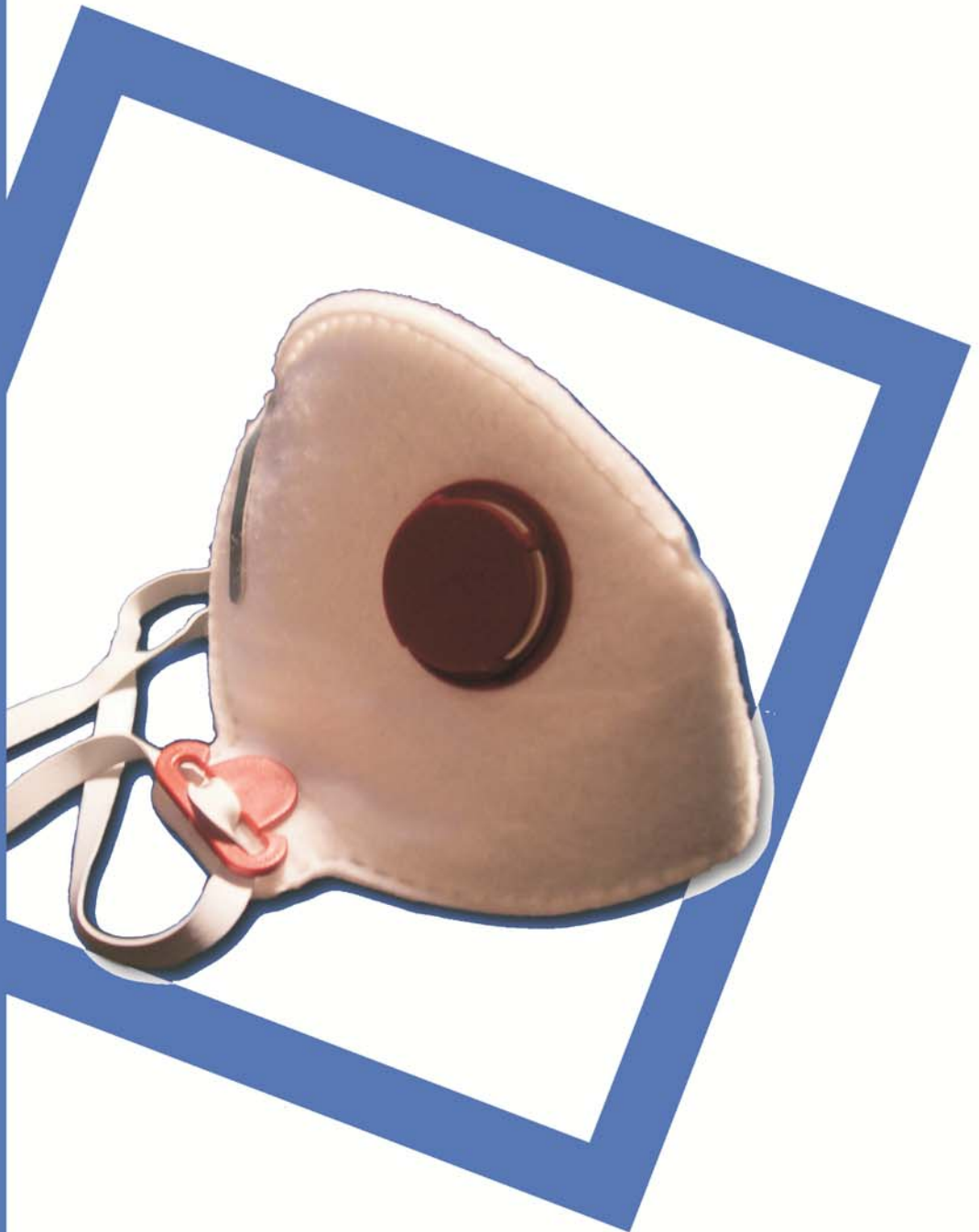


Advanced Training Manual for First-Aid



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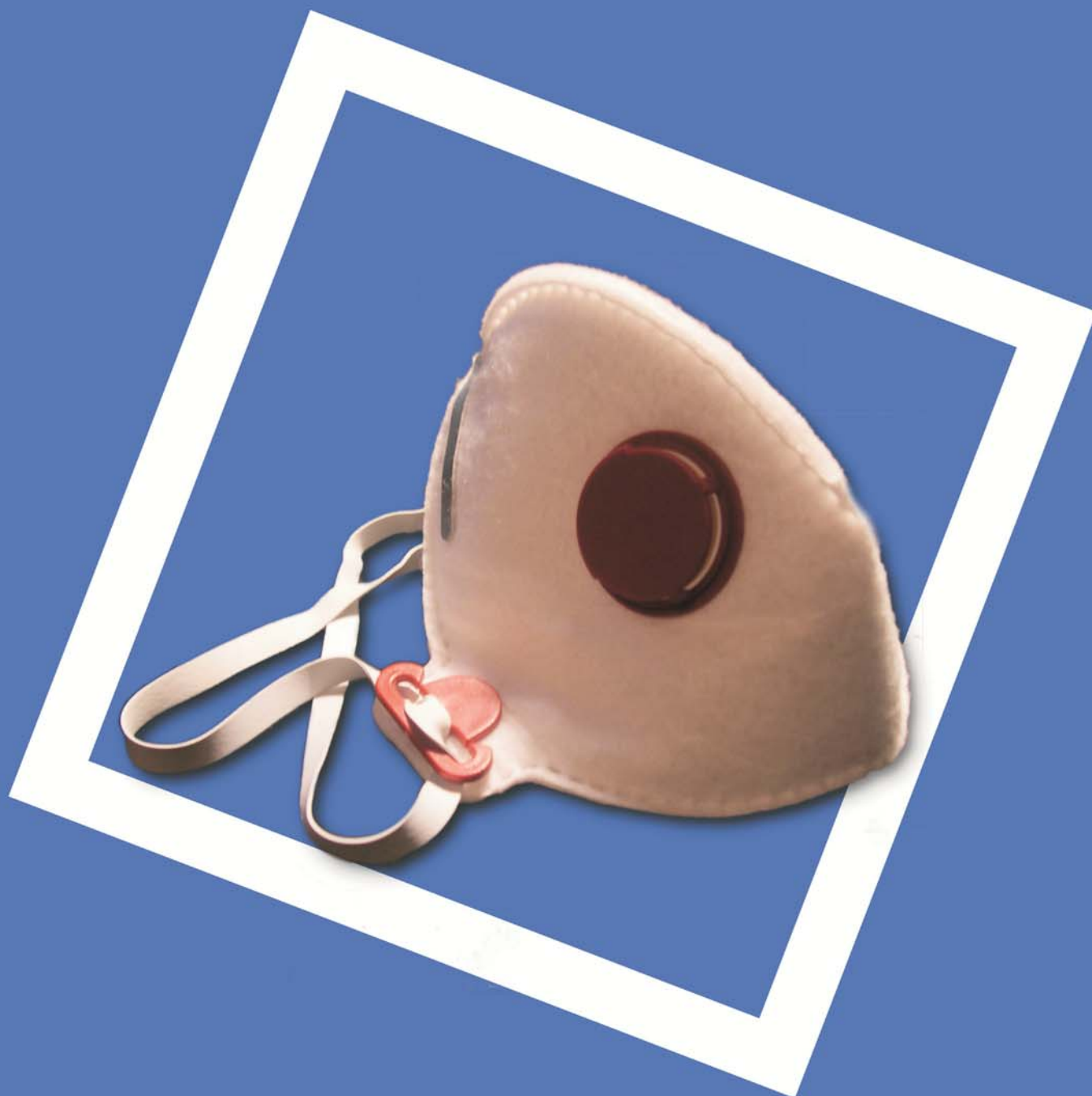
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introduction



It is compulsory, by law, that all companies should be organized and have their human resources trained in first aid, in order to allow an effective intervention in this area. Its failure is liable through the application of fines. However, we all should see this activity as a civic and moral duty.

We will present some procedures that may assist you in the case of emergency. It is important to mention that the provision of first aid does not exclude the importance of a doctor.

Rapid action after an accident can save the life of a person or prevent the lesions which were suffered from getting worse.

It should be any company priority to organize first aid training, whether it's in the number of human resources or materials required, maintaining the teams always well trained adjusting them to the company own risks, and according to the law.

Principle aspects to consider in the organization of the first aid in the company:

- Selection of the staff that will be responsible for the implementation of measures regarding issues on first aid training;
- Periodic verification of the proper implementation of these measures;
- Organization of contacts that should be established with foreign services to ensure the speed and effectiveness of actions;
- Appropriate training of personnel by supplying the adequate and sufficient number of equipment, and ensuring a sufficient number of staff depending on the risks of each company.

Knowledge on first aid can protect the victim against major injuries, until the arrival of a Business health specialist professional.

When you intend to decide on the number of individuals which will make up the first aid team, you need to take into account, the number of workers, the structure of the organization and the distribution of employees, according to the distance between the business and the nearest medical services, etc..

A point of reference regarding low-risk situations would be one individual qualified in first aid for each 50 employee per shift.

First aid training, in companies, should be divided into two blocs:

Basic Training:

The first aid should be able to act in the case of medical emergency, such as: loss of memory, cardio-respiratory stoppage, and blockage of the Respiratory airways, bleeding and shock.

Specific training:

Together with the basic training and considering to the existent of risks in the company, it is convenient to have specific training. For example, an individual trained in first aid that works in a chemical company should easily dominate the following techniques: rescue in toxic environment, oxygen therapy, chemical burns, and intoxications by specific chemical products and accidents due to fires and explosions.

The employee that will receive initial training should be voluntary and should receive periodically training.

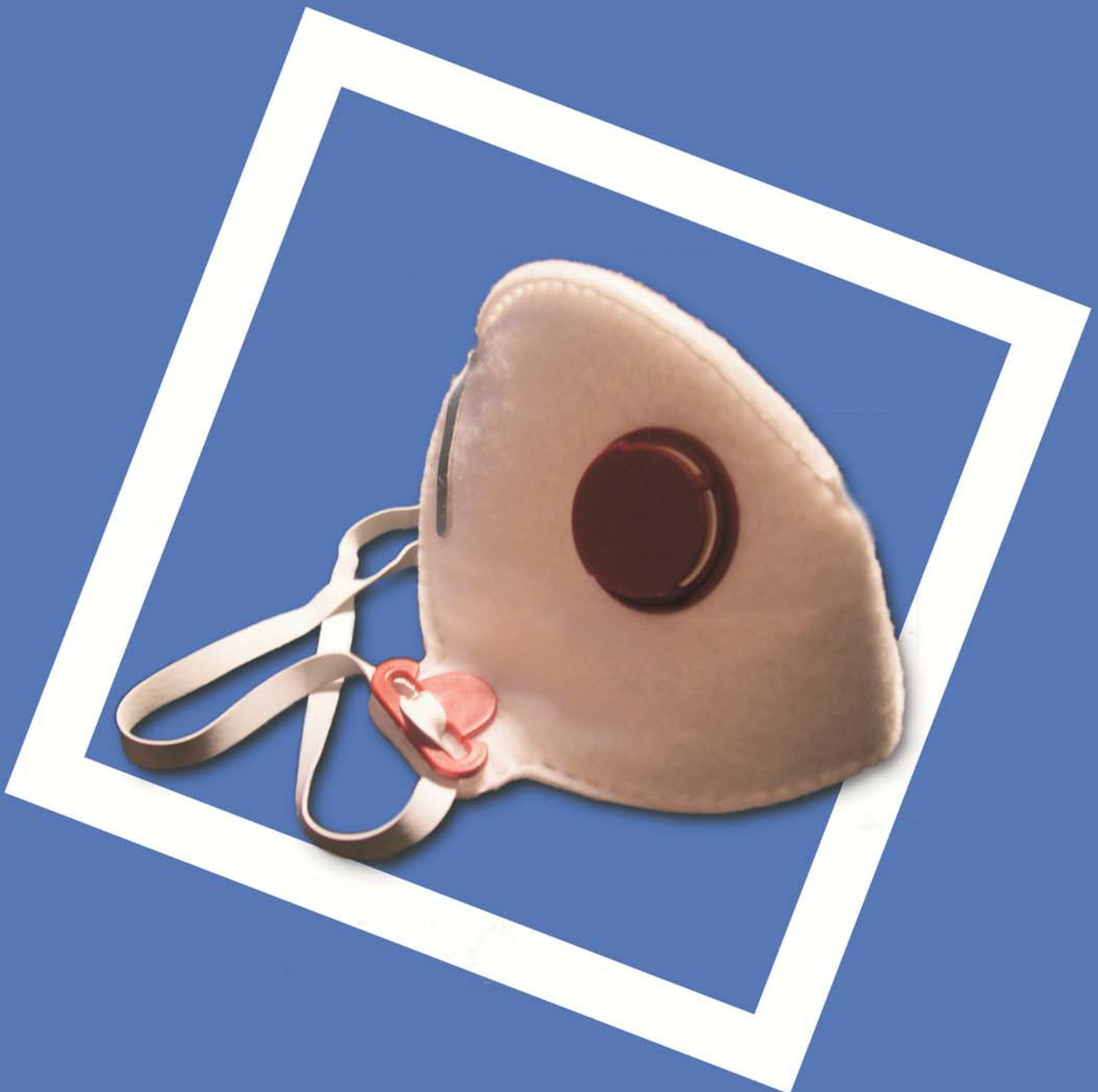
First aid material (KIT):

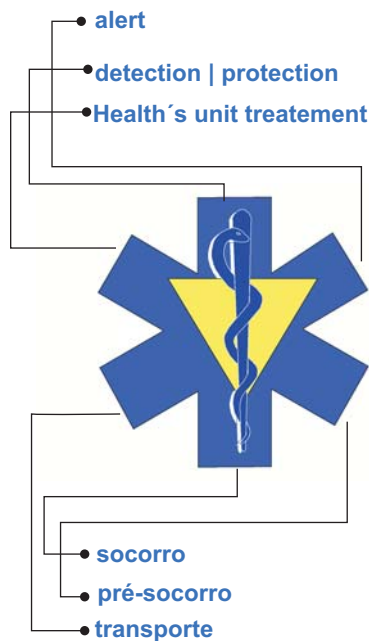
According recommendation quality, the basic minimum contents that company's first aid kit should contain are:

- Compresses individually wrapped and different sized (20x20cm, 15x15cm and 10x10cm);
- Sterile gloves;
- Cotton;
- Hypoallergenic adhesive;
- Band-aids of various sizes;
- Adhesive band type Band-aids;
- Elastic bandages of various sizes (10x10cm, 5x7cm and 5x5cm);
- Triangular bandages (for arm suspension);
- Splints of various sizes for fixed assets;
- Anti-septic solution;
- Peroxide Water;
- Physiological serum;
- Alcohol;
- Safety pins
- Cotton swabs;
- Two tweezers Haemostatics;
- Two dissections tweezers;
- Scissors with tip line and curve;
- Strong Scissors for clothing;
- Army knife;
- Clinical Thermometer;
- Small Flashlight;
- Blood pressure measuring device;
- Manual inhaler;
- Ointment for wounds and burns (only by medical indication).

It is important to always replace the used material, as well as regularly checking the status and validity of existing medications in the first aid cabinet.

Integrated System of Emergency (ISME)





The Integrated System of Medical Emergency (ISME) is a set of human resources and materials, activities and procedures in the health sector, covering everything that occurs at the emergency scene until the moment that is initiated treatment in the health unit more appropriate for the situation.

This unit is represented by a blue star with six sides (Life star), with a staff and a snake in the centre (Life star) and where each side represents the various stages of the system: accident detection, alert, pre-aid, and aid, transportation and hospital treatment.

2.1 | Phases of ISME

2.1.1 | Detection

It is the moment when someone becomes aware of the existence of one or more victims of sudden illness or accident.

2.1.2 | Alert

Phase in which the emergency services are contacted, using the European assistance number "112".

2.1.3 | Pre-aid

Set of simple procedures that can be applied until the arrival of assistance.

2.1.4 | Aid

Initial emergency cares applied to victims of sudden illness or accident, with the objective of stabilizing the individuals and therefore reduce morbidity and mortality.

2.1.5 | Transport

Assisted transportation of the victim in an ambulance with specific characteristics, staff and defined load from the emergency scene the appropriate health unit, ensuring the continuation of the emergency care required.

2.2 | Evolution of ISME in Portugal

- 1965 - Creation of 115;
- 1971 - Creation of the National Ambulance Service - SNA;
- 1981 - Creation of the National Medical Emergency Institute - NMEI;
- 1987 - Creation of the Centre for Emergency Patients - CEP;
- 1998 – Alteration in the emergency number to 112.

2.3 | Objectives of ISME

- Promote quick assistance;
- Stabilize injuries;
- Appropriate transportation;
- Hospital Treatment.

2.4 | Who intervenes in ISME

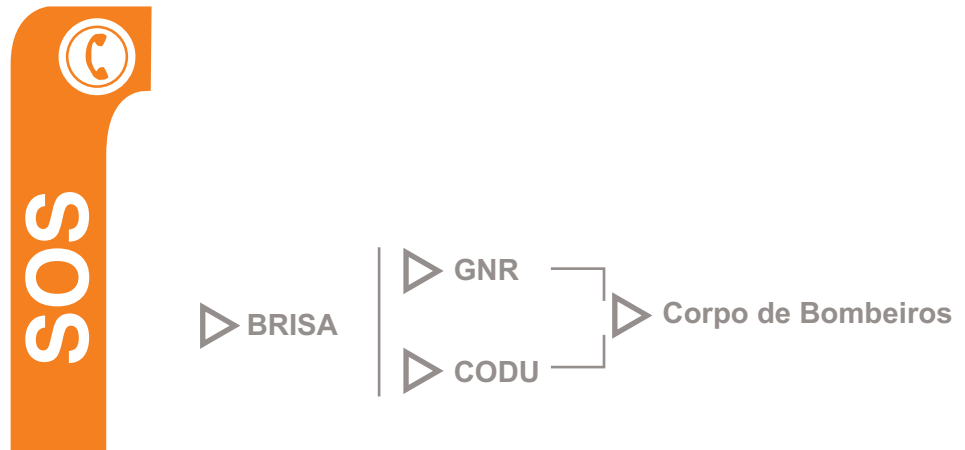
- Public;
- Central Operators;
- Authority Agents;
- Firemen
- Ambulance Crew;
- Doctors;
- Nurses;
- Hospital technicians;
- Telecommunication Technicians;
- and so on.

The NMEI (National Medical Emergency Institute) has the role of regulating organism of medical emergency activities.

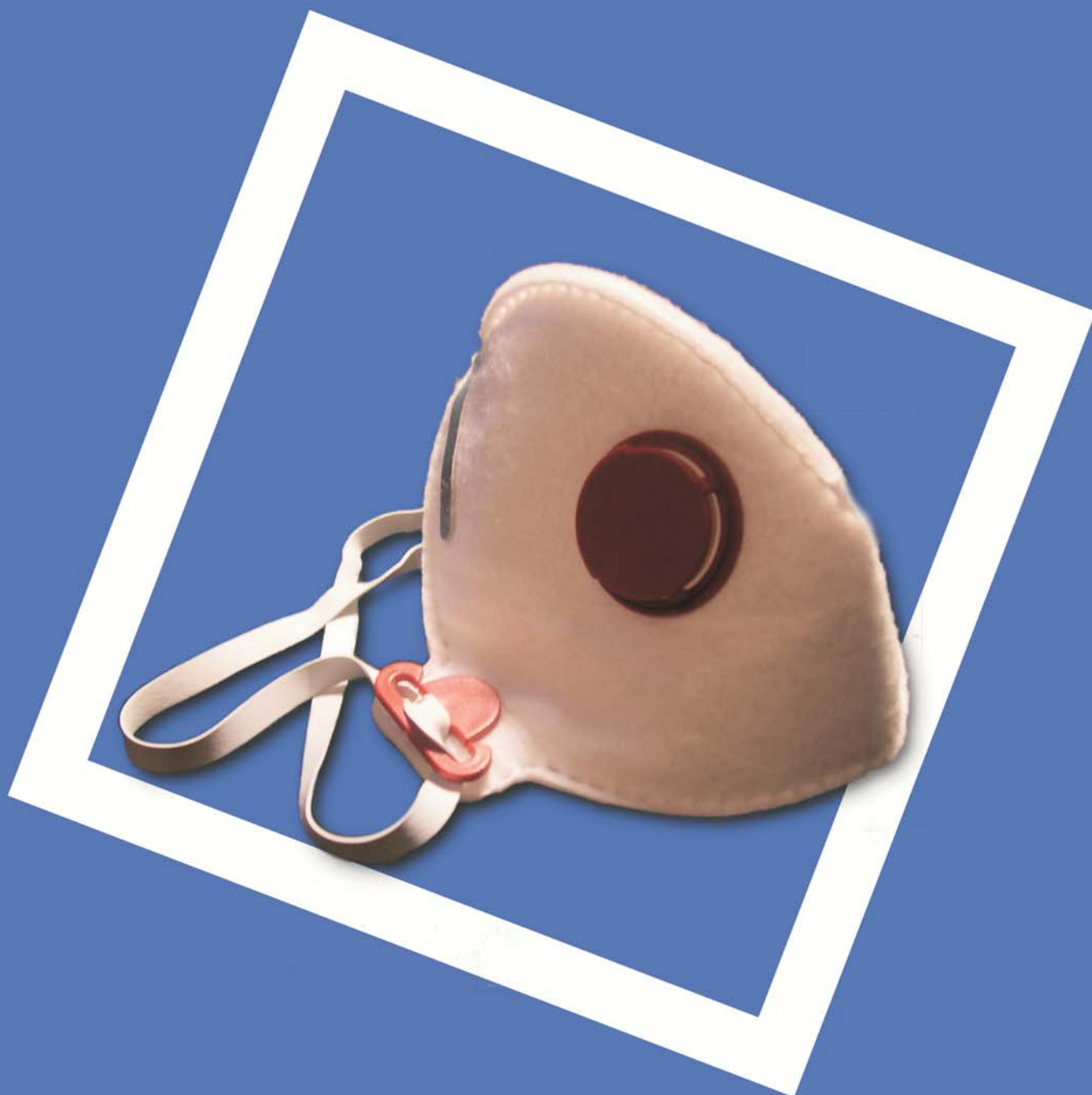
2.5 | Subsystems that work permanently in NMEI

- APIC - Anti-Poison Information Centre;
- Transportation;
- GCUP - Guidance Centre for Emergency Patients;
- GCEP-SEA - Guidance Centre Emergency Patients at Sea.

2.6. AIDS chain



Victim exam



3.1 | Introduction

Before any procedure related to the examination of the victim, it is essential to ensure their safety and the safety of the team's team, as well as the victim. After ensuring security conditions at the scene, the rescuer must begin the evaluation of the victim's state in order of priority and severity of the injury, that the victim presents, remember not to advance with the exam if you have not corrected any alteration in the victim.

The rescuer should make a fast and careful primary exam in order to evaluate the existence of any changes in vital functions, which may put at risk the lives of the victims.

He should then carry out the secondary examination, searching for the existence of injuries that are not of immediate life risk, but need emergency care and stabilization in order to ensure their safe transportation to the health unit.

REMEMBER



3.2 | Primary Examination

The primary examination aims at detecting the existence of situations that may immediately endanger the life of the victim, or situations which may compromise vital functions (those that put in immediate danger the life of the victim). It is therefore fundamental to correct and provide the appropriate emergency care.

In this primary exam the rescuer should follow the following list in order of priority:

1. Evaluate the state of consciousness;
2. Evaluate breathing;
3. Evaluate pulse;
4. Detect serious external bleeding;
5. Detect signs of shock.

In case of accident or unknown situation, suspect always that the victim may have skull brain or spinal cord-vertebral injuries.

3.2.1 | Evaluation of the state of consciousness



Evaluate if the victim is conscious, this means, if he/she responds when stimulated.

Therefore, slowly shake their shoulders and ask in high voice: are you o.k.? Are you feeling good?



If the victim is unconscious, you should immediately scream for help without abandoning her/him, because it is possible you may need the help of someone else near by.

If there is no response, the victim is considered unconscious in a life risk situation.

3.2.2 | Permeability of the airway



The obstruction of the airway is a very serious situation that can occur in unconscious victims due to a collapse, relaxation of muscles or accumulation of secretions, vomiting, blood or even due to strange objects such as teeth, dental prosthetics, food, etc...

3.2.3 | Search for spontaneous breathing



After making the permeability of the air way, get close to the face of the victim and observe the thorax, keeping the air way open.

Check the victim's breathing during 10 seconds, using these three steps:

See | if there are thoracic movements;

Listen | air passing through the air way of victim;

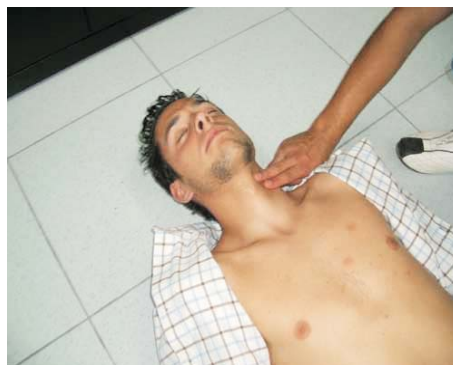
Feel | if the air flowing out of the victim's mouth hits your face.

3.2.4 | Search for circulation / existence of pulse



The pulse is the result of a wave of blood that passes along the arteries when the heart contracts, meaning that, when the heart acts like a pump and takes the oxygenated blood to all parts of the body through the arteries (blood circulation). In a victim with circulation, it is possible to take her/his pulse in several arteries, particularly in the carotid, femoral, radial humeral arteries.

In an unconscious victim always search for the carotid pulse, since it is a more central pulse, and is easier to feel.



To find the carotid pulse you should put two fingers (indicator and medium) in the region of the larynx ("Adam's Apple") and slip slightly to the exterior side to the neck, until you find a groove between the trachea and the sternocleidomastoid muscle.

Touch smoothly, without pressing too much, and search for the existence of a pulse during 10 seconds.

3.2.5. Detection of severe external bleeding

After certifying if the victim has a pulse, totally observe him/her and look for the existence of serious external bleeding. These are easily identifiable.

When the hemorrhagic is abundant, it will put the victim's life endanger, so it is essential to control it immediately.

3.2.6. Detection of clear signs of shock

Hypovolemia is the state of decreased blood volume provoked by several causes however it is always a serious situation that can lead to death.

3.3. Secondary Examination

After the primary examination (detecting and beginning aid in situations of immediate life danger) starts the secondary examination.

The overall objective of completing the secondary examination is to detect situations that do not constitute immediate life threat, but can aggravate the victim's situation if not aided.

This approach must be effective and systematic, and processed in the following sequence:

3.3.1. Gathering information

The collection of information is fundamental and intended to:

1. Know what happened to the victim - in some situations this may seem obvious, but by talking with the victim you could obtain information that reveals other causes;
2. Identify the victim's main complaint - what hurts more is not always the most evident;
3. Knowing the personal history - previous diseases, or the intake a certain types of medication, that may require a different action.

Questions to ask the victim:

1. Name and age (if he/she is a minor, contact the parents or a known adult);
2. What happened? (Identify characteristics of the event: hour, type of accident, number of people, etc. ...);
3. Has this happened before?
4. Do you have a similar problem or illness?
5. Are you receiving medical treatment?
6. Are you allergic to any medicine or food?

7. Have you ingest some type of drug or food?

Note: It is however important to note that the victim is the most important person at the scene, even if he/she seems less cooperative or confused, therefore, you question the victim first, and secondly question family and other members that are at the scene.

3.3.2 | Evaluation of vital signs

The evaluation of the three vital signs aims at characterizing, breathing, the pulse and skin, regarding temperature, coloration and humidity.

3.3.2.1 | Pulse

The pulse is a wave of blood generated by the heart beat and spread over the arteries. It is palpable in any area where an artery passes, on a protruding bone prominence or located near the skin.

The frequency of pulse considered normal in adults is 60 to 100 beats per minute. In children generally up to one year of age it is over 100 beats per minute;

For children over one year figures are between 80 and 100 beats per minute.

Changes in the frequency and volume of the pulse represent important data in pre-hospital emergency. A rapid or weak pulse can result in a state of shock by blood loss. The absence of a pulse could mean a blocked or damaged blood vessel, or that the heart stop working (cardiac arrest).

In order to characterize the pulse it is necessary to evaluate:

- The frequency, which corresponds to the number of beats per minute;
- The Amplitude, which can be high or low;
- The Rhythm, which can be regular or irregular.

3.3.2.2 | Breathing

Normal breathing is easy, without effort and without pain. To this set of inhales and exhales is given the name of a ventilator cycle (breathing). This frequency can vary a lot, for an adult; ventilation is normally between 12 to 20 times per minute. Breathing and ventilation means the same thing, which is the act of inhaling and exhaling air.

Occasionally, you can deduce from the individual's breath, you can observe if he/she is intoxicated, for example if they smell alcohol. In a state of shock you can observe quick and superficial breaths. A deep breath, hard and with effort could indicate an obstruction in the airway, lung or heart disease.

To characterize the ventilation is necessary to evaluate:

- The frequency, which corresponds to the number of cycles per minute;
- The Amplitude, which can be superficial, normal, or deep;
- The Rhythm, which can be regular or irregular.

3.3.2.3 | Characterization of the skin

In the evaluation of the characteristics of the skin it is important to consider:

- Temperature



The normal body temperature is 37°C. The skin is responsible, largely, for the regulation of this temperature, radiating heat through the subcutaneous blood vessel and evaporating water in the form of sweat.



Cold and wet skin is an indicator of a response of the sympathetic nervous system to a trauma or loss of blood (state of shock). An exposure to cold usually produces cold and dry's skin.

Hot and dry skin can be caused by fever, disease, or be the result of an excessive exposure to heat, such as overexposure to the sun.

It is considered:

- High temperature or hyperthermia when the temperature is more than 37.5 °C;
- Normal temperature when the temperature is between 35.5 °C and 37.5°C;
- Temperature below normal or

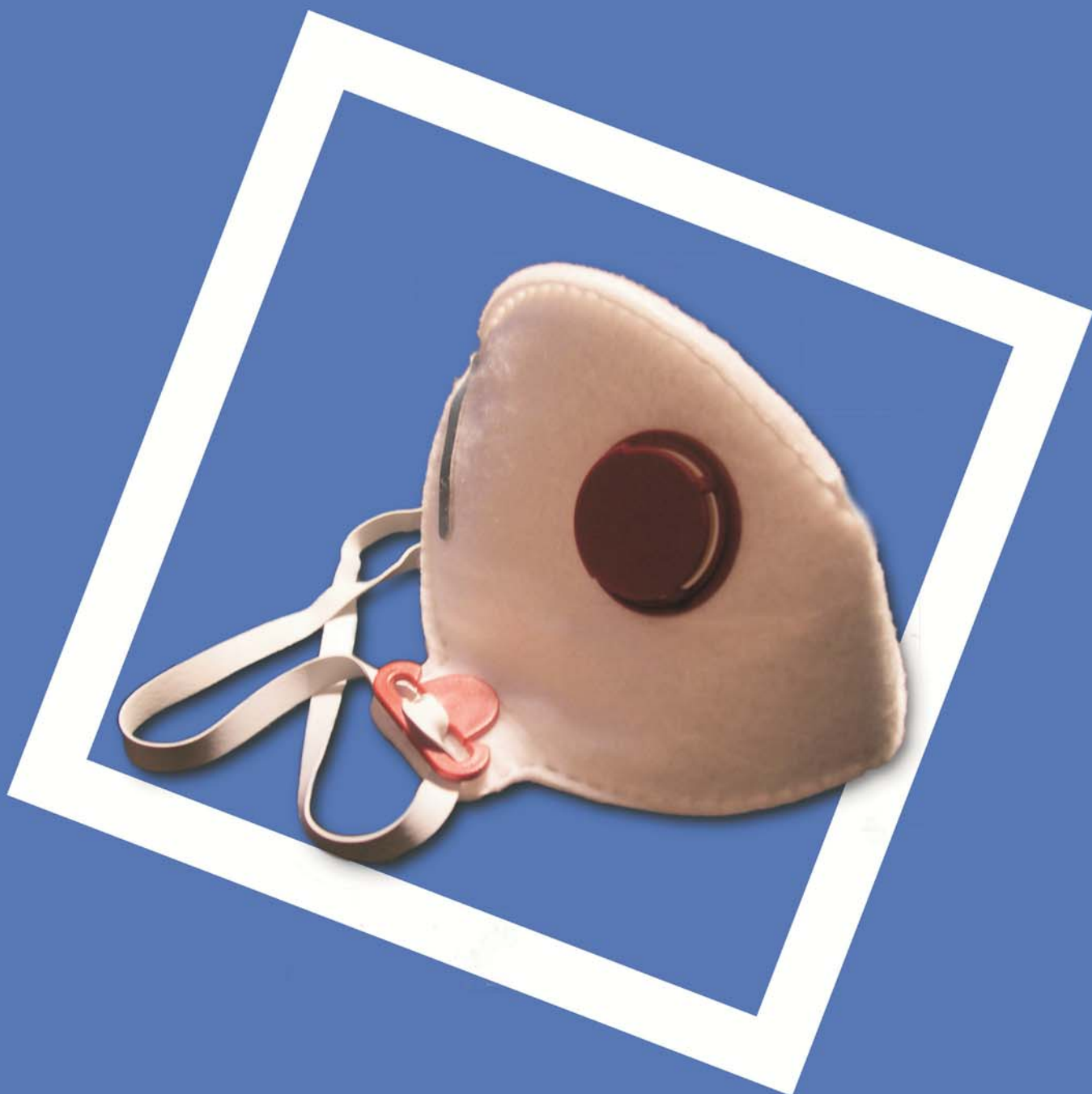
- Colouration and the presence or absence of humidity

The colour of the skin depends primarily of the presence of circulate blood in the subcutaneous blood vessels.

A pale white skin indicates inadequate circulation and is seen in victims with shock or myocardial infarction. A bluish colour (cyanosis) is observed in heart failure, obstruction of the airways, and in some cases of poisoning. There may be a red colour in certain stages of poisoning by carbon monoxide (CO) and in overexposure to the sun.

Activity	How to perform it?	Why?
Register the victim's vital signs (performed during the exam or after the victim has been treated).	Verify and note: respiration, pulse, systolic and diastolic arterial pressure and skin temperature.	The verification and comparison of the victim's vital signs are fundamental in order to evaluate real conditions.
Inspect and feel the victim's head.	Touch the entire cranium, search for deformities, wounds, oedemas, bruises, etc.	In order to identify possible lesions to the head.
Inspect the victim's eyes.	Observe both pupils, search for oedemas, bruises, lesions on the corneas or eyelids	In order to identify possible traumas, to the head, eye or the use of drugs, etc.
Inspect and feel the face, nose, mouth and mandibula.	Feel the victim's face bones, nose and mandibula. Search for haemorrhages, deformations, wounds or bruises. Check the nose. Verify if there are any lesions in/around the mouth, tongue, lose of teeth or prosthesis, and check their breath.	In order to identify possible lesions to the head, facial bone fractures, cranial fractures, lesions to the mouth and mandibula, ingestions of alcohol, etc.
Inspect both ears of the victim (without moving the head).	Search for blood loss through the ears. Confirm if the victim is able to hear. Search for oedemas or bruises on the back of the ears.	To indicate the possibility of loss of hearing, cranial traumatism or head wounds.
Inspect and feel the victim's neck.	Search for dilated veins, wounds, deformities or deviation of the trachea. Check the cervix, looking for oedemas or deformities and apply a proper cervical collar.	To indicate possible cardiac or respiratory problems and traumas to the cervical region.
Inspect and feel the victim's shoulders (bilaterally).	Touch the victim's clavicle and scapula (bilaterally), search for deformities, wounds, haemorrhages or oedemas.	Search for possible lesions on the victim's waist. Fractures and/or dislocations of the shoulders' bones.
Inspect and feel the victim's thorax (bilaterally).	Feel the frontal and lateral regions of the thorax. Search for abnormal respiratory movements, deformities, fractures, areas with contusions or oedemas.	To indicate possible respiratory problems, fractures to the ribs or sternum, open wounds on the thorax.
Inspect and feel the victim's abdomen.	Feel and search for contusions, wounds, haemorrhages, and eviscerations. Observe sensibility and rigidity.	To indicate possible internal haemorrhages, eviscerations, contusions and wounds.
Inspect and feel the victim's pelvic region.	Feel the frontal, lateral and back regions of the pelvis. Search for instability, pain, wounds or haemorrhages. Try to identify lesions to the genital region.	To indicate possible lesions to the pelvic region. Fractures and/or dislocations of the pelvic bones. Possible lesions to the genital organs.
Inspect and feel the victim's extremities.	Feel the inferior and superior members. Search for wounds, haemorrhages, deformities or oedemas. Analyse movement capacity, sensibility, and the presence of a pulse and blood perfusion.	To identify possible fractures, dislocations, sprains, wounds, spinal trauma, and encephalic-cranial trauma, etc.
Feel and visually inspect the victim's dorsal region.	The victim should be rolled in mono-block (90 degrees). After positioning the victim laterally (maintaining the spine aligned), inspect the entire spine through touch. Check the spine and buttocks, deformities, contusion areas, wounds or haemorrhages.	To identify possible lesions on the victim's dorsal region and spinal traumatism.

Cardio Pulmonary Resuscitation



4.1. Introduction

Cardio Pulmonary Resuscitation (CPR) is a well-defined set of procedures with standardized methodologies. These procedures succeed in a chained way and form a chain of attitudes in which each link articulates the previous procedure with the following. This set of methodologies aims at recognizing situations of imminent life danger. Know how and when to ask for help and knowing how to immediately start, without using any tool or manoeuvres that contribute to the preservation of breathing and circulation, in order to maintain the victim stable until the appropriate medical treatment can be established, eventually restoring normal respiratory and heart functioning.

The manoeuvres of CPR are not in itself sufficient to recover most of the victims of cardio-respiratory failure. CPR can save time, keeping part of the vital functions working until the arrival of advanced life support. However, in some situations where respiratory failure was the primary cause of cardio-respiratory malfunction, CPR can reverse the cause and achieve total recovery.

4.2. How to act

The three elements of CPR, after the initial evaluation, are referred by "ABC"
 A - "Airway" | Air;
 B - "Breathing" | ventilation;
 C - "Circulation" | Circulation.

4.2.1. Evaluate the scene's security conditions



After ensuring that the scene's security conditions are guaranteed, approach the victim and ask out loud: "Do you hear me? Do you feel good? ", while stimulating him/her by tapping gently on the shoulders;

1 | If the victim responds he/she should be left it in the position where you found him/her (since that, does not represent an increased danger), ask what happened, if they have any complaint, any pain and try to look if there are signs of injury and if necessary go and ask for help;



2 | If the victim does not respond - ask for help shouting out loud "I need help There's an unconscious person here. " Do not leave the victim and proceed with the evaluation.

4.2.2 | Air way – A

Since the victim is unconscious, the muscles of the tongue loss their natural tone (muscle tension), relaxing, and gives falling backwards into the throat (the victim with supine position may cause air way obstruction). This mechanism is the most frequent cause of the air way obstruction in an unconscious adult.

There exist other factors which can condition airway obstruction, such as:

- Vomit
- Blood
- Broken teeth or badly fixed dental prosthetics

It is fundamental to proceed to the permeability of the airway, through the following manner:



-Open/remove around the neck exposing the thorax;



-verify if there are strange objects inside the mouth (food, dental prosthetics bad fixed, secretions);
The existence of these strange objects must be removed, if detected.
NOTE: you mustn't remove well fixed dental prosthetics



Place the palm of on the victim's forehead and the indicator and medium fingers of the other hand on the border of the inferior jaw.



In a trauma situation, tilt the head back and move the lower jaw (chin) forward.

While elevating the lower jaw do not press the soft parts of the chin, place fingers only on the part of the bone.

NOTE: if you suspect that the victim may have suffered a trauma of the cervical spine the extension of the head can not be done.

Several situations can cause trauma of the cervical spine, including:

- Traffic accidents;
- falls;
- Diving accidents;
- Aggression by a firearm.

In these cases the permeability of the air way should be made only by raising the lower jaw (dislocation of the jaw).

4.2.3. Breathing – B

After making the permeability of the air, evaluate the existence of breathing –B



To check if the victim breathes, approach your face to the face of the victim. Looking at the thorax, keeping the air way open and searching for:

See | if there are thorax movements;
Listen | if there are breathing noises through the mouth and nose of the victim;
Feel | the victim's face if there is air coming from the mouth and nose.

You should see, hear and feel (SMF) during 10 seconds.

This procedure intends to look for the existence of normal respiratory movements, observing if the thorax rises or lowers cyclically. Some victims can present ineffective respiratory movements by “gaspings” or by “agonic breathing” which should not be confused with normal breathing.

These movements do not cause a normal thorax expansion, but corresponds to a transitional phase that may proceed to the total absence of breathing movements and tend to end quickly. In the absence of breathing or in the presence of ineffective breathing it is necessary to ventilate the victim.

- If the victim breathes normally, he/she should be placed in the lateral security position (LSP).

The technique for placing the victim in a lateral security position will be described further on.

- If the victim doesn't breathe you must immediately contact the medical system of emergency by calling 112.



• **If you are alone:**

After confirming that the victim is not breathing, you must abandon him/her instantly to call 112. While calling to 112 you must inform the other party that there is an unconscious victim not breathing and indicate the precise location where he/she is.

You should return near the victim as soon as possible and make sure there are no foreign objects in his/her mouth, and then start the ventilation with exhaled air.



• **If you are not alone:**

Ask the person to call 112, informing that there is an unconscious victim that doesn't breathe and indicating exactly where the victim is located.



- Ventilation with exhaled air:
- Ensure that the head of the victim remains in extension and that the chin lifted up, keeping the palm of one hand on the forehead of the victim and the indicator and medium fingers of the other hand on the boarder of the lower jaw;
- Squeeze the victim's nose between the forefingers and the thumb fingers with one hand on the forehead, to prevent the circulation of air;
- Keep the extension of the head and the chin lifted, without closing the mouth of the victim;

Inhale deeply, filling the chest cavity with air;

- Make two paused and deep inhalations with the duration of two seconds each.

•Faça duas insuflações pausadas e profundas com a duração de dois segundos.

If you can not inhale air you must::

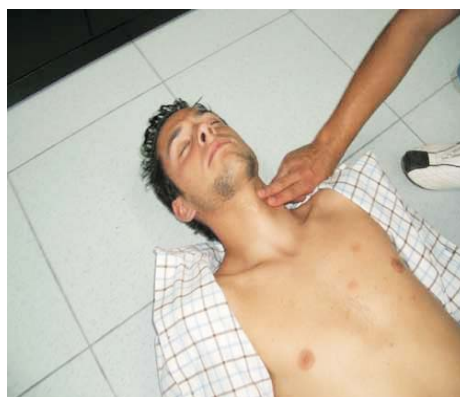
- Check again if there are visible foreign objects in the mouth and remove them;
- Confirm the correct permeability of the air way, repositioning the head if necessary;
- Try to inhale again;
- Do five attempts to achieve two effective inhalations.
- If after 5 attempts you don't get effective inhalations go to the following step:

4.2.4 | Evaluation of circulation signals – C



While searching for signs that reflect the presence of circulation you must simultaneously:

- Keep the permeability of the airway;
- Search if the victim breathes normally (in response to the two initial inhalations) using the SHE;
- Search for the existence of movement;
- Observe the victim's cough;
- Search for the presence of a central pulse.



The search for the existence of circulation signals must be given at least for 10 seconds. If at the end of this time the victim does not show any sort of the signals of circulation referred above, you must conclude the absence of circulation. In this situation, search for the carotid pulse. Keep the extension of the head with one hand on the forehead of victim and with the tips of the fingers, indicator and medium on the other hand and find the area of the larynx "Adam's Apple". This is where the carotid artery passes through and where you should touch to feel a pulse.

If the victim doesn't breathe but presents other signs of circulation, it is necessary to maintain ventilation with exhaled by air making 10 inhalations per minute.

How to keep the victim breathing with exhaled air:

- You should make the inhalations in a paused way, over 2 seconds, wait about 4 seconds and return to make another inhalation;
- Repeat this procedure 10 times;
- After each 10 inhalations, which normally run about 1 minute, you must search again for the existence of other circulatory signs;
- If the victim remains with signals of circulation, but doesn't breathe, repeat the procedure (10 inhalations per minute) and always search for signs of circulation after each minute.

If the victim doesn't show any sign of circulation you must immediately begin the thorax compressions:



Note: The victim must be in supine position on a rigid surface, with the head at the same level as the rest of their body.

- Kneel closely to the victim;
- Touch the lower edge of the ribcage;
- Run your fingers the medium and indicator over the ridge of the ribcage until you locate the junction point of the left and right ribcage;
- At this point is founded the Xiphoid Appendix which corresponds to the end of the external sternum;



- Place two fingers, the indicator and medium, on the xiphoid Appendix;
- Slide the basis of the other hand (the one that was on the forehead of the victim) and place it on the sternum, near the indicator finger. This is the correct place to make the thoracic compressions with the middle portion the lower half of the sternum. Certify that you maintain the edge of the hand in the same axis as the longitudinal axis of the sternum.



Place the base of the other hand on the first one, keeping the hands parallel, without crossing them;

Interlace your fingers and lift them, without exerting any pressure on the ribs. Maintain only one hand in contact with the sternum;

- Keep your arms held without bending the elbows, placing your shoulders perpendicular to the sternum of the victim;

- Press vertically on the sternum, in a downward motion, approximately so that this download some of 4-5 cm;

- Relieve the pressure, so that the chest cavity can totally decompress, but without losing contact with the hand that is on the sternum;

- Repeat this movement, of compression and decompression, maintaining a frequency of 100/min. (approximately 2 compressions within 1.5 sec.);

- This gesture of compression should be firm, controlled and executed vertically;

- The periods of compression and decompression should have the same duration;

- Synchronize the compressions with the ventilations:

- At the end of 15 compressions (a) permeable the air extension of the head by lifting the jaw, applying 2 strong inhalations;

- Reposition hands perpendicular to the sternum to carry out more compressions;

- Repeat 15 new compressions (a);

- Keep compressions and inhalations within the ratio of 15:2 (15 compressions: 2 inhalations).

Note (a): It is useful to count out loud 1 and 2 and 3 and 4 and 5 and... 15, in order to achieve

4.2.5 | Lateral Security Position

If the victim is unconscious but breathes, he/she should be placed in the lateral security position (LSP).

The unconscious victim, that breathes must be placed in LSP, only if there is no suspicion of trauma, which allows the airway to be maintained open avoiding the entry of gastric contents.

Placing of the victim in the lateral safety position should be following this sequence:



1- Remove their glasses and any bulky objects in their pockets (keys, telephones, pens, etc.) and other pieces of clothing that may hurt the victim.



2 – If the victim is wearing a shirt and tie, loosen the tie and undo the shirt.



3- Kneel up beside the victim and extend their legs. Place the arm closest to you folded at the elbow level in order to make a right angle with the body of the victim, and then aline their arm at shoulder level with the palm of their hand upwards. para cima.



Fold the other arm near the top of the thorax in order to get to hand's dorsal side close to the cheek of the victim, on your side. Keep the hand of the victim held with their cheek and with the palm of your hand, in order to control the movement of their head.



With your other hand hold their thigh at knee level.



Fold the leg of the victim keeping their foot on the floor.

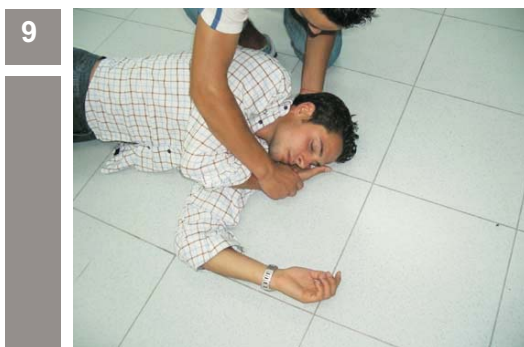
Keeping one hand supporting the head, pull the leg to knee level, rolling the body of the victim to your side.



Adjust the top leg, so that the hip and the knee fold in a right angle.



If necessary adjust the victim's hand on their face to keep their heads in extension, confirming if the victim is breathing well, without making noise.



In case of sudden illness or accident call 112. The call is free and is accessible from anywhere in the country at any time of the day. 112 is the National Emergency number

And it is the same for other emergency situations, such as fire, robbery, etc... The call is answered by a Central Emergency operator, which sends the appropriate means of aid. In particular types of situations the call may be transferred to INEM's Guidance Centre for Emergency Patients (GCEP).

Provide all the information that is requested in a clear and simple manner, to enable a rapid and effective assistance to the victims.

4.2.6 | Algorithm of basic life support

The algorithm of life basic support systemizes what should be done, in the case of individuals with 8 or more years, when any citizen is confronted with a victim.

However, for that these gestures to be applied correctly you need a course in Basic Life Support (BLS).

The scheme we developed on the following page, describes the essential procedures to be carried out.

Evaluation of the safety conditions

evaluate the state of consciousness



shake gently
call out loud

conscious

unconscious

keep calm
inspire confidence
keep aware off:
- any worsening;
- loss of blood;
- dangerouse injuries.



ask for help



make permeable the airway.

evaluated the breathing



estay aware
put in Supine Position



evaluated the breathing
see|listen|feel
[10 seconds]

breathes

doesn't breathes



evaluat the blood circulation



search signals of pulsation

signal of presence of blood circulation

absence of circulation signals

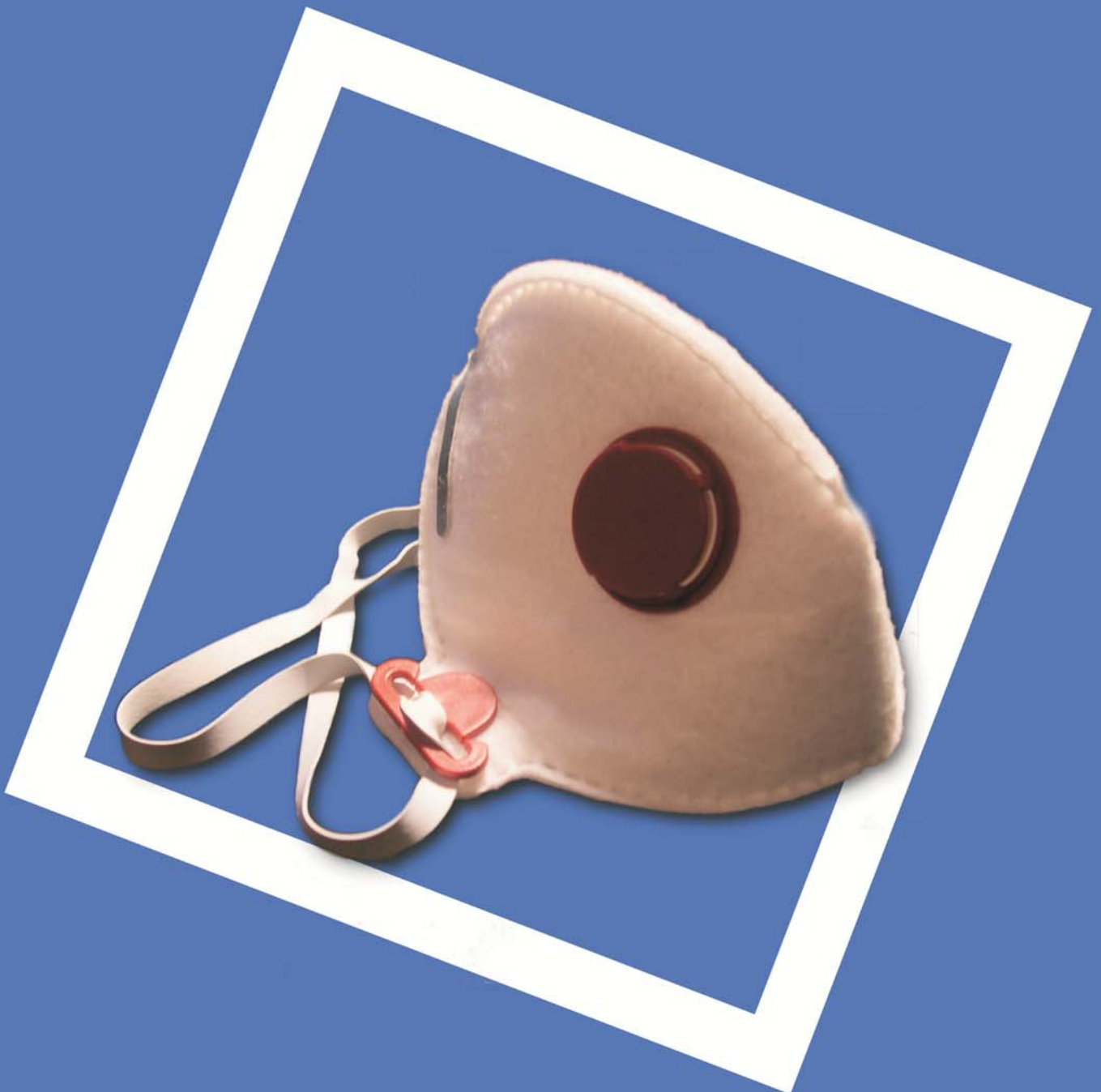
10 insufflation p/ min.
(evaluate 1/1 min.)



15: 2
(frequency of 100/min)



Clearance Technique of the airways



5.1 | Partial obstruction

In the case of partial airway obstruction, the victim begins to cough expressing difficulty in breathing, marked by cyanosis. These signals may arise gradually if the situation is not resolved.

The cough is considered as a natural defence mechanism, in an attempt to keep the airways open.

5.1.1. | Acting

1. If the victim is breathing, do not interfere with his/her natural and spontaneous attempt of trying to expel the foreign object, but encourage him/her to cough;
2. Advise the victim to incline down, because this position helps the strange object to be expelled by the force of gravity;
3. If the victim does not recover, you should act as if there was a total obstruction.

5.2 | Total obstruction

The victim presents an expression of great distress and anguish, which is evident on their face:

- Eyes wide open;
- Mouth open, wanting desperately to talk, without making any sound;
- Normally both hands are tied to the neck, appearing as if they are trying to remove something.



Total airway obstruction > total asphyxia
Full Asphyxia = breathing stopped > (death of the victim))

5.2.1 | Acting

If the victim is getting tired and weak or no longer breathes or coughs:



1. Remove any foreign objects from the mouth of the victim, and put the victim in adjacent position, inclined foreword on your arm, give the victim five shots on the back between the scapulas, with the base of the palm of your hand. If you are lying down, roll the victim to the side, facing you, and hit him/her five times between the scapulas;



2. If the shots between the scapulas are not effective, start immediately to clear the airways through the application of the Heimlich manoeuvre, that is, abdominal compression and by:

- Putting the victim in front of you and placing your arms around the waist of the victim;
- With a fist, place your thumb finger against the abdomen of the victim, in the middle of an imaginary line, between the navel and the xiphoid appendix of the victim. Maintain the other hand with a fist.



Attention

3. Apply five abdominal thrusts in an inward and upward motion- each motion should be paused and firm.

The Heimlich manoeuvre, should ALWAYS be used when there is a total obstruction of the airway, being the victim conscious or unconscious.

If the victim becomes unconscious you should put him/her in supine position (on their back) on hard ground with their head to the side opening their mouth and applying the Heimlich manoeuvre by placing your hands overlapped on the upper side of their abdomen, between the xiphoid appendix and belly button, applying five paused and firm thrusts inward and upwards to up and down (towards the head). Do not squeeze the ribcage.

If the obstruction remains, recheck the victim's mouth and remove any foreign objects eventually present and continue with the five shots between the scapulas and the five abdominal thrusts, in an alternating and cyclical way.

In situations where the victim stays unconscious, proceed with the sequence of evaluation and apply CPR together with the means of unblocking the airway described above.

Thoracic Compressions to clear the airways

The location of the area of application of thoracic compressions, for unblocking airway, is the same ones used during the manoeuvres of CPR – Inferior Portion of the Sternum, above the xiphoid appendix. They can be applied to victims who are conscious or unconscious.

5.3. Exceptional situations on the application of abdominal thrusts

Abdominal thrusts, the manoeuvre of Heimlich should not be applied in:

- Pregnant women;
- Obese Victims, in which you may have difficulty in reaching the abdomen of the victim;
- Children under one year of age.

In all these three cases, the head worker should replace the abdominal compressions by thoracic compressions, as manoeuvre of clearing the airways.

5.4. Problems in applying CPR

In CPR manoeuvres, are not applied properly, they may not produce any result or cause serious injury to the victim making it impossible to reanimate them.

Therefore, important points to take into account when applying CPR manoeuvres:

1. Artificial breathing, when poorly executed, often causes enlargement of the stomach, which is due to air that enters through the oesophagus because of the inhalations due to the poor positioning of the head. If the enlargement is big, there is the possibility of this becoming dangerous, because it can cause regurgitation with vomiting.

If, during the artificial breathing you verify the gastric distension, reposition the head to ensure a smooth opening of the airways. You should avoid inhalations that introduce too much air. The amounts of air inhaled must be required amount in order to reach a normal expansion of the thorax, by positioning the head of the victim in a correct way (by extension);

2.2. Never stop CPR more than 30 seconds. When you carry the victim through a staircase it is difficult to administer CPR effectively. Therefore, with a combined signal, stop CPR, go up or down to the next to level where CPR is re-administered.

The interruption should not, however, exceed 30 seconds. The head of the victim should be transported to a level equal to or lower than the rest of the body;

3. You should not move the victim to a more convenient location until you have stabilized the situation, and the victim is in transportable state or until the necessary means are taken so that CPR does not stop during this transportation;

4. We should never press on the xiphoid appendix as it may cause laceration of the liver causing internal bleeding;

5. Between the compressions, the base of your hand should no longer exert any pressure.

However, it should remain in contact with the thorax wall, under the inferior half of the sternum (The fingers must not touch the thorax of the victim during the compressions and the over lapping of the two hands, helps to avoid it. The pressure exerted by the fingers on the ribs or the pressure exerted laterally, increases the possibility of fractures to the ribs);

6. When the thorax is compressed, should be avoided dry and sudden movements. On the contrary, the compressions should be constant, regular and with rhythm (a cycle is composed of 50 compression and 50 decompressions);

7. Your shoulders while applying the compressions should remain upright above the sternum of the victim. Your elbows should be kept tightened.

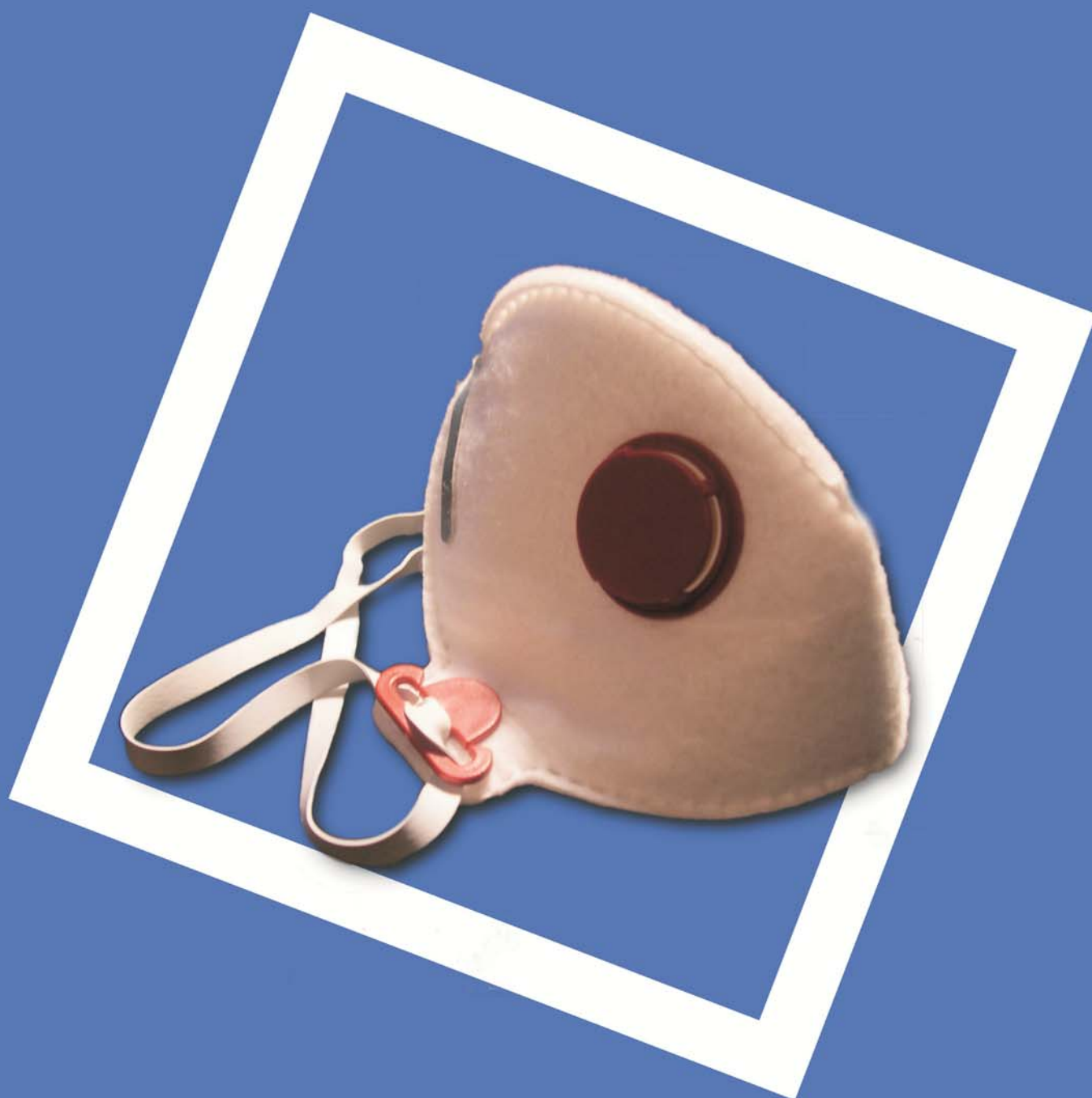
The pressure must be exerted vertically up and down, in the inferior half of the sternum. All these details ensure a maximum effectiveness in compressions, less fatigue for the first aider and a lower risk of complications to the victim.

8. The lower half of the sternum of an adult should drop about four to five centimetres in depth. Superficial compressions are ineffective;

9. The thorax compressions poorly executed can cause serious injuries (fractures of the sternum, fractures to the ribcage, damage the liver, for example).

10. The complications will be minimized if the correct technique of CPR is applied.

Haemorrhages



6.1 | Definition

Haemorrhaging happens when blood leaves the blood vessels and is lost. The loss of blood can provoke serious complications in the individual, such as the state of shock, irreversible injuries to the principal organs, or even death.

Haemorrhage can be classified in relation to its source, through three types:

- Arterial haemorrhage (arteries)

Result from the disruption of an artery. The blood comes out in a discontinuous jet simultaneously with each contraction of the heart. It is a very abundant haemorrhage and difficult to control.

- Venous Bleeding (veins)

It follows from the disruption of a vein. The blood comes out on a regular mode, subject to a small pressure, but also abundant. Not as dramatic as the arterial but can be fatal if not detected. These are almost always easier to control.

- Bleeding Capillaries (capillary vessels, arterioles and venules)

This occurs due to the collapse of tiny capillary vessels in a wound. Where the blood comes out slowly.

These haemorrhages are easy to control and can stop spontaneously.

6.2 | Classification of the haemorrhage relatively to its location

6.2.1 | Classification

The haemorrhages are also classified relatively to their location and can be divided into:

- External haemorrhage

The external haemorrhage can be observed and is easily recognized.

- Internal haemorrhage

The recognition of an internal haemorrhage and its identification is more difficult.

This type of haemorrhage may occur due to situations of trauma or disease.

The internal haemorrhages are also divided into:

- Visible

When blood, is exteriorized by the natural orifices of the body (mouth, nose, ears, anus, vagina, etc.).

- Invisible

When there is no release of blood to the exterior. There is suspicion of internal haemorrhage due to the causes of injury or lesion and the signs and symptoms that the victim may present.

6.2.2 | Signs and symptoms of haemorrhages

The most obvious signs in the victim are:

- bleeding;
- Breathing quickly, superficially and with difficulty;
- Weak and rapid pulse;
- Hypothermia;
- Noise in the ears;
- Anxiety and restlessness;
- Cold Skin;
- Abundant Sweating;
- Intense paleness and discoloured mucous;
- Thirst;
- Dizziness and unconsciousness (state of shock).

6.2.3 | Methods of controlling bleeding

6.2.3.1 | Direct pressure



Also named as direct manual compression if there is no counter indication, which is the most effective method in the control of bleeding.

How to act:

- Compress with a sterile compressor or with a clean cloth;
- Never take the first compressor off;
- Put other more compressors on top.

6.2.3.2 | Indirect pressure



A pressure made at the point of compression of the arteries, at the base of the members, leads to the control of haemorrhages in the irrigated areas of the artery in question, preventing the progression of the blood loss despite the interruption caused by indirect pressure. This method is used only if there is a suspicion of a strange blunt object or the suspicion of a fracture.

It is therefore an alternative method to direct compression, when this can not be done.

6.2.3.3 | Garrotte

The garrottes should be used mainly in cases of amputation or crushing of the members and can only be placed on the arm or on the thigh.

The Garrotte should only be used when other methods are not efficient or if there is just one first-aider and the victim requires other important cares.

How is a Garrotte made?

1. Use resistant and wide cloth. Never use wire, rope, or other materials that are very thin or narrow which might injure the skin.
2. Role the cloth around the upper arm or leg, just above the injury.
3. Give a half knot.
4. Put a small piece of wood in the middle knot.
5. Make a full knot above the wood.
6. Twist the piece of wood in order to stop the haemorrhage and firmly hold it in place.
7. Note with a pencil, lipstick or coal on the forehead or anywhere else visible on the victim, the letters "G" (Garrotte) and the time of its application.
8. Don't cover the Garrotte.

Untie the Garrotte, gradually, every 10 or 15 minutes. If the haemorrhage has stopped, put the Garrotte back in the place so that it can be retightening again if necessary.

Attention

If the end of the patient's fingers becomes cold and Violet, loosen the Garrotte a little, enough to restore circulation. Then retighten it in the case of continuous haemorrhage. While loosening the Garrotte, compress the bandage on the wound.

6.2.3.4 | Elevation of the member



On the wounds or injuries of the member, the first aider should apply a compress and elevate the member if there is no fracture. The force of gravity, contrary to the Blood flow, helps to stop bleeding.

6.3 | Internal haemorrhages

The application of cold in the affected area as well as its complete immobilization may reduce the bleeding process. However, the excess of cold could lead to serious skin injury. The first-aider should prevent and help the shock.

Do not give the victim anything to drink, because this may prevent that the victim is immediately cared at the hospital.

With immense care transport the victim to the nearest hospital to avoid aggravation. Never leave this type of victim. Check at every moment, the state of consciousness, pulse, and ventilation and, if unconscious, maintain the airways clear.

6.3.1 | Some examples of haemorrhages

6.3.1.1 | Nose haemorrhage

How to act:

- Sit the patient, with their head in a normal position and press their nostrils for five minutes, avoiding blood going to the throat and being swallowed, causing nausea;
- Compress the nostril that bleeds and apply cold compressors in the area;
- After a few minutes, loosen the pressure slowly and don't allow the victim to blow their nose;
- If the bleeding does not stop, put a piece of gauze inside their nostril and a piece of cold towel on their nose. If possible, use a bag of ice;

If the bleeding continues, the help of health professionals may be necessary.

6.3.1.2 | Lung haemorrhage (Haemoptysis)

Symptoms:

After an excessive of cough, blood comes out of the mouth through spurts and is bright red.

How to act:

- Place the patient on the bed in a restful position with his/her head lower than their body;
- Do not allow them to speak, keeping them quiet;
- Find a health professional immediately.

6.3.1.3. Stomach haemorrhages

Symptoms:

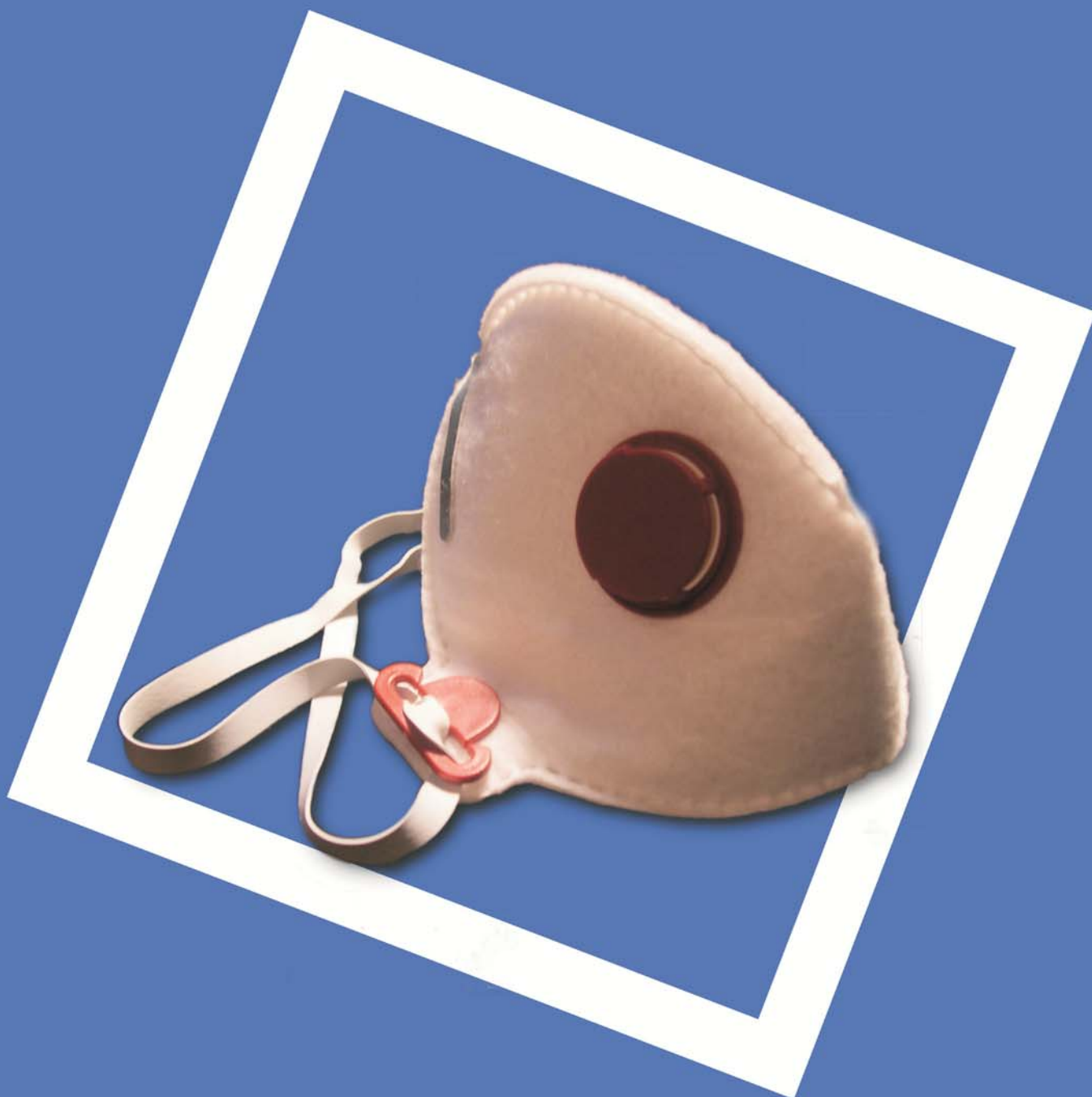
Before the loss of blood the patient usually presents the following:

- Sickness;
- Nausea;
- While vomiting, blood is released like coffee remains.

How to act:

- Lie the patient down without a pillow;
- Do not give anything to the victim through their mouth;
- The care by a health professional is essential.

State of shock



7.1 | Definition

Shock is the inability of the cardio-circulatory system to reach the vital organs with the amount of oxygen and nutrients required.

Shock is due to an inadequate perfusion (irrigation of blood) to the tissues of the body caused by severe changes of the cardio-circulatory apparatus.

Independently of the mechanism that triggers the shock, there is a chain reaction that leads to a decline of the cardiac function, inadequate distribution of blood in the tissues, associated, as well to poor breathing, leading, therefore, more or less serious changes, of the functioning of the central nervous system.

In all cases of serious injury, major internal or external bleeding, shock may occur. The most frequent, being hipovolemic shock.

The follows list of situations which may provoke shock:

- Severe burns, serious or extensive injuries;
- Crushing;
- Loss of blood;
- Accidents caused by electric shock;
- Poisoning by chemical products;
- Heart attack;
- Exposure to extreme heat or cold;
- Severe pain;
- Infection;
- Food intoxication;
- Fracture.

7.2 | Signs

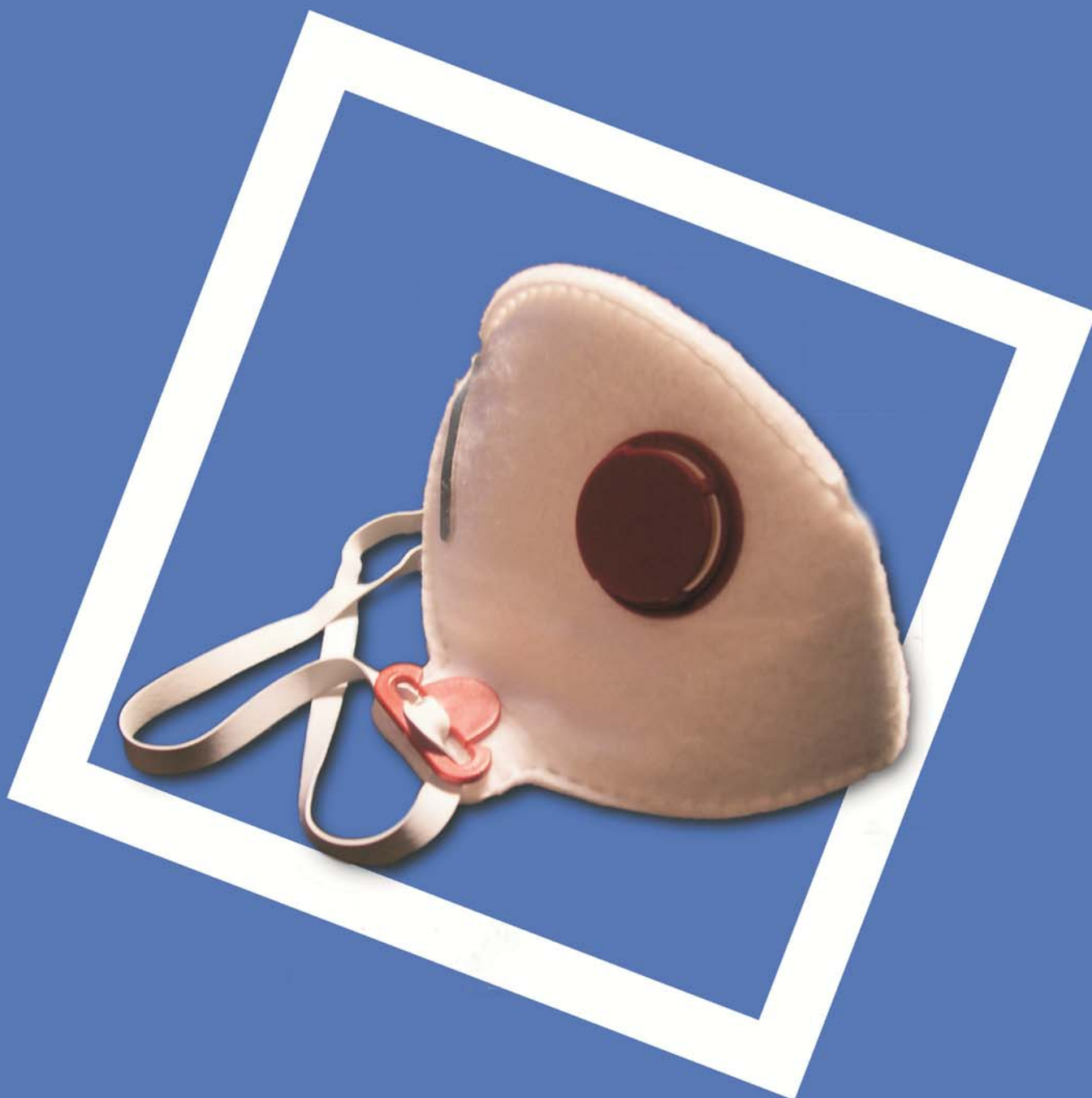
- Skin: cold and sticky;
- Sweat: on the forehead and on the palms;
- Face: pale, with expression of anxiety;
- Cold: the victim complains of cold, and may feel tremors;
- Nausea and vomiting;
- Breathing: superficial, rapid and irregular;
- Thirst, restlessness and mental confusion;
- Vision: cloudy;
- Pulse: low and fast;
- He/she may be partially or totally unconscious

7.3 | How to act

While waiting for the arrival of medical assistance or the transportation of the victim is provided, the following measures must be taken:

- A quickly examination to the victim;
- Avoid the causes of the shock, if possible (e.g. control of bleeding);
- Keep the victim laid down with their legs high at an angle of 30° degrees, in the case of no fracture;
- Loosen the clothing which is tight around the neck, the chest and waist;
- Remove through the mouth, if there is any, dentures, gum, etc...
- Maintain breathing;
- Keep the head faced to the side;
- If possible, keep the head lower than the trunk;
- Keep the victim warmed, using blankets, quilts etc...
- Do not administer.
 - Alcoholic beverages to the victim;
 - Liquids to an unconscious person.

Damage



8.1 | Definition

Damage caused through the action of heat, cold, chemicals, electric current, radioactive emissions and biological substances (animals and plants).

Examples of burns:

- Contact with direct flame, or fire;
- Contact with ice or frozen surfaces;
- Hot Vapours;
- Hot or boiling Liquids;
- Super-heated or incandescent solids;
- Chemicals (acids, caustic soda, phenol, naphtha, etc.).
- Radioactive emissions;
- Infrared and ultraviolet radiations (in laboratory equipment due to the excess of sun radiations);
- Electricity;
- Contact with animals and plants. Ex: animals, larvae, jellyfish, and some species of frogs; plants: Nettle

8.2 | Severity of the burns

To evaluate the severity of the burns it is necessary to take into account:

- 1 - The cause of the burn;
- 2 - The extent of body surface burned;
- 3 ° - The depth of the burn;
- 4 ° - The place where the victim was burned;
- 5 ° - Age of the victim.

8.3 | Causes of burns

The burns may arise from various types of accidents:

- burns by heat

The heat may be wet, such as steam or boiling water, or dry such as the heat of fire or any hot object, metal, glass, etc...

- Chemical burns

Are common in industries, which use chemicals that may cause serious burns: acid (hydrochloric acid and sulphuric acid) and alkali / bases (caustic soda).

- Electrical Burns

Electricity burns, not only at the point of contact, while entering the body, but also, during its trajectory and output point. In addition, the so called 'electrical shock "may cause respiratory failure or a serious cardiac change that has the same effect as the cardiac arrest.

- Radiation burns

The most common radiations are ultraviolet rays (which exist in sunlight), X-ray's and the ones produced by radioactive substances. o efeito que a paragem cardíaca.

- Queimaduras por radiações

As radiações mais comuns são os raios ultravioleta (que existem na luz solar), os raios X e as produzidas por substâncias radioactivas.

8.4 | Extension of burning

To determine the extent of body surface area burned, you should use the rule of nines for body areas.

The more extensive the area is burned, the greater is the severity.

The risk of surviving is lower in large burns. An area considered badly burned when you verify:

- In a child, more than 10% of their body surface area is burned;
- In an adult, over 15% of their body surface area burned.

To give a rough idea of the area burned you can use the "rule of nines": *

- Head - 9% of body surface;
- Neck - 1%;
- Upper left member - 9%;
- Upper right member - 9%;
- Thorax and abdomen (front) - 18%;
- Thorax and lumbar (back) - 18%;
- Lower left member - 18%;
- Lower right member - 18%;
- (the area of the genitals - 1% - included in the thorax and abdomen).

8.5 | Depth of burns

Burns can be classified according to their depth in three levels, first grade, second grade and third grade.

- First Grade: lesion of the surface layers of the skin.

Signs and symptoms:

- Redness;
- Local unsupportable pain;
- There is no formation of bubbles EX: those caused by sunlight.

- Second Grade: lesion of the deeper layers of the skin.

Signs and symptoms:

- Bubbles start to form;
- Detachment of layers of the skin;
- Local pain and burning of various intensities.

- Third grade: injury of all layers of skin.

Signs and symptoms:

- Exposure of deeper tissues, which may reach the bone. The skin turns brown or black, can be presented sometimes without pain.

1st, 2nd, 3rd Degree Burns may be present in the same patient.

(* values only for Adults)

8.6 | Location of burns

- Airway Burns

The airway burns are always serious, indicated through burns on the face, especially around the mouth. Generally, the victim coughs, expelling particles of coal and blood, and has difficulty breathing, due to the injury of the larynx presenting bubbles on lips and nostrils.

- burns of the hands and feet

Burns of the hands and feet, or at the level of any articulation, are also severe, due to the possibility of the loss of movements.

- burns with injuries or fractures

Burns with complicated fractures or wounds are always serious.

- Burn on the genitals

Burns of the genital organs are always serious.

8.7 | General Emergency Cares

Prevent the state of shock;

Control pain;

Avoid contamination.

- The first care will be to maintain the airways open and assist breathing;
- The application of a band avoids contact with the air, which reduces the pain;
- Sterile bands should be used to prevent contamination of the burning surface;
- If the extension of the burn is large you should cover the victim with sterile sheets, or clean sheets, as an alternative;
- You should not apply any type of fat. Only apply cold and wet compressors to relieve the pain;
- On burnt fingers, armpits, etc., when two areas of the skin are in contact with each other, you must separate them through the use of bandages to prevent that they stick together.

8.8 | Specific emergency care

8.8.1 | Thermal burns

Examples of thermal burns, are caused by:

Hot liquids, fire, steam, sunlight rays, etc...

How to act

- Lay the victim down;
- Place the head and thorax of the victim lower than the rest of the body. Place his/her legs, if possible, at an angle of 30 degrees;
- If the victim is conscious, give him/her enough liquid: water, tea, coffee, and fruit juices. NEVER ADMINISTER ALCOHOL;
- Place a clean cloth, soaked in physiological saline, to protect the injury and maintain body temperature, taking the care to also moisten the location of the burn;

Search immediately for health professionals: moving the victim to a hospital, if possible by ambulance.

In small burns

- Wash the burn with cold clean and running water, for about 15 minutes;
- DO NOT touch the injury;
- DO NOT perforate the bubbles;
- DO NOT apply solutions or ointments on the burn.

8.8.2 | Chemical burnings

How to act:

- Wash the affected area with plenty of water;
- If the burn is caused by chemical powder, remove all the powder off the skin, and remove clothing and then apply Physiological saline or running water;
- Proceed as in thermal burns, preventing shock and pain;
- Cover with gauze or a clean cloth;
- Move the victim to a hospital.

What you should not do:

- DO NOT apply ointments, fats, sodium bicarbonate or other substances in external burns;
- DO NOT remove foreign objects or fat from the injuries;
- DO NOT puncture existent bubbles;
- DO NOT touch the burned area with the hands.

All burns must be examined by a doctor or nurse, except only in cases where the skin is red and it is just a small burnt area.

8.8.3 | Eyes burns

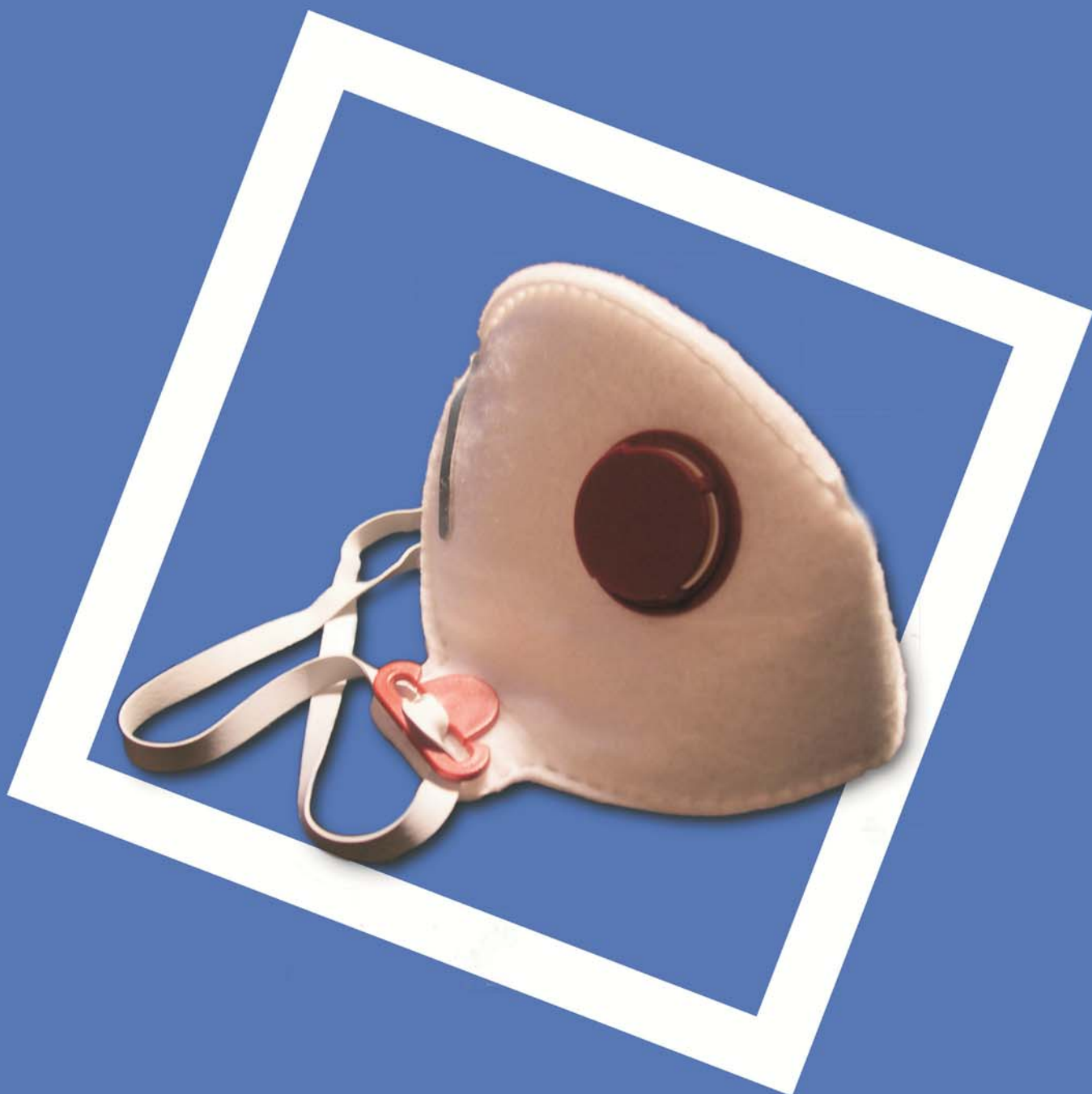
Definition

They can be produced by irritating substances - acids, alkalis, hot water, steam, hot ash, explosive powder, molten copper, direct flame.

How to act:

- Wash your eyes with plenty of water or, if possible, with physiologic saline, for several minutes;
- Do not rub your eyes;
- Apply eye drops
- Seal eyes with a clean ice cold cloth or gauze;
- Consult a health professional as soon as possible.

Fractures



Introduction

A fracture is an alteration of the continuity of the bone, caused by a very strong punch, a fall or smash.

The exposed fractures require special cares, therefore cover the locale with a clean cloth or gauze and seek immediately medical assistance.

9.2 | classification of fractures

Fractures can be classified into three types:

Closed fracture - when the bone broke, but the skin is not punctured.

Expose fracture - When the bone is broken and the skin is punctured.

Complicated Fractures of wounds – the existence of wounds which are not related to the fracture, and when the broken bone has not punctured the skin.

Signs and symptoms:

- Pain or large sensitivity of a bone or joint;
- Inability to move the affected zone, in addition to numbness or "Tingling" of the region;
- Swelling and violet toned skin, accompanied by an apparent deformation of the injured member;
- Crackling of bone tissue - the abnormal movement of protruding bones due to a fracture produces a sensation that you can hear and feel;
- Ecchymosis and hematomas;
- Exposure of protruding bones.

How to act:

- Ask for medical assistance and, in the meantime, keep the person calm and warm.
- Make sure that the injury did not block the blood circulation;
- Immobilize the injured bone or joint with bandages. The bandages should have sufficient length to cover the joint above and below the fracture.

Any rigid material can be used such as: splints, boards, stakes, cardboards, metal rods or even thick and folded a magazine or a newspaper. Use cloth or other soft material to cushion splints and avoid damages to the skin.

The splints must be placed with bandages or loose strips of cloth, at least on four main points:

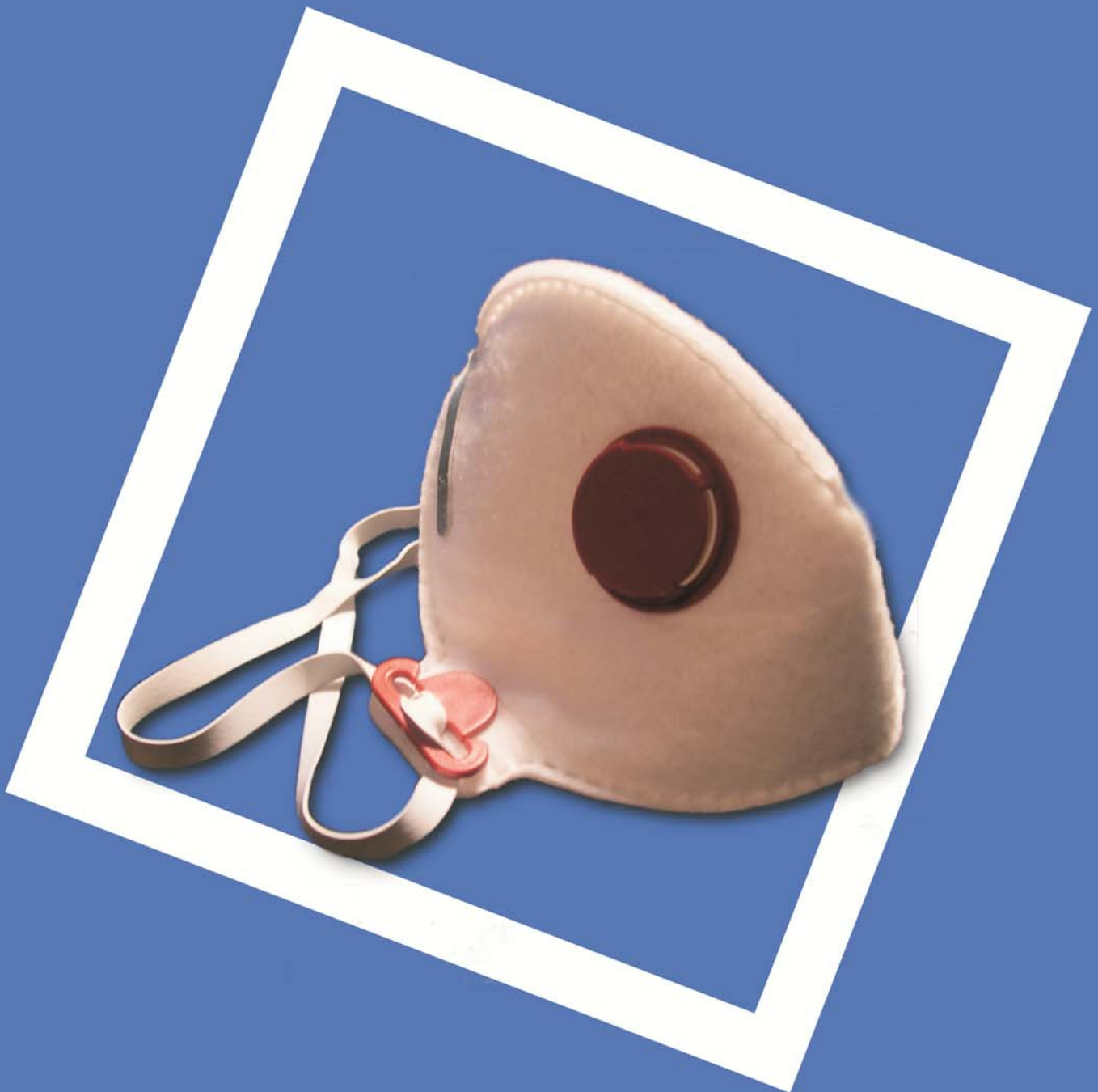
On the **BOTTOM** of the articulation, below the fracture;
ABOVE the articulation and fracture.

- Keep the affected areas in a higher level than the rest of the body, and apply ice packs to reduce the swelling, the pain and the progress of the hematoma.

What must not be done?

- Do not move the victim until you have immobilized the target area;
- Do not give any food to the wounded individual or even water

Soft tissue injuries



10.1 | Definition

Any abnormal disruption of the skin or the body surface is called an injury. Most of these injuries affect the soft tissues, such as skin and muscles. The wounds may be opened or closed. Open wound is when there is an opening of the coetaneous surface. In a closed wound, the damage of the soft tissue occurs below the skin, but there is no loss of continuity on the surface. In these types of injuries affecting tissues under the skin, without that this one has any change in its continuity. They are very painful, cause local edema (swelling) and are accompanied by local blood vessel traumas, causing internal haemorrhages;

- Ecchymosis or bruises, when the blood vessels affected are the capillaries;
- Bruising, when there is damage in vessels of larger size.

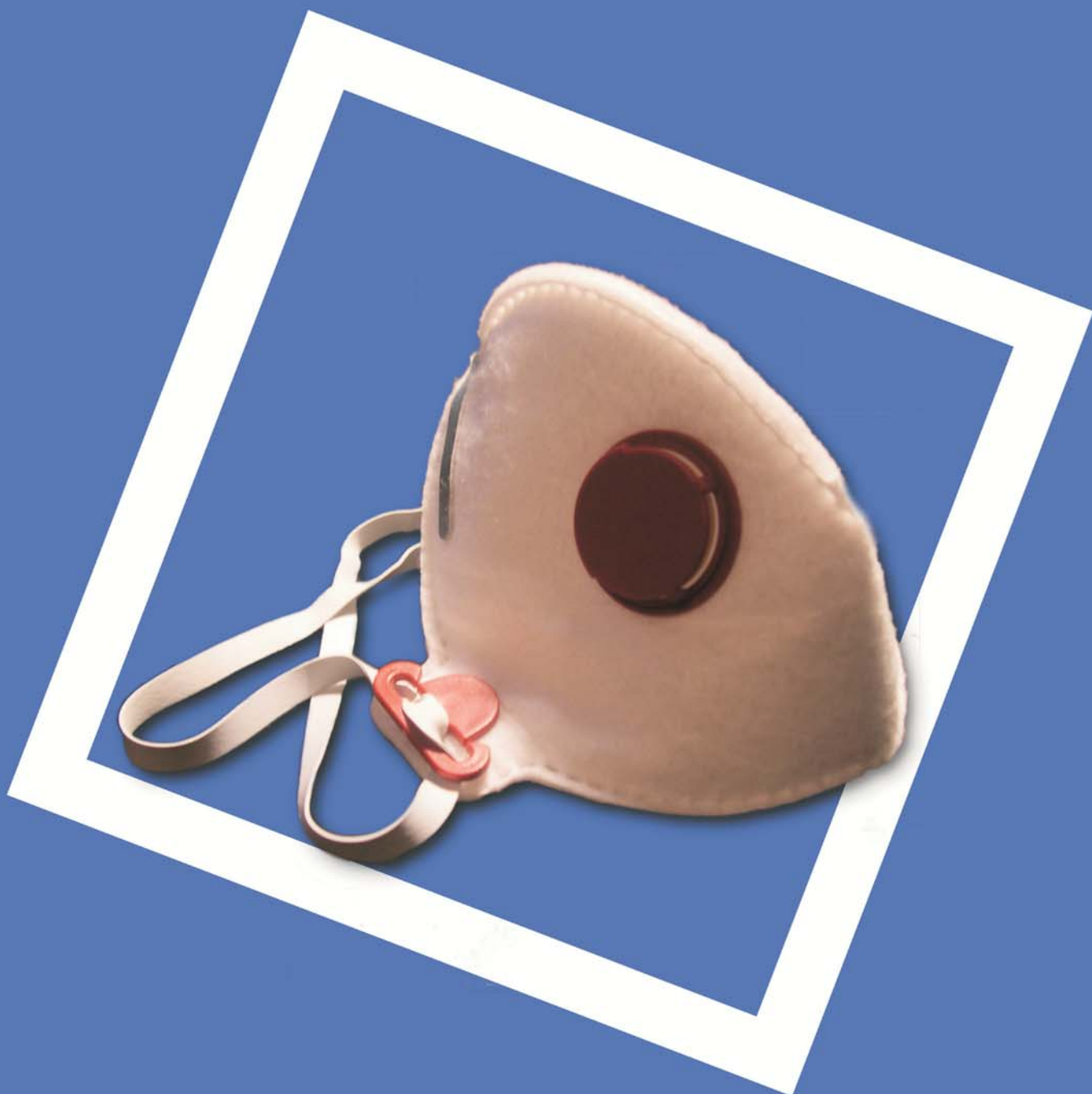
10.2 | How to act

- Remove the clothes covering the injury so that you can have a better view of the injured area. Remove them with minimal movements. It is better to cut them than to try removing them in one piece, because the mobilization can be very painful and cause injury and contamination of the tissues;
- In edema and ecchymosis cold (ice) should be applied on the spot, to help to diminish the swelling, bleeding and pain;
- In the case of extensive bruising, besides the application of cold, you should immobilize the zone to prevent the worsening bleeding;
- You should not touch the wound;
- If the wound is dirty, or even if it was caused by a dirty object, it should be cleaned with the use of physiological saline or clean water;
- Reduce the probability of contamination of a wound, using cleaned and sterilized materials to make for initial cleaning;
- All wounds should be covered by a sterile compressor. This compressor should be placed over the wound and fixed firmly with a bandage;
- Control the haemorrhage;
- If the injury is in the abdominal region of the victim and if there is any removal of organs (abdominal evisceration), the first-aider should cover the viscera with wet compressors and not try to place them into the abdomen;
- In some cases, parts of the victim's body may be partially or completely amputated. Sometimes, it is possible, by means of micro-surgical techniques, to re-implant amputated parts. The sooner the victim arrives to the hospital with his/her amputated member, the better. Conserve the amputated part, protected inside of a plastic bag with crushed ice. The cold will help preserve the member. Do not allow the amputated part to come into direct contact with the ice. Do not wash or place cotton in any surface;
- Look for signs and symptoms of shock.

What we should not do:

- Strange objects must not be removed (knives, splinters of wood, pieces of glass or hardware) that are stuck in the wound. The attempts to remove foreign objects can cause severe haemorrhages or even harm more the closer nerves and muscles.

POISONING



11 | Introduction

Some products act like poisons, spreading across the body through the blood. Referred to as acute poisoning.

Such poisoning can result in nausea, vomiting, headache, dizziness, respiratory disorders and, in serious cases, loss of consciousness and respiratory failure, sometimes causing death.

11.1 | Signs and symptoms

- The smell of poison on the individual's breath;
- Change of colour on lips and mouth;
- Pain or sensation of burning in the mouth and throat;
- Glasses or packages of drugs or open chemicals in the possession of the victim;
- Evidence, on the mouth, that he has eaten poisonous leaves or fruit;
- Sudden state of unconsciousness, confusion or sudden bad feeling, when in direct contact with the poisoned victim;

In case of poisoning, call the Centre for Information Ant poison (CAPI) of the INEM: 808 250 143

11.2 | Information to collect

- Who - age, sex, pregnancy and so on;
- What - product, animal, plant, mushroom;
- How much - quantity of product, exposure time;
- When - how long;
- Where - at home, in the field, in the workplace, etc;
- How - in an empty stomach, with food, alcoholic drinks and so on.

11.3 | Some tips to avoid accidental poisoning

- Explain to children the risk of taking drugs that they don't need and the danger of trying or tinkering with dangerous products;
- Do not take or give drugs recklessly and do not exceed the prescribed doses;
- Store medicines and other chemicals (cleaning products, pesticides, paints, oil, diluents) away from children;
- Do not apply arsenic, naphthalene or other pesticides in places accessible to children;
- Do not use empty containers to store other products, store them in their real package;
- Close the containers and store the products immediately after use;
- Do not give empty containers to children to play;
- Do not put products of domestic use near food or beverages;
- Keep alcoholic beverages safety stored;
- Do not forget that perfumes, cologne water and after-shave lotions may contain alcoholic compounds.
- Know the meaning of symbols that exist on labels;
- Read carefully the application instructions of products and apply the product according to safety instructions, especially when pesticides are used; corrosive substances; stain strip and varnish;

- Do not leave abandoned, the packages of unclosed pesticides, empty jugs that still contain pesticides or liquid remain;
 - Close the gas taps after use, and maintain the premises in good state and, if possible with security devices;
 - Do not have gas installations in the bathroom;
 - Do not have toxic plants at home or in the garden;
 - Do not let children eat berries or seeds of unknown plants;
 - Do not cook or ingest fresh mushrooms, if you do not know how to distinguish them;
 - Staying calm is very important, do not rush but do not waste time either.
- Keep the number of CAPI near the phone: 808 250 143

11.4 | What you should not do

DO NOT cause vomiting if the victim is unconscious or has swallowed any of the following:

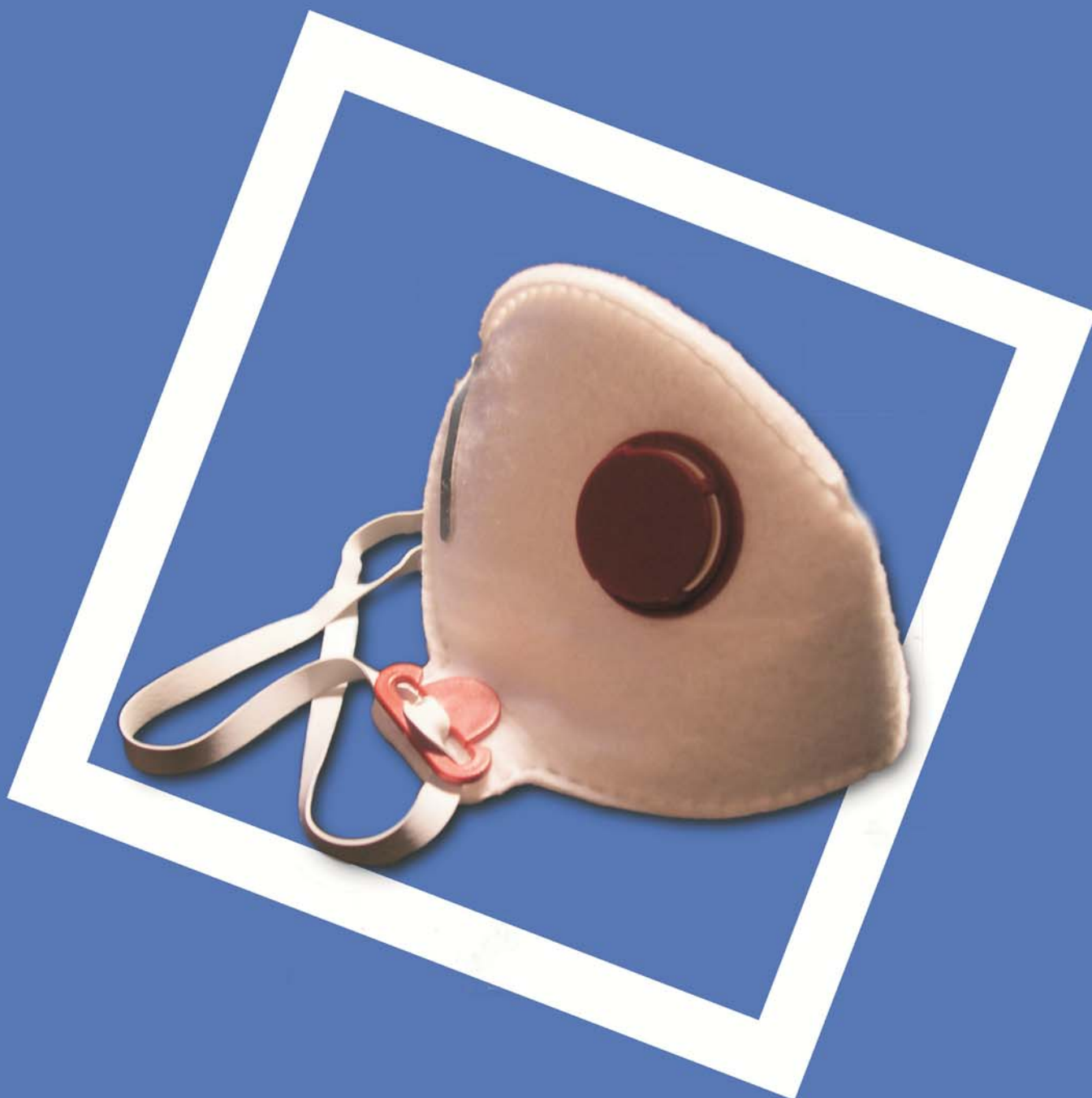
- Caustic Soda;
- Fuel products (kerosene, gasoline, lighter fluid, etc...);
- Acids;
- Lime water;
- Ammonia;
- Products for domestic use;
- Hypochlorite.

Do not administer to the victim alcohol!

Do not let the poisoned individual walk!

Do not administer oil to the poisoned victim!

Skull-brain trauma



12.1 | Definition

Except the ones with less gravity, injuries to the head always require immediate attention of a health care professional, except the less severe ones.

These injuries include head trauma to the scalp, skull and brain. Accidents with strong blows to the head are usually accompanied by brain haemorrhages, which, if not attended to urgently, may cause serious injuries and even death.

The skull-brain trauma (SBT) affects all the systems of the body.

12.2 | Signs and symptoms

The most common signs and symptoms are:

- Loss of consciousness;
- Dizziness;
- Headache;
- Irritability;
- Disorientation;
- Nose, mouth and ear bleeding;
- Abnormalities in the diameter of the pupils;
- Convulsions;
- Ecchymosis around the eyes and behind the ears;
- Skull fractures;
- Changing of the respiratory rhythm or even respiratory failure;
- Missing or decreasing sensitivity of the upper and lower limbs.

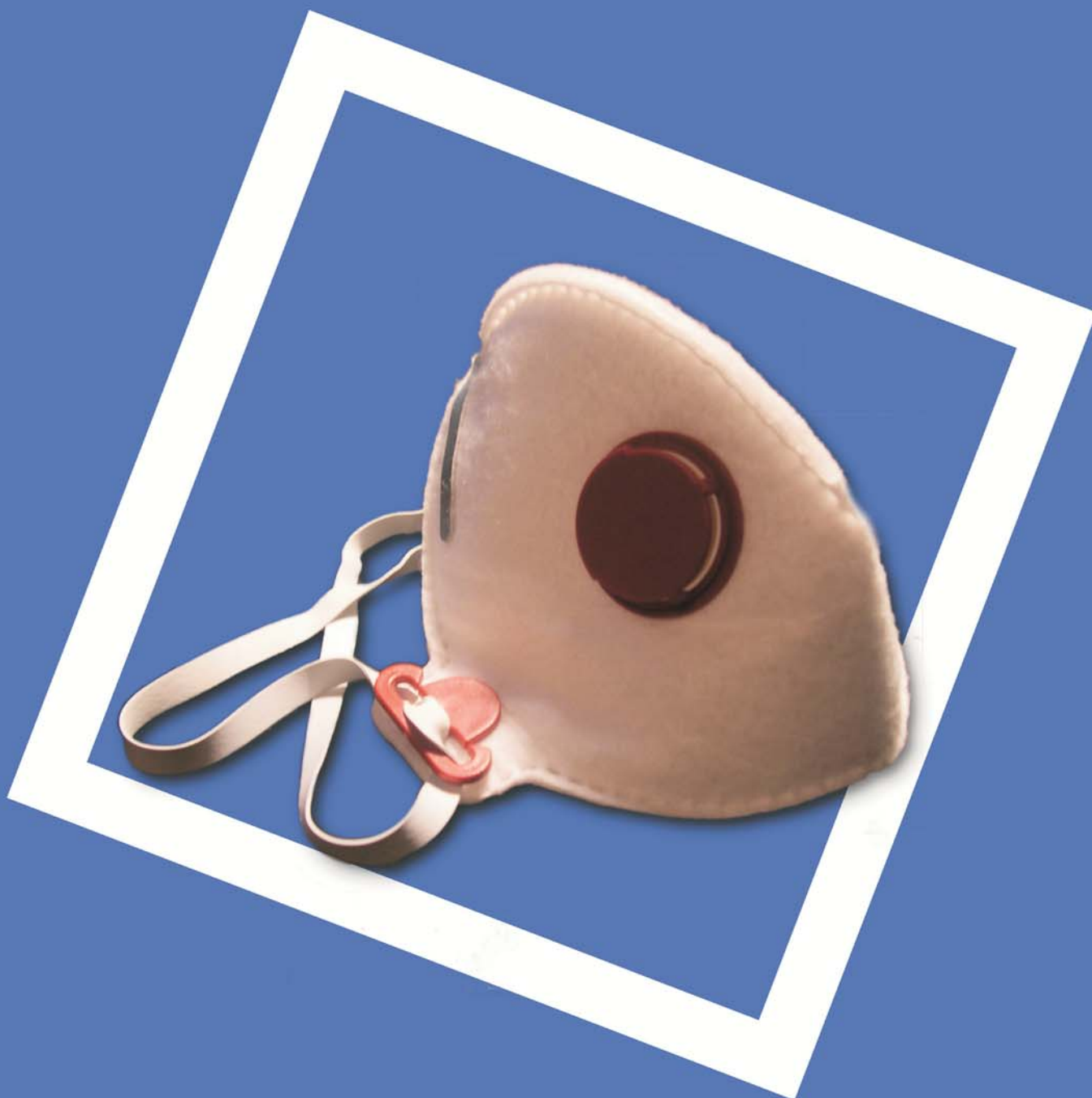
12.3 | How to act

When dealing with a SBT victim, the first-aider should presume that he may also have an injury in the cervical spine, until the contrary is proved. The transportation of victims should be performed on a rigid gurney, with the head and neck kept in complete alignment with the axis of the body. We should also immobilize the head and neck with cervical mobilization necklace equipment.

The emergency care required while attending a victim with cranial or brain injuries are as follows:

- Keep the airways always open;
- Control any external bleeding by compression;
- If the bleeding is in the nose, mouth or in the ear, turn the head of the victim to the side that is bleeding. If he/she releases through the ear a clear and colourless liquid, let it out naturally, by turning the head by to side;
- If you suspect of injuries linked to cervical spine:
- Immobilize and transport the victim to a hospital to receive constant observation of his/her vital signs;
- Lift the head of the gurney 30°C while the victims lay on a hard surface;
- Keep strict surveillance of the victim's state of consciousness;
- In case of material immobilization, the victim should not be moved, except if we are confronted with a situation of immediate life danger (cardiac arrest) or the safety of the individual is in question (in the case of fire)

Spinal cord trauma



13.1 | Definition

The lesions to the spine are very common problems in car accidents. These victims, if inappropriately attended by individuals, who do not have the knowledge's of the techniques for rescue and immobilizations, may have their injuries aggravated or permanent neurological damage. Immediate treatment, shortly after the accident, is essential. Improper handling may cause greater damage and loss of neurological functions. Any victim of a car accident, fall, or any other cranial or cervical trauma, should be considered carrier of an injury to the spine, until that this possibility is ruled out.

13.2 | Situations that may provoke spinal cord injury

- Traffic Accidents;
- Diving accidents;
- Fall or high jumps;
- Trauma above the clavicles;
- Injury by burying;
- Electric shock;
- Fire Weapons;
- Multi- traumatic situations;
- Unconscious victims due to cranial trauma;
- Direct trauma of the spine.

13.3 | Signs and symptoms

The most common signs and symptoms of injury to the spine are:

- Local pain;
- Inability to move;
- Loss of sensitivity and touch in the upper and lower limbs;
- Sensation of tingling limbs;
- Deflection of the spine;
- Involuntary release faeces and urine (incontinence of the sphincters ");
- Difficulty in breathing;
- Alteration of vital signs.

13.4 | How to act

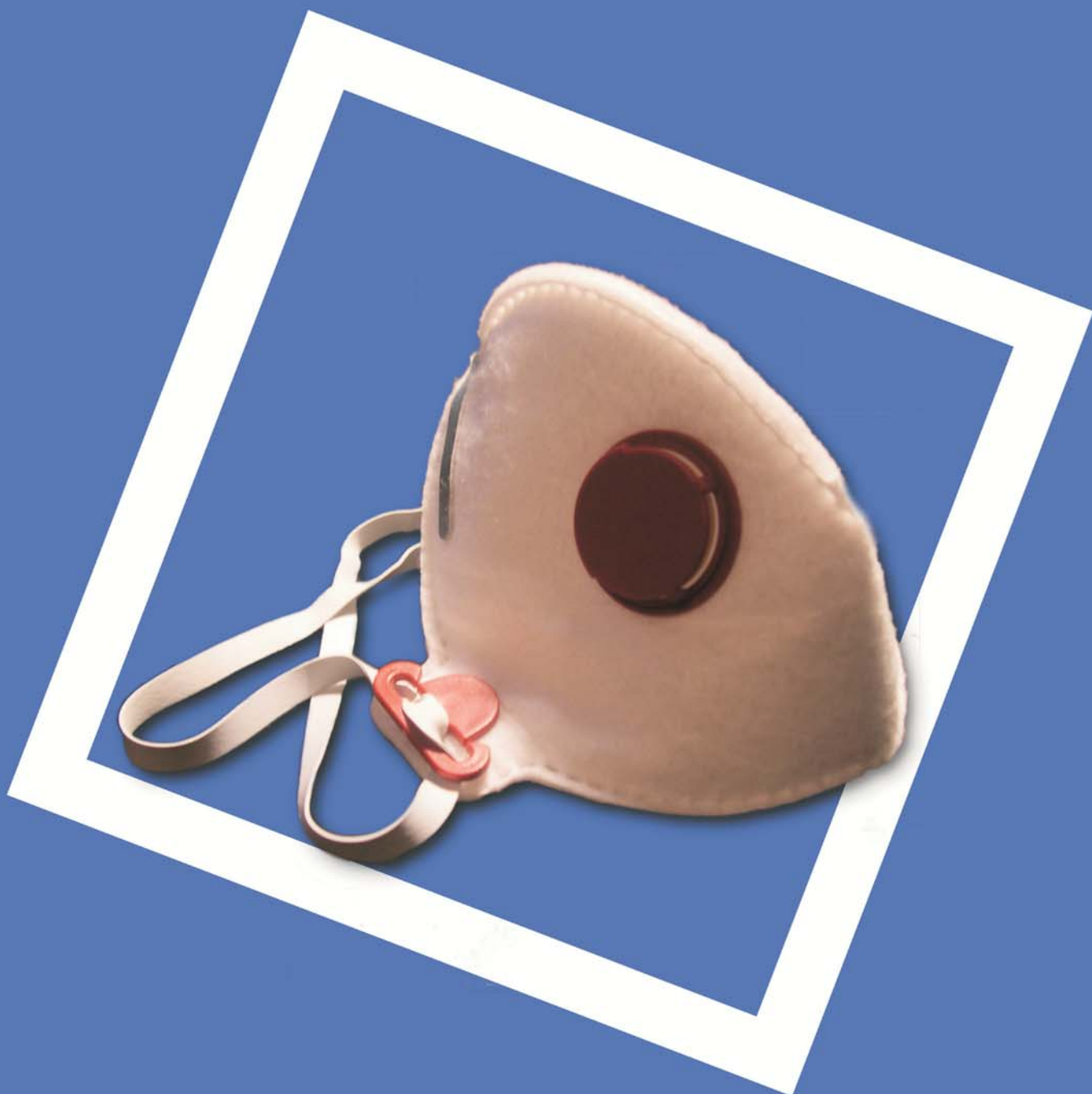
Conscious victims' should be guided in order not to move their head, maintaining an alignment as perfect as possible between the head and neck (this alignment is done through the following points of reference: tip of the nose, navel and feet).

It is therefore important to follow some fundamental rules during the pre- hospital treatment of a victim suspected of having a trauma in the column:

- All the unconscious victim after an accident should be treated based on the assumption that he/she has a lesion to the spine;
- In the case of conscious victims, presenting signs and symptoms of skull-brain trauma, should always suspect that there is an injury to the spine;
- Victims with suspected trauma of the spine should never be mobilized, unless there is a threat to the victim and they need to be moved (fire, collapse, explosion, etc.) or if the first-aider has to start manoeuvres of resuscitation or if he is trying to control severe haemorrhages;

- To initiate any movement of the victim, you should in the first place, perform traction of the spine, followed by gradual alignment between the nose, navel and feet;
- Keep monitoring vital signs (these victims may come into respiratory failure, due to paralysis of the thorax muscles);
- Do not forget to always perform traction, over the column, and put the cervical collar or before lifting the victim. In the case of executing a roller for the supine position, the cervical collar should only be placed after the execution of this manoeuvre;
- Never execute any lifting unless there are four adult elements present;
- The first-aider at the scene with more knowledge of these techniques should stay at the head of the victim, being responsible for the traction and alignment, commanding the whole operation;
- The victim should be placed on a vacuum stretcher, type 'coquille' or rigid plane;
- Finally transportation should be initiated and this should be done in a very calm and smooth manner.

Techniques for mobilization of traumatised victims



14 | Introduction

The removal or movement of an injured person should be made with the maximum care, in order not to aggravate the existing injuries.

There are two techniques presented for mobilization of traumatised victims, the Roller and the lift.

14.1| Roller

This technique requires at least three elements but the ideal is four.

It can be applied in the mobilization of unconscious, traumatized victims, without the suspicion of having pelvic or waist injury (these should always be mobilized as if they have cervical lesion).

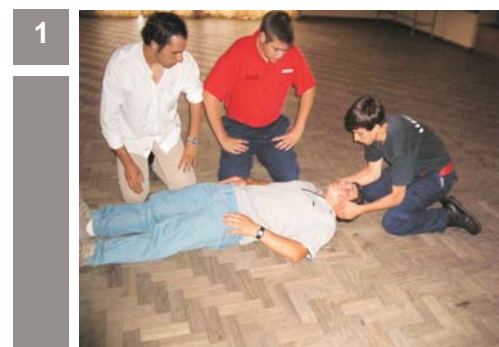
You must avoid unnecessary movements.

Choosing the correct technique for lifting e victims in supineposition in cases of:

- Fracture of the pelvic waist;
- Eviscerations;
- piercing objects;
- Multi-traumatic laterals lesions.

14.2. | How to act

1 - The head of the rescue team will proceed to the immobilization, the traction and alignment of the cervical spine, along the axis of the nose, navel and feet. He/she will order all the movements to be followed, always maintaining attention on the alignment of the victim, during and after rolling, until they have reached the location of treatment.



14.2.1. | Victim in supine position

The second rescue assistance will laterally place themselves near the victim, by kneeling on the ground, in front of the victim's body placing the spinal board between them, while tilting and touching their thighs, so that the top stays at the same level as the head of the victim; the third and fourth elements of the team, on the opposite side, will place the members of the victim's body by the victim's side, in order to allow rolling and, always on the command of the head of the team. Also under the orientation of the head rescuer and with the help of a second individual, who may be a citizen on the scene who will roll the body forwards you, maintaining the alignment and immobilization of the spine, so that the second individual will adjust the spinal board to the dorsal region of the victim;



Meanwhile, the second individual will reduce the inclination of the spinal board, the third and fourth elements will roll up the body of the victim on to the board, accompanying this movement, until the victim is completely laying horizontally;



Under the command of the head rescuer, the victim is centred on the spinal board, proceeded by his/her mobilization, with lateral stabilizers at the head and at least three belts around the spinal board.



14.2.2 | Victim in ventral decubitus position

The second individual adjusts the spinal board to the body of the victim, placed on the side where the victim will be rolled, while the third and fourth party will be on the opposite side. The victim's body will be rolled on to the spinal board, taking into attention the arm of the victim on the side of the board and if possible, you should elevate it to the side of the head.

At the command of the head rescuer the victim is centred on the spinal board, where a cervical collar is applied.

14.3 | Lifting

A proper lifting needs at least four elements, but the ideal number of six. All unnecessary movements should be avoided.

Procedures:

1. Before lifting, you should execute or maintain traction, alignment and cervical immobilization, and apply the cervical collar. The head of the team has the following responsibilities:

- To maintain the immobilization of the victim;
- To maintain alignment along the axis nose, navel and feet;
- To command all movements



2. The other elements of the team should be placed 2 by 2 from each side of the victim. With the same knee on the floor, place the members of the victim correctly to allow lifting. Finally, a sixth element will introduce the spinal board under the victim.

Note: The fourth, fifth and sixth elements do not need special training and may be any citizens at the location.

3. Hand placement

In order to perceive correct positioning during lifting, all elements should align their hands with their palms on the victim. The hands of each individual alternate with the hands of the individual in front of them (see photo).

This way their hands are positioned in order to distribute the weight of the victim (of the scapular waist, torso, pelvic belt and other members), so that the victim is immobilized as much as possible.

9



4. Introduction of hands

Then, without disturbing the alignment, your hands should be placed under the victim, with sliding movements.

10



5. Lifting

Lifting is done simultaneously (block), until knee high, always under the express indications of the head of the team (for example "In the count of three").

11



6. Introduction of the spinal board

The spinal board will be introduced below the victim, by their side of the feet, so that the top of the spinal board stays at the superior level of the head of the victim.

12



7. In the absence of a spinal board you can use gurney vacuum, which if previously hardened, can be used as an initial spinal support.

8. Lowering

Under indication of the chief of team, the lowering is also done simultaneously in block.

Hands should be removed with the same care that was taken when they were introduced.

13

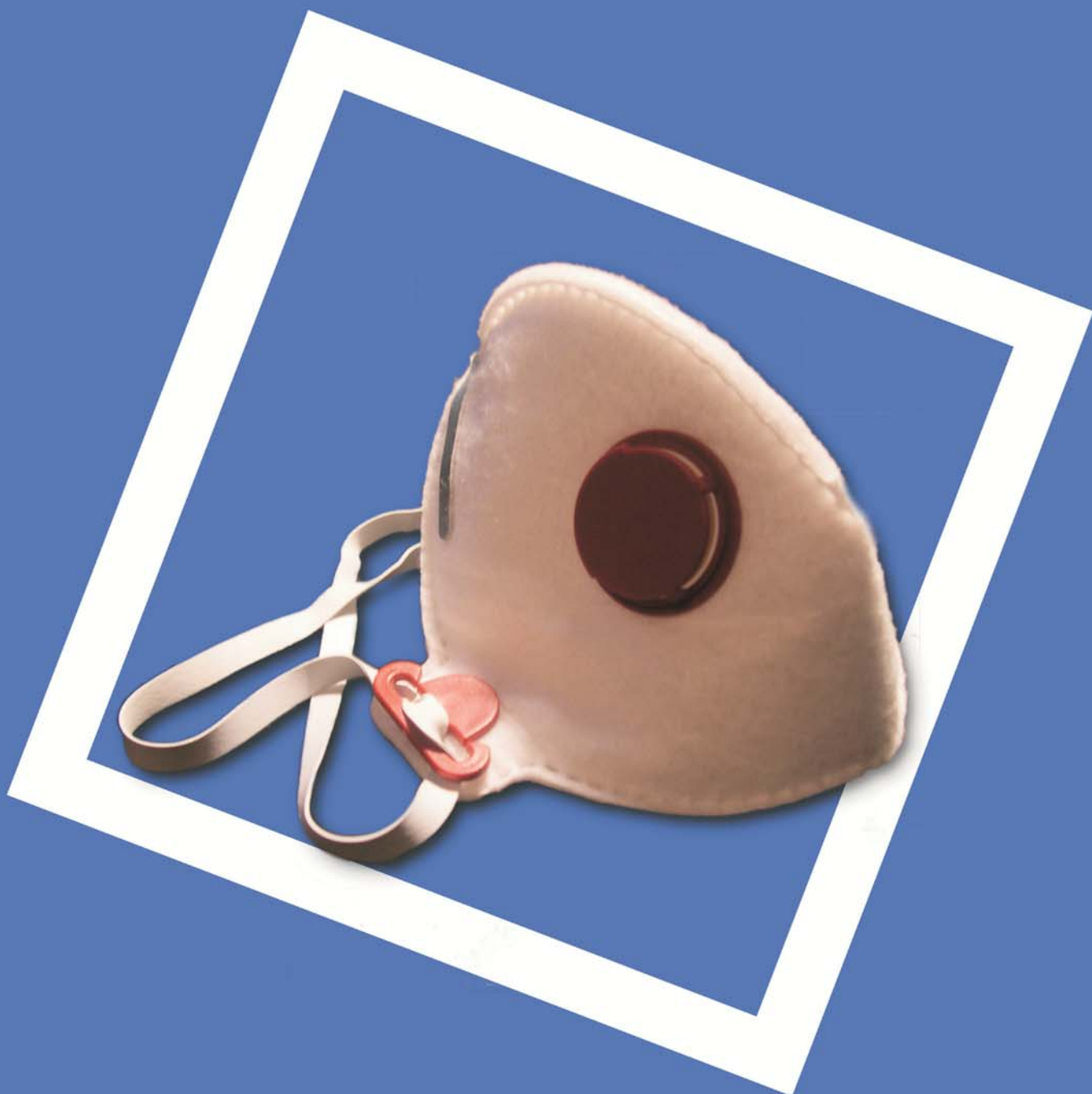


9. Under the orders of the head of the team, the victim is centred on the support, proceeding to his/her immobilization, with lateral stabilizers at the head and at least three belts around the spinal support.

14



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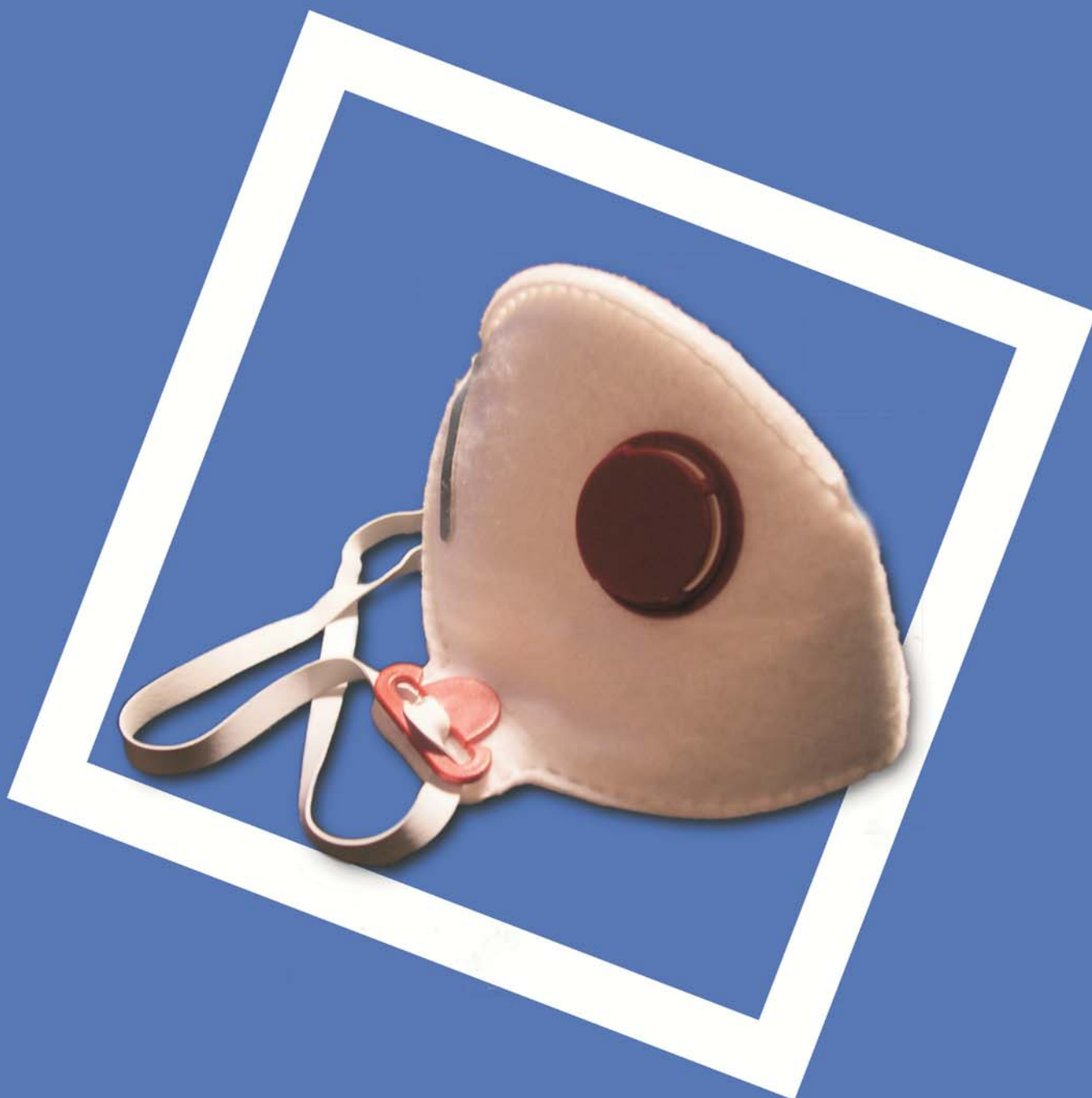
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