What is First Aid?

All those operations necessary to save a person’s life or to improve the person’s physical condition without the help of any particular tools.

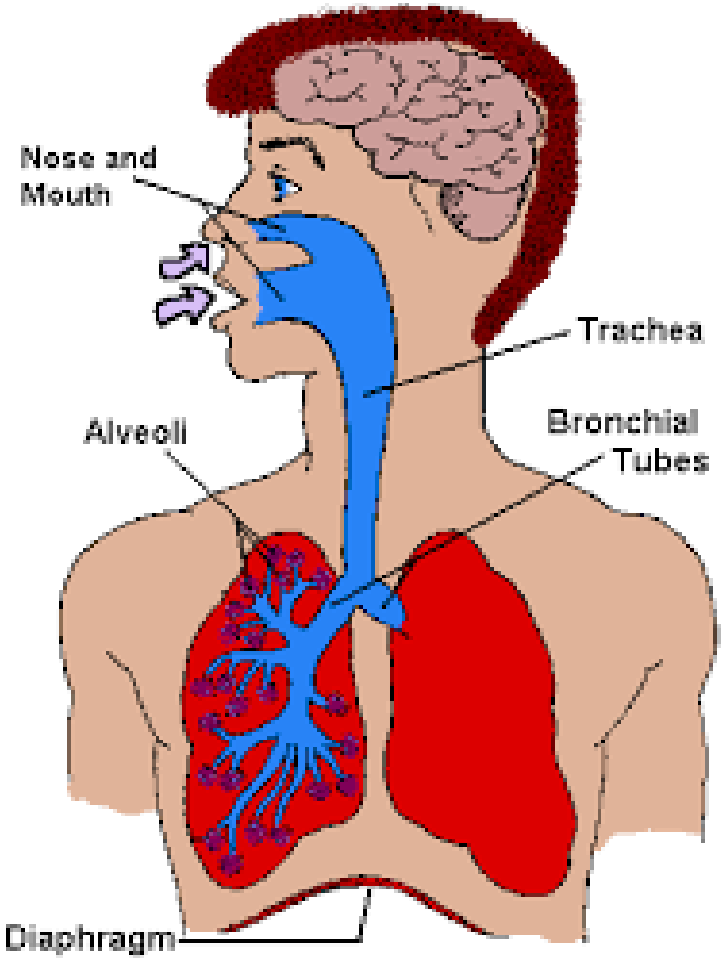
In this lesson we are going to consider:

- How our **breathing system** works

- What we can do in the case of breathing problems such as:

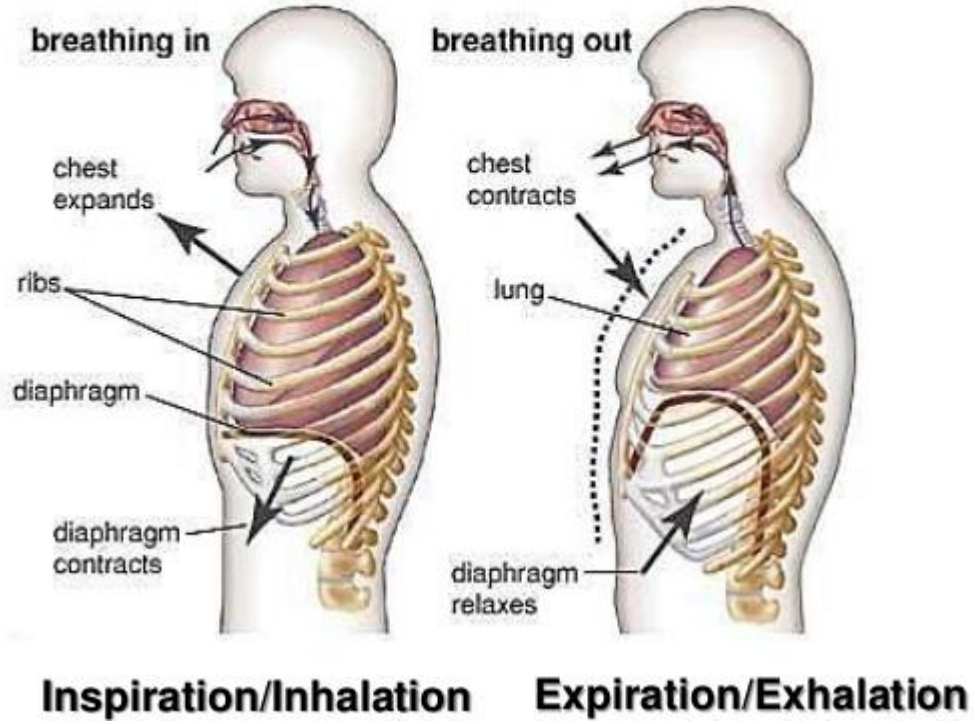
  Suffocation (when some object is obstructing the breathing ducts)

RESPIRATORY SYSTEM



RESPIRATORY SYSTEM

Mechanics of Breathing



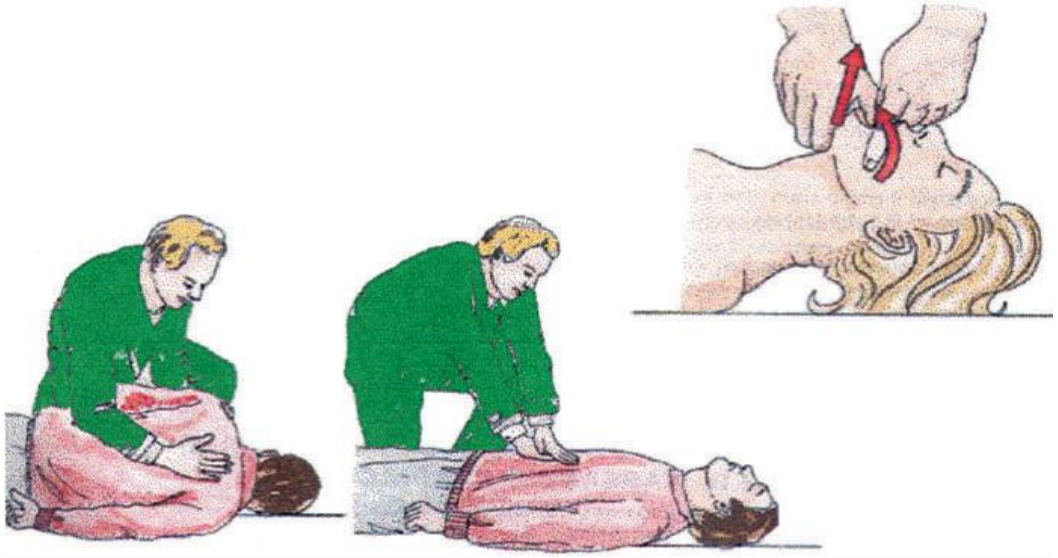
Inspiration/Inhalation **Expiration/Exhalation**

Heimlich maneuver in a conscious person,
useful to remove an object from a person's throat.

Stand behind the person, clasp your hands below the rib cage and pull towards you with a quick, hard movement, moving your hands inward and upward.

You may have to repeat the same movement many times, alternating it with some slaps on the back.

SEQUENCE OF MOVEMENTS



How to free the respiratory ducts from an obstructing object

If the person is **unconscious**, put him/her in the lateral safety position, and hit him/ her between the shoulder blades.

If he doesn't start breathing, make him lie down, press on the diaphragm and, as soon as he starts breathing, put him in the lateral safety position.

In the meantime, without leaving the person alone, ask somebody to call the emergency number 112.

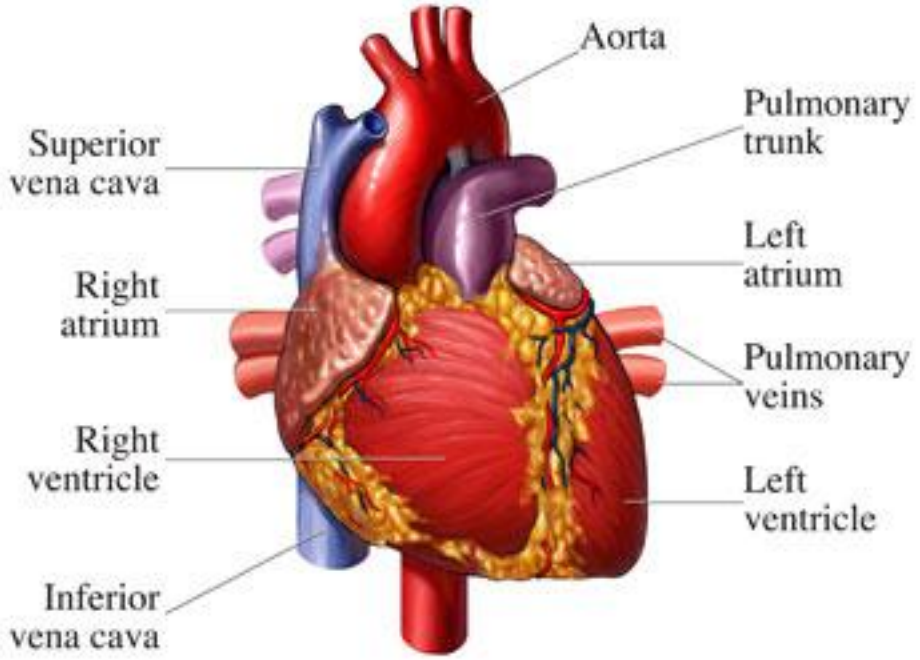
In the second part of the lesson we are going to consider:

- How our **heart** works

- What can we do in the case of **heart problems** such as:
  - **Fainting**
  - **Shock**
  - **Angina pectoris** (when not enough blood is running in the coronary arteries),
  - **Heart attack (infarct)**
  - **Heart failure or cardiac arrest**

The heart

The human heart consists of a special muscle called **myocardium**; if it gets oxygen and is nourished in an adequate way, it contracts rhythmically and automatically without the need of external stimuli.
Its exterior shape is conical, with the basis at the top. It is placed in the middle area of the chest, between the two lungs, on the diaphragm. It is hollow inside.



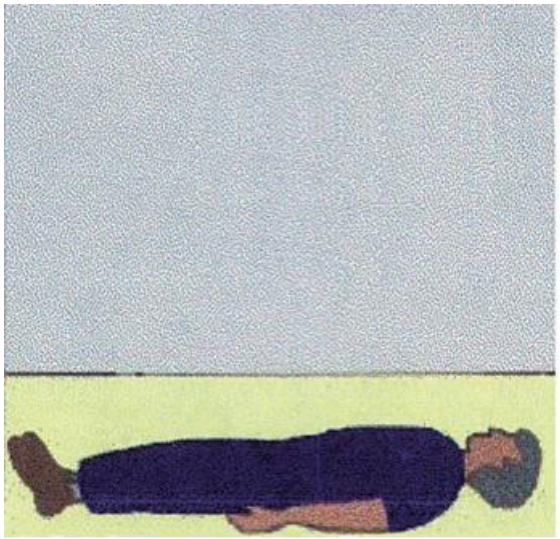
BLOOD CIRCULATION DISTURBANCES

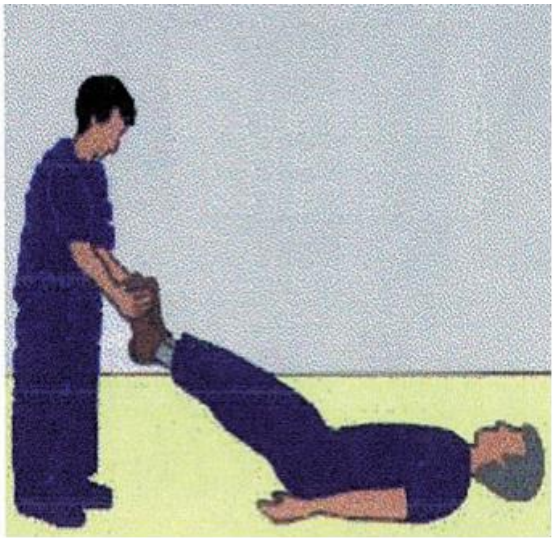
Fainting is a temporary loss of consciousness due to a temporary reduction of blood inflow to the brain: it can be caused by an intense emotion, by a reduction of the blood pressure, by intense heat. It's harmless and it can be solved in a short time.

General symptoms: the person appears pale, sometimes slightly sweating, with a slow pulse.

THE SAFETY POSITIONS

Antishock position





What to do: the aim is to improve the brain circulation. Make the person lie down, keep his/her legs upward taking them by the ankles or using a suitable support, such as pillows or an overturned chair.

HEART FAILURE (CARDIAC ARREST)

Cardiac arrest happens when the heart function stops and consequently also the blood stops flowing to all organs and systems in the human body. If this condition lasts for a certain number of minutes, you will have irreversible damages to some organs, first of all to the brain, and subsequently death.

General symptoms:

The person is unconscious, there is no pulse, no breathing. The person appears grey bluish.

What to do:

Check the absence of pulse and breathing.

Call the emergency number 112

Start practicing CPR (= cardiopulmonary resuscitation) in order to activate circulation, in particular in the brain.

DEFIBRILLATOR

Infarct

Heart infarct consists in the necrosis of a part of the heart muscle tissue, caused by a sudden stop of the blood flow due to an obstruction of the main branch of the coronary artery.

General symptoms:

Pain, the person feels a sensation of imminent death, he looks pale waxy, the lips can be bluish, the face is covered with cold sweat, the pulse is fast, the breath is heavy.

What to do:

Put the person in a comfortable position, half seated, with bent legs; if possible use some pillows to support shoulders and head. Reassure him and call the emergency number 112. It's better to ask somebody else to call the emergency number, in order not to leave the person alone. In fact, there is a very high risk of cardiac arrest. Aways tell the emergency that there's the risk of an infarct.

Always check the pulse and breathing and practice resuscitation if necessary.

RESUSCITATION

Our brain must receive a constant blood supply: after three of four minutes without it, the brain stops working. You lose consciousness, you stop breathing, the heart stops working and you can die.
Cardiopulmonary arrest is the sudden stop of blood circulation and of spontaneous breathing.
In order to keep a constant oxygen supply to the brain, we must have three conditions:

- **the respiratory ducts must be free**
- **the person must be breathing**
- **blood circulation must be efficient.**

Resuscitation techniques allow to keep the vital functions until the arrival of the emergency operators (112).
The techniques consist in CPR (cardiopulmonary resuscitation) and, if possible, in the use of defibrillator, if you know how to use it.

Before starting any resuscitation activity, you'll have to check:

- If the person is **conscious**
- If the person can **breathe**
- If the person's **heart** is working.

State of consciousness:

You can check it by asking the person some simple questions: ask his name, what happened, etc.

If he doesn’t respond to any stimulus, the person is unconscious

Breathing activity:

You can check it by putting your face near the person's mouth, trying to hear if there are any respiratory noises. You can then check if there are any movements of the chest, and it can also be useful to put a mirror in front of the person's mouth; if the mirror steams up it means that the person is breathing.
Remember to check if the breathing ducts are free. In fact there could be no breathing not because it stopped but because an external object is blocking it.

The pulse: presence of cardiac activity.

If the heart is beating it will be possible to hear it in some specific places.

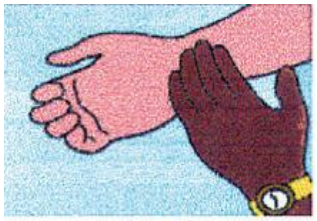
The most widely used are the radial pulse and the carotid pulse.

The radial pulse is beneath the thumb, between the hand palm and the wrist.

The carotid pulse is between Adam's apple and the muscle of the neck.

The most important pulses are:

The radial pulse



The brachial pulse

The carotid pulse

WHAT TO DO AFTER THE PERSON EXAMINATION

If the person is unconscious but there is breathing and pulse: put him/her in the lateral safety position (recovery position).

Call the emergency number 112

If the person is unconscious, is not breathing, but there is pulse.

Start artificial respiration (AR).

Call, or better, make somebody call the emergency number 112 and go on with artificial respiration.

If the person is unconscious, is not breathing and there is no pulse.

First call the emergency number 112.

Then start CPR (cardiopulmonary resuscitation)

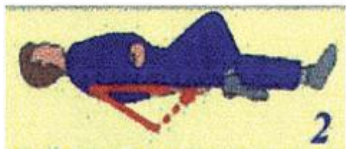
RECOVERY POSITION

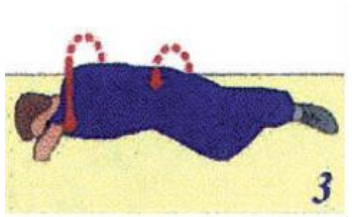
An unconscious person should always be put in the lateral safety position (recovery position) before leaving him/her alone to call for help. We need to use this position for different reasons:

a) Avoid the tongue to fall backwards and close the respiratory duct,
b) Allow organic liquids (vomit, blood), if present, to go out from the mouth avoiding the risk of suffocation.

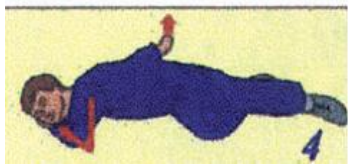
1. Kneel down near the person and stretch his head to free the respiratory ducts. Put the person's right arm on the ground bending his elbow and with the palm of his hand upwards. The legs must be outstreched.

2. Put the person's left arm on his chest and his hand on the cheek, with the palm outwards, keeping it with your hand. Then take with your other hand the person's left leg under the knee, keeping the foot flat on the ground. At this point, pushing towards you, turn the person on one side.



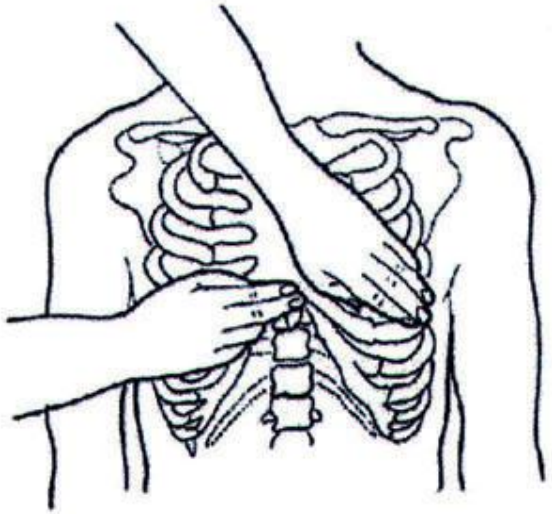


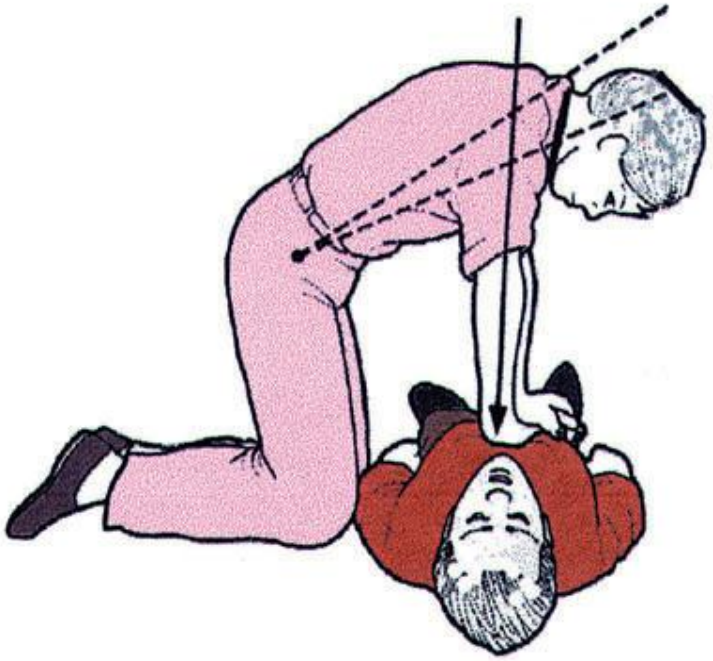
3. The person is now lying on one side. If necessary, put the arm at right angle, the hand of the other arm under the cheek, and the leg with knee and hip at right angle.



Call the emergency number 112

CPR (cardiopulmonary resuscitation)





1. Make the person lie down on a hard surface; kneel down beside him and find with two fingers the point where the last two ribs join the sternum.
2. Put the basis of the other hand's palm on the sternum, on the point mentioned above, take away the two fingers and put your hand over the other one, interlacing your fingers.
3. Stretch your arms and practice a compression; the sternum must lower down about 4-5 cm. In order to make this operation effective your fingers must be raised so as not to damage the ribs with your pression.
4. Release the pression without moving your hands away. Then repeat the compressions regularly, with a frequence of 100 per minute.

If the person doesn’t breathe and has no pulse, you must always practice CPR. If there is s defibrillator and you know how to use it, use it.

The CPR can be practiced by one person, better by two people.

If you are on your own:

• first of all call the emergency number 112;

• free the respiratory ducts by lifting the head backwards and free the mouth from any object;

• practice chest compressions;

• never stop, not even to check the pulse, except when the person gives evidence of recovery: cough, movement, breathing;

• if the pulse and breathing are present, put the subject in the recovery position and wait for the ambulance, checking pulse and breathing every two minutes.

If there are two of you:

This is the best option because practicing chest compressions is tiring and after a few minutes these can be less effective because the rescuer may be tired. You can arrange to exchange the rescuers every two minutes. The exchange must take place in the shortest possible time, following this sequence:

• The rescuer who is practicing chest compressions and feels tired asks for a change before starting a new series of compressions; when he finishes his turn he stands up and moves at the head of the unconscious person;

• the other rescuer moves to the side of the patient and practices chest compressions.