your hand. Only use one hand.

3. Repeat these compressions 30 times at a rate of 100 - 120 per minute.

Release the pressure completely between compressions without removing your fingers from the chest.

Always make sure the chest rises before pressing down again.

A.5.3.4 CPR: HOW TO GIVE RESCUE BREATHS ON A BABY/CHILD LESS THAN ONE YEAR OLD?



1. Move the baby's/child head backwards and lift its chin slightly.
2. Cover the baby's/child's nose and mouth with your mouth and gently puff into his lungs only until you see his chest rise, pausing between rescue breaths to let the airflow back out.

! Remember that a baby's lungs are much smaller than yours, so it takes much less than a full breath to fill them.

3. Check if the baby's/child's chest rises.

If the chest does not rise, take following steps:

a. Check if anything is in the baby's/child's mouth.

If so, remove any visible items that may block the airway.

b. Check that the head is well tilted and the chin is lifted properly.

In any case: make no more than two attempts to blow air into the baby/child.

4. Start another series of 30 chest compressions prior trying to puff air into the baby's/child's mouth again.

5. Do not interrupt the resuscitation until:

- the child starts to wake up, moves, opens his eyes and breathes normally;
- help (trained in CPR) arrives and takes over; or
- the area becomes unsafe for you to continue.

A.5.3.5 HYGIENE

Always wash your hands after taking care of a person. Use soap and water to wash your hands. If no soap is available, you can use ash to wash your hands. Alcohol-based sanitizers can also be used, if available.

A.5.4 WHEN TO REFER TO A HEALTHCARE FACILITY?



Always – urgently: Any person that has stopped breathing or needed CPR should always be transported to the nearest healthcare facility as quickly as possible continuing CPR.