



ELEMENTARY FIRST AID COURSE *HANDOUT*
(IMO Model Course 1.13/STCW A-VI/1)

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FIRE PREVENTION AND FIRE FIGHTING COURSE

B: Revision Record


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Section	Details of Revision	Revision No.	Date


	Elementary First Aid C: Course Outline	Doc No.: EFA-C
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ELEMENTARY FIRST AID

COURSE OUTLINE

Duration 2.5 days

Subject Area	Lecture	Demo & Practice
Registration	0.5	
1. General Principles	1.0	Lecture / Presentation
2. Body Structure and Functions	1.0	1.0 (Lecture / Presentation/ Demo)
3. Positioning of Casualty	1.0	0.5(Lecture/Presentation/Workshop/ Exercises)
4.The Unconscious Casualty	0.5	0.5 (Lecture/ Presentation/ Workshop/ Exercises)
5. Resuscitation	0.5	1.5(Lecture/ Demonstration of Equipments)
6. Bleeding	0.5	1.0 (Lecture/ Presentation/ Workshop/ Exercises)
7. Management of Shock	0.5	0.5(Lecture/ Presentation/ Workshop/ Exercises)
8. Burns and Scalds, and Accidents caused by Electricity	0.5	0.5 (Lecture/ Presentation/ Workshop/ Exercises)
9. Rescue and Transport of Casualty	0.5	1.0 (Lecture/Presentation/Exercises/Contingency plans for various security related emergencies)
10. Other Topics	1.0	1.0 (Lecture / Presentation)
Review and Final Assessment	0.5	
Gross Total	15 Hrs.	(2.5 Days)

	Elementary First Aid D: Course Introduction	Doc No.: EFA-D
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1. Aim

The course aims to provide the training for candidates to provide elementary first aid on board ship, in accordance with Section A-VI/1 of the STCW Code.

2. Objectives


This syllabus covers the requirements of the STCW Convention Chapter VI, Section A-VI/1, table AVI/1-3. On meeting the minimum standard of competence in elementary first aid, a trainee will be competent to take immediate action upon encountering an accident or medical emergency until the of a person with medical first aid skills or the person in charge of medical care on board.

3. Entry Standards

The course is open to all seafarers who are to serve on board sea-going merchant ships. There are no particular educational requirements.

4. Required Attendance

100% attendance is required for successful completion of the course.

	Elementary First Aid 01: General Principles	Doc No.: EFA-01
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General Principles

Emergency first aid is immediate first aid with the aim of saving the patient's life. The victim's breathing and blood circulation are secured with emergency first aid. Emergency first aid must be given without delay, because the first few minutes are crucial for the patient's survival. Thus, emergency first aid must be started immediately at the scene. The first aid procedures are the same in the case of an accident and an attack of illness.

Emergency first aid procedures consist of the following: assessment of the situation and rescuing the victim from danger, securing breathing, securing circulation, stopping bleeding and treatment of shock. When the situation has been stabilized, the actual treatment and the possible transportation of the patient to shore for further treatment can be started. On arrival at the scene, a rapid evaluation of what has happened must be made. If the dangerous situation continues, the patient must be rescued from it. The helper must at all times make sure that he/she is not in danger him/herself (electric shock, gas, fire, etc.).

First aid administration must be started immediately when it is safe to do so. The patient's own breathing is assessed and mouth-to-mouth respiration started, if necessary. If the patient's heart is not beating, cardiac massage is started. A breathing patient is placed on his / her back and an unconscious patient on his/her side. It must be ensured that the lungs are getting oxygen, the respiratory tract is open and the pulse can be felt. External bleeding must be stopped. When the patient is no longer in imminent danger, he/she is examined more carefully, his/her wounds are bound more carefully, and fractures are supported. The patient is protected and settled as comfortable as possible. Any necessary further medical treatment is initiated, and the patient's condition is monitored constantly, and, if necessary, his/her transportation to shore is arranged.

1. Assessment of the situation	What has happened Safety hazards at the scene (electrocution, fire, gases)
2. Protect yourself from danger and save the patient	Use protective clothing or other safety equipment Eliminate safety hazards (e.g., switch off electric current, air the room)
3. Assess the condition of the patient	
3.1. Patient is breathing	Make sure that respiratory tract stays open



Elementary First Aid

01: General Principles

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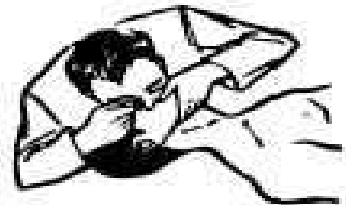
3.2. Patient is not breathing	<p>Open respiratory tract</p> <ul style="list-style-type: none"> • remove any foreign objects • tilt head backwards <p>Start cardiac massage</p> <ul style="list-style-type: none"> • press 30 times <p>Start mouth-to-mouth respiration</p> <ul style="list-style-type: none"> • blow twice, check that the patient's chest rises • if the chest does not rise, check the position of the head <p>Check the pulse or signs of circulation; if there are none, continue resuscitation</p> <ul style="list-style-type: none"> • rhythm of resuscitation: press 30 times, blow twice
4. Patient is bleeding	<p>Stop bleeding</p> <ul style="list-style-type: none"> • raise the limb • press the wound with hands using dressings • if necessary, bind the wound with a pressure bandage
5. Patient is in shock	<p>Determine the cause of shock</p> <ul style="list-style-type: none"> • bleeding • allergy
5.1. Shock caused by bleeding	<p>Place the patient on his/her back, elevate lower limbs</p> <p>Start intravenous infusion</p>
5.2. Allergic shock	<p>Administer adrenaline (1 mg/ml) 0.5–1.0 ml</p>

First Things First

All too often we get caught up in some minor detail and miss the big picture, or to put it another way, “we miss the forest for the trees”. It is important to keep in mind the following priorities when performing first aid.


Always perform first aid in the following order:

1. Restore Breathing: A person becomes brain dead in 6 minutes if breathing is not restored.




2. Stop Severe Bleeding: Without blood, oxygen cannot get to the vital organs of a person's body.



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3. **Treat Shock:** A victims mind and body must work together in order to be healthy. Never overlook shock situations, be they mental or physical.

4. **Call advanced medical help immediately:** Always realize that you are providing a stop-gap function to an injured person. Always obtain trained medical assistance as soon as possible. It also is good first aid practice to have even minor wounds checked when expert medical assistance is available.

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Body Structure and Functions

In order for the member to learn to perform first aid procedures, he must have a basic understanding of what the vital body functions are and what the result will be if they are damaged or not functioning.

a. Breathing Process. All humans must have oxygen to live. Through the breathing process, the lungs draw oxygen from the air and put it into the blood. The heart pumps the blood through the body to be used by the cells that require a constant supply of oxygen. Some cells are more dependent on a constant supply of oxygen than others. For example, cells of the brain may die within 4 to 6 minutes without oxygen. Once these cells die, they are lost forever since they do not regenerate. This could result in permanent brain damage, paralysis, or death.

b. Respiration. Respiration occurs when a person inhales (oxygen is taken into the body) and then exhales (carbon dioxide [CO₂] is expelled from the body). Respiration involves the-

- *Airway.* The airway consists of the nose, mouth, throat, voice box, and windpipe. It is the canal through which air passes to and from the lungs.

- *Lungs.* The lungs are two elastic organs made up of thousands of tiny air spaces and covered by an airtight membrane. The *bronchial tree* is a part of the lungs.

- *Rib cage.* The rib cage is formed by the muscle connected ribs, which join the spine in back, and the breastbone in front.

The top part of the rib cage is closed by the structure of the neck, and the bottom part is separated from the abdominal cavity by a large dome-shaped muscle called the *diaphragm* (Figure 1-1). The diaphragm and rib muscles, which are under the control of the respiratory center in the brain, automatically *contract* and *relax*.

Contraction increases and *relaxation*

decreases the size of the rib cage. When the rib cage increases and then decreases, the air pressure in the lungs is first less and then more than the atmospheric pressure, thus causing the air to rush into and out of the lungs to equalize the pressure. This cycle of inhaling and exhaling is repeated about 12 to 18 times per minute.



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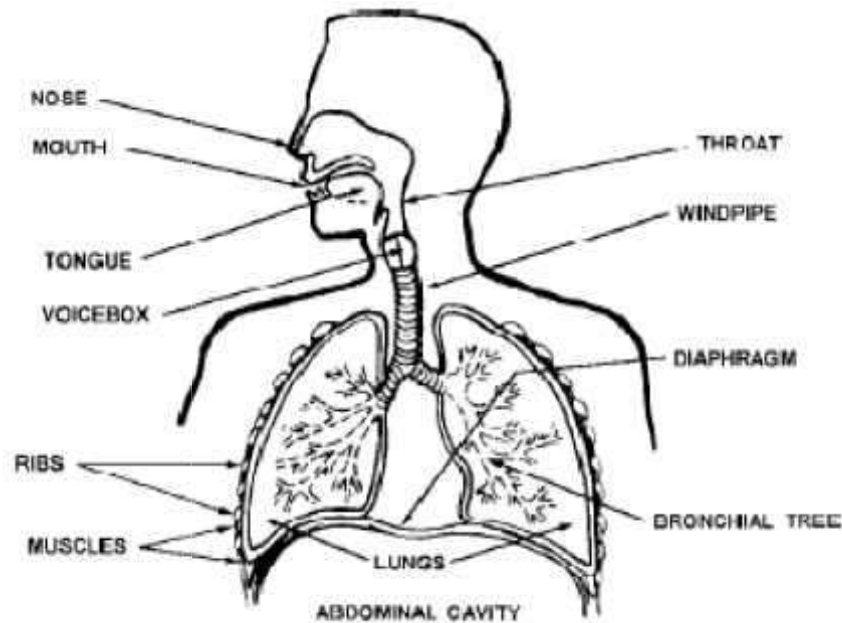
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c. Blood Circulation. The heart and the blood vessels (arteries, veins, and capillaries) circulate blood through the body tissues. The heart is divided into two separate halves, each acting as a pump. The left side pumps oxygenated blood (bright red) through the arteries into the capillaries; nutrients and oxygen pass from the blood through the walls of the capillaries into the cells. At the same time waste products and CO₂ enter the capillaries. From the capillaries the oxygen poor blood is carried through the veins to the right side of the heart and then into the lungs where it expels the CO₂ and picks up oxygen. Blood in the veins is dark red because of its low oxygen content. Blood does not flow through the veins in spurts as it does through the arteries. The entire system of the heart, blood vessels, and lymphatic is called the *circulatory system*.

(1) *Heartbeat.* The heart functions as a pump to circulate the blood continuously through the blood vessels to all parts of the body. It contracts, forcing the blood from its chambers; then it relaxes, permitting its chambers to refill with blood. The rhythmical cycle of contraction and relaxation is called the *heartbeat*. The normal heartbeat is from 60 to 80beats per minute.

(2) *Pulse.* The heartbeat causes a rhythmical expansion and contraction of the arteries as it forces blood through them. This cycle of expansion and contraction can be felt (monitored) at various points in the body and is called the *pulse*. The common points for checking the pulse are at the -



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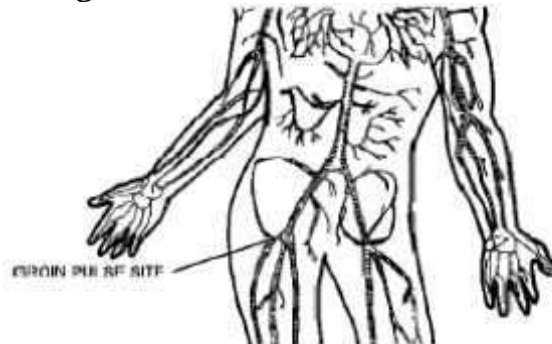
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- Side of the neck (*carotid*).
- Groin (*femoral*).
- Wrist (*radial*).
- Ankle (*posterior tibial*).

(a) *Carotid pulse*. To check the carotid pulse, feel for a pulse on the side of the casualty's neck closest to you. This is done by placing the tips of your first two fingers beside his Adam's apple (Figure 1-2).



(b) *Femoral pulse*. To check the femoral pulse, press the tips of your first two fingers into the middle of the groin.



(c) *Radial pulse*. To check the radial pulse, place your first two fingers on the thumb side of the casualty's wrist.





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(d) *Posterior tibial pulse.* To check the posterior tibial pulse, place your first two fingers on the inside of the ankle.



DO NOT use your thumb to check a casualty's pulse because you may confuse the beat of your pulse with that of the casualty.

Vital organs

Humans have five vital organs that are essential for survival. These are the brain, heart, kidneys, liver and lungs.

The human brain is the body's control center, receiving and sending signals to other organs through the nervous system and through secreted hormones. It is responsible for our thoughts, feelings, memory storage and general perception of the world.

The human heart is responsible for pumping blood throughout our body.

The job of the kidneys is to remove waste and extra fluid from the blood. The kidneys take urea out of the blood and combine it with water and other substances to make urine.

The liver has many functions, including detoxifying of harmful chemicals, breakdown of drugs, filtering of blood, secretion of bile and production of blood-clotting proteins.

The lungs are responsible for removing oxygen from the air we breathe and transferring it to our blood where it can be sent to our cells. The lungs also remove



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02: Body Structure and Functions

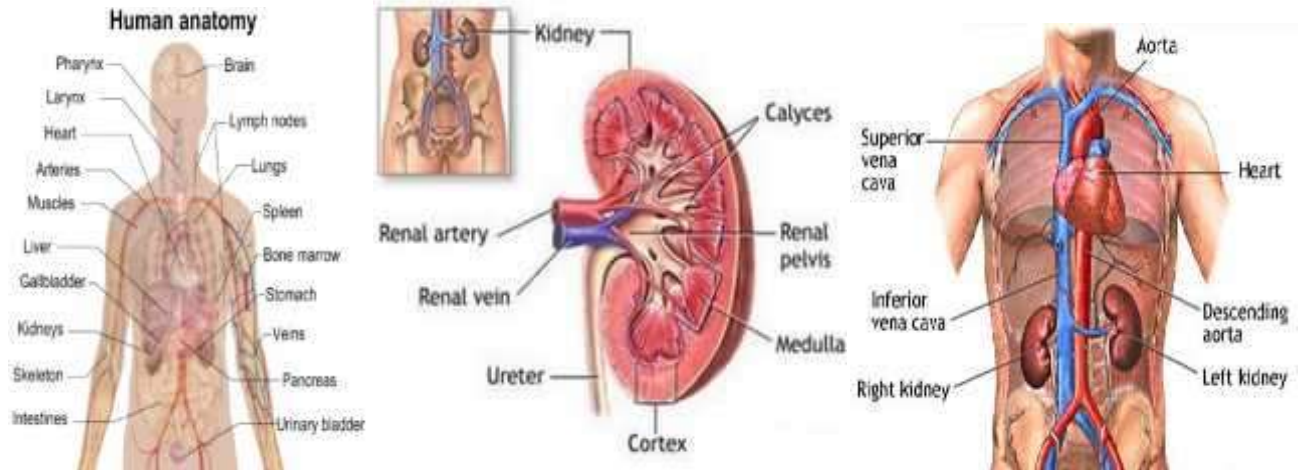
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carbon dioxide, which we exhale.



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Positioning of Casualty

Casualty Positioning

Once you've treated the injury or illness you are not quite out of the woods until further help arrives. In that time, correct positioning of the casualty can aid recovery in the same way that poor positioning can very easily aggravate the injury or exacerbate the condition. Here are a few positions to consider.

Safe Airway Position

Without airway management equipment or techniques unconscious casualties will die on their back. We can open their airway with a simple head tilt but this does not prevent fluids (blood or saliva) draining down or coming up (vomit or blood) and entering the airway.

Any unconscious casualty (even with a suspected spinal injury) should be positioned onto their side because, quite simply, if you don't have an airway, you don't have a casualty.

Regardless of whether you call it the *Safe Airway Position*, *Recovery Position*, *Drainage Position*, *Left lateral Recumbent* or *Three-Quarter Prone*, we're going to flip them over.

How to do it

- Remove the victim's glasses, if present.
- Kneel beside the victim and make sure that both his legs are straight.
- Place the arm nearest to you out to you side – **DO NOT** place the shoulder and elbow at right angles. This is unnecessarily painful for people with limited range of movement and places pressure on the lower arm.



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- Bring the far arm across the chest, and hold the back of the hand against the victim's cheek nearest to you.
- With your other hand, grasp the far leg just above the knee and pull it up, keeping the foot on the ground.
- Keeping their hand pressed against their cheek, pull on the far leg to roll the victim towards you on to their side.
- Adjust the upper leg so that both the hip and knee are bent at right angles.
- Tilt the head back to make sure that the airway remains open.
- If necessary, adjust the hand under the cheek to keep the head tilted and facing downwards to allow liquid material to drain from the mouth.
- Check breathing regularly.
- If the victim has to be kept in the recovery position for more than 30 min turn him to the opposite side to relieve the pressure on the lower arm.



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The Recovery position is for when someone is unconscious (passed out) but otherwise unhurt, and breathing normally.



Left or Right?

The Safe Airway Position is often called Left lateral Recumbent, especially in the US. There is sometimes milage in positioning the casualty on their left; the most cited reason - and most plausible - is significant for women in the later stages of

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pregnancy when positioning the casualty on their right will apply pressure from the foetus onto the superior vena cava (one of the two large vessels which return deoxygenated blood to the heart) impeding circulation. Other reasons include:

- Stomach curves to the left, so vomit would have an extra curve to overcome
- Stomach curves to left, so contents won't be pushing against sphincter.
- In the ambulance, attendant can watch him better facing toward him.
- Improved ventilation given the right lung being slightly larger than the left and left main stem bronchus being at an angle.

There is no real evidence for any of these justifications so it would seem that many of the reasons given are - as is often the way in First Aid - largely historical cliché's perpetuated because it is really easy to teach people what you have been taught rather than actually looking into what you are teaching.

In fact, positioning on the left can have adverse effects for some conditions, such as Congestive Heart Failure (1) or increase absorption of ingested poisons (2).

Let's be pragmatic.

Depending on the position your casualty is already found in and obstacles around them you may not have the luxury of this choice. Practice positioning your casualties on either left or right and position them appropriately to

1. Maximize drainage without
2. Aggravating injuries or illnesses.
3. Roll casualties with chest injuries onto the injured side to protect the unaffected lung.



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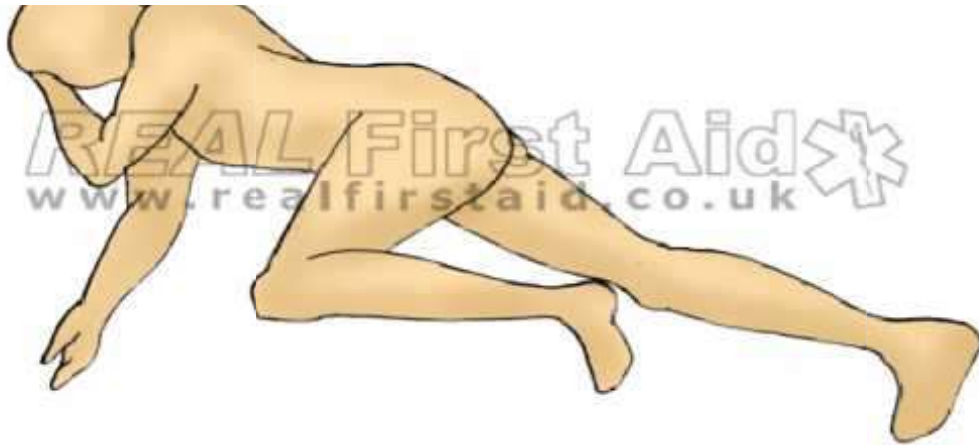
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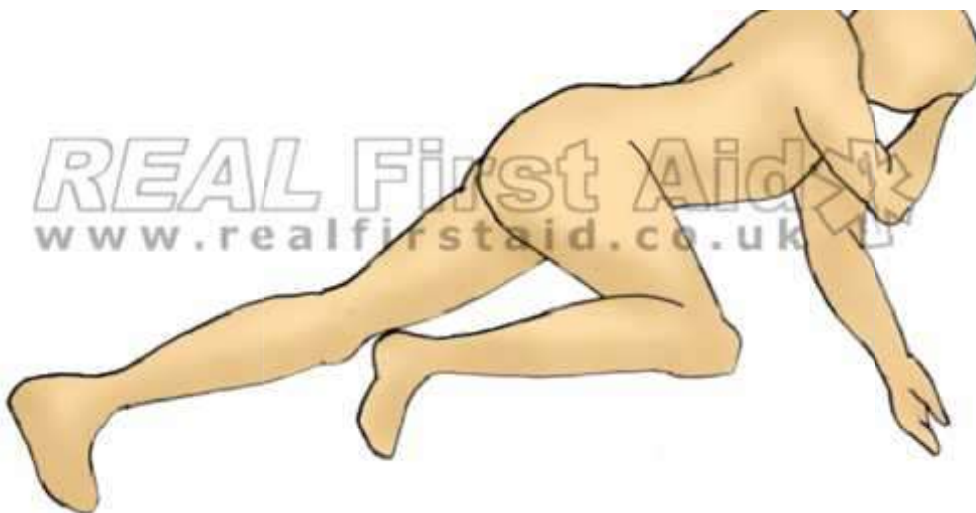
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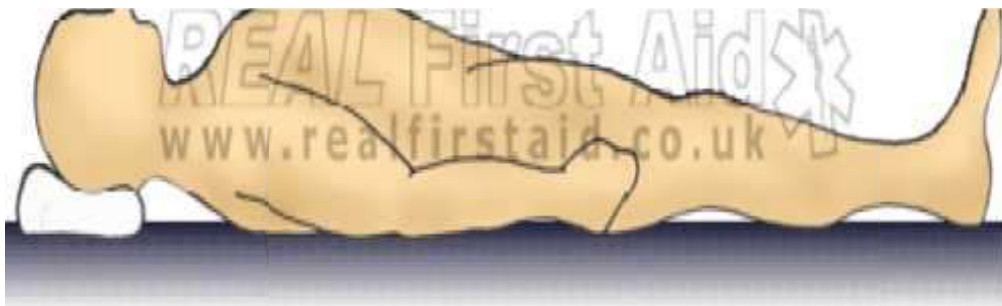


Safe Airway Position Right



Safe Airway Position Left

Lying Down





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Recumbent



Supine



Supine - Knees Bent



Trendelenburg



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Inclined

If the casualty is alert or we are able to manage their airway with suction and [airway adjuncts](#), it is sometimes beneficial for the casualty to remain on their back. **Recumbent** is a posh word for simply lying down with their head supported by a pillow and is the most common and appropriate position for someone who simply needs rest. A slight modification for this would be to remove the pillow which would be appropriate for someone with a suspected spinal injury. This position is now called **Supine**. Neither of these positions are recommended for head injury (where the priority is to reduce intracranial pressure) or for casualties with breathing problems or chest pain. In reality most conscious casualties with these conditions won't let you lay them flat

While we're on the subject of letting the casualty assume the most comfortable position, most people with abdominal pain will draw their knees in. If that's what they want, let them do it. Supporting under the knees is also meant to relieve pain from pelvic injuries - this is subjective so offer it, don't force it.

Sometimes a tilt can help; most ambulance trolleys will have this option but in the outdoors we have hills and slopes we can utilize. With the legs elevated the **Trendelenburg** position can improve venous drainage from lower limbs and improve blood supply to the head but with pressure on the diaphragm from below, respiration can be reduced. **Inclining** the whole body downhill can reduce intracranial pressure and without pressure on the diaphragm, easy respiration.



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Sat Up

We often have a tendency to force our casualty to lie down. It's traditional. Like a default position for poorly people. Sometimes, allowing or encouraging your casualty to sit up will make their day.

An **upright** or **semi-recumbent** position is not just comfortable for some casualties it can greatly assist their recovery. Upright positions will reduce intracranial pressure, essential for head injuries, and assist breathing.

The **W Position** is one of the most common positions the conscious casualty will adopt and a safe bet for anyone with a reduced level of consciousness;

if they're on the floor they can't fall off it. It's good for head injuries, chest pain, breathing problems and abdominal pain

The Shock Position

For years we have been told that the casualty who is in shock needs to lie down with their legs elevated because this will drain blood from the legs into the core to:

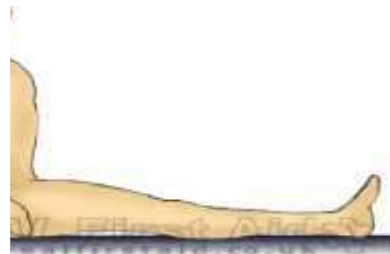
- Improve cardiac output
- Improve systemic vascular resistance
- Improved mean arterial pressure
- Improved systolic blood pressure

There is **no evidence of any standard** that this is of real benefit. If you think about it, you know there is no available blood in the legs because the casualty is cold and pale - they are already shunting any available blood to the core by vasoconstriction.

And if they are going into shock we can expect their level of consciousness to drop. How do unconscious casualties die? Oh, that's right, on their backs.



Semi-recumbent



Upright



W Position



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Anaphylaxis

Several awarding bodies still teach this for the treatment of hypovolemic shock as well as the [treatment of anaphylactic shock](#). This position may be helpful for the anaphylactic casualty with low blood pressure but given 80% of cases present with skin rashes and 70% with difficulty breathing compared to the 10-45% who present with low blood pressure (5) elevating the legs could be the absolute worst thing you can do for them. For the conscious casualty, they will adopt a comfortable position, probably the **W Position** or **Semi Recumbent** (6, 7). Anyone unconscious is placed into the **Safe Airway Position** if airway management equipment and techniques are not available.


Conclusions

Don't just leave them as you found them for fear of causing injury and neither flip them into a textbook position just because you were told to once.

Prioritise the airway - even with a spinal injury - a casualty without a clear and open airway will not last long.

If the casualty is conscious allow them to adopt the most comfortable position for them; they will know what relieves pain or eases breathing much better than you and they will not appreciate being forced into an uncomfortable position just because it *'looks right'*.

Be pragmatic: Do the best you can based on the position they are found in and obstacles around them with as little movement as possible to avoid aggravating injuries. More often than not the Real World is not Text Book.

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The Unconscious Casualty

Someone who is unconscious

If you see someone who has collapsed, you need to confirm whether they are **unconscious and breathing** or **unconscious and not breathing**.

The safest thing to do is get professional help as quickly as possible. If other people are around, get someone help. If you are alone, shout for help and as soon as someone arrives get them to inform bridge as soon as possible.

Unconscious and breathing

DRAB survey

While you are waiting for help to arrive, follow the primary **DRAB** survey steps - **Danger, Response, Airway, and Breathing**.

Danger

Check that neither you nor the unconscious person is in any danger. If necessary make the area safe and then assess them.

Response - unconscious adult or child

If you are still alone, shout for help again and then see if the person responds:

- Shout at them - for example: 'Can you hear me?' or 'Open your eyes'.
- Gently shake their shoulders.

Response - unconscious infant

If it is an unconscious infant (under 12 months), to check for a response:

- Tap or flick the sole of an infant's foot to try to elicit a response.
- Do not shake an infant.

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Airway

If they respond, they are breathing but check for severe bleeding and other injuries. You may need to help them to breathe by opening their airway:

- Place one hand on the forehead and, using two fingers, lift the chin

Breathing

If they don't respond, you need to check if they are breathing:

- Position your cheek close to their mouth.
- Look, listen and feel for no more than 10 seconds:
 - Look to see if the chest is rising and falling.
 - Listen for breathing.
 - Feel the breath against your cheek.

Recovery position

If they are breathing put those in the recovery position until help arrives:

- Turn them on to their side.
- Lift chin forward in open airway position and adjust hand under the cheek as necessary.
- Check they cannot roll forwards or backwards.
- Monitor breathing continuously.
- If injuries allow, turn them to the other side after 30 minutes.

Unconscious and not breathing

Having completed the [DRAB survey](#) steps above and established the person is not breathing; give cardiopulmonary resuscitation (CPR). This is a technique whereby oxygen is pumped around the body, using a combination of **chest compressions** and **rescue breaths**.

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Unconscious and not breathing adult

- Chest compressions:
 - Place the heel of your hand (the base of your thumb) in the centre of the chest.
 - Place your other hand on top and interlock fingers.
 - Keeping your arms straight and your fingers off the chest press down by five to six centimeters and release the pressure, keeping your hands in place.
 - Repeat the compressions 30 times, at a rate of 100-120 per minute (about the speed of the song 'Staying Alive' or 'Nelly the Elephant').
- Next give 2 rescue breaths:
 - Ensure the airway is open.
 - Pinch their nose firmly closed.
 - Take a deep breath and seal your lips around their mouth.
 - Blow into the mouth until the chest rises.
 - Remove your mouth and allow the chest to fall.
 - Repeat once more.

If you are unable, unwilling or untrained to give rescue breaths, give chest compressions only and continue at a rate of 100-120 per minute.

Unconscious and not breathing child

If it is an unconscious **child** (1 year to puberty) who is not breathing, start with **rescue breaths**:

- Ensure the airway is open.
- Seal your lips around the child's mouth.
- Blow gently into their lungs, looking along the chest as you breathe.
- As the chest rises, stop blowing and allow it to fall.
- Repeat this 5 times.

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Then give **compressions**:

- Place one or two hands in the centre of the chest (depending on the size of the child). You can do this without removing the child's clothes.
- Use the heel of that hand with arms straight and press down to a third of the depth of the chest.
- Press 30 times, at a rate of 100-120 compressions per minute (about the speed of the song 'Staying Alive' or 'Nelly the Elephant').

After 30 compressions, give 2 more rescue breaths, Repeat the sequence of 30 chest compressions and 2 rescue breaths until help arrives.

Unconscious and not breathing infant

If the infant is not breathing, start with **5 rescue breaths** as for a child, followed by **compressions**:

- Place the baby on a firm surface.
- Locate a position in the centre of the chest - it is possible to identify the correct hand position without removing the infant's clothes.
- Using two fingers, press down sharply to a third of the depth of the chest.
- Press 30 times, at a rate of 100-120 compressions per minute.

After 30 compressions, give 2 more rescue breaths and if help still hasn't arrived, repeat the sequence of 30 chest compressions and 2 rescue breaths until help arrives.

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Resuscitation

Cardiopulmonary resuscitation, commonly known as **CPR**, is an [emergency procedure](#) that combines chest compression often with [artificial ventilation](#) in an effort to manually preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in [cardiac arrest](#). It is [indicated](#) in those who are unresponsive with no breathing or abnormal breathing, for example, [agonal respirations](#).

CPR involves chest compressions for adults between 5 cm (2.0 in) and 6 cm (2.4 in) deep and at a rate of at least 100 to 120 per minute. The rescuer may also provide artificial ventilation by either exhaling air into the subject's mouth or nose ([mouth-to-mouth resuscitation](#)) or using a device that pushes air into the subject's lungs ([mechanical ventilation](#)). Current recommendations place emphasis on high-quality chest compressions over artificial ventilation; a simplified CPR method involving chest compressions only is recommended for untrained rescuers. In children only doing compressions may result in worse outcomes.

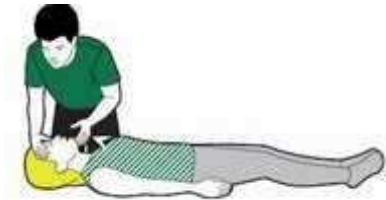
CPR alone is unlikely to restart the heart; Its main purpose is to restore partial flow of oxygenated blood to the [brain](#) and [heart](#). The objective is to delay tissue and to extend the brief window of opportunity for a successful resuscitation without permanent [brain damage](#). Administration of an electric shock to the subject's heart, termed [defibrillation](#), is usually needed in order to restore a viable or "perfusing" heart rhythm. Defibrillation is effective only for certain heart rhythms, namely [ventricular fibrillation](#) or [pulse less ventricular tachycardia](#), rather than [asystole](#) or [pulse less electrical activity](#). CPR may succeed in inducing a heart rhythm that may be shock able. In general, CPR is continued until the person has a [return of spontaneous circulation](#) (ROSC) or is declared [dead](#).

If an adult is unresponsive and not breathing, you'll need to do CPR (which is short for cardiopulmonary resuscitation). CPR involves giving someone a combination of chest compressions and rescue breaths to keep their heart and circulation going to try to save their life. If they start breathing normally again, stop CPR and put them

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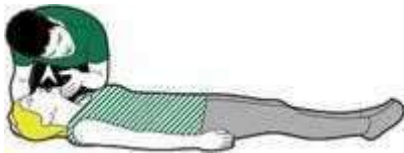
in the recovery position.

Step 1 of 5: Open their airway



- If they are unresponsive, open their airway.
- Place one hand on the casualty's forehead and two fingers under their chin. Gently tilt their head back and lift the chin.

Step 2 of 5: Check their breathing



- Maintain the head tilt and chin lift, and look for chest movement. Listen for the sounds of normal breathing and see if you can feel their breaths on your cheek.

If they are not breathing, you need to start CPR (cardiopulmonary resuscitation – a combination of chest pressure and rescue breaths) straight away.

Step 3 of 5: Call for help and start CPR



- Call for an ambulance, or get someone else to do it, or inform bridge.

Next you'll need to perform CPR - cardiopulmonary resuscitation. This involves giving someone chest compressions and rescue breaths to keep their heart and



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05: Resuscitation

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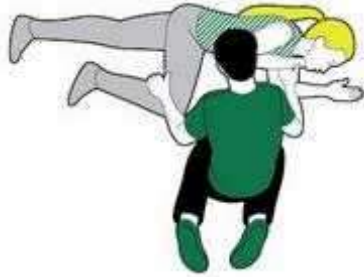
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circulation going.

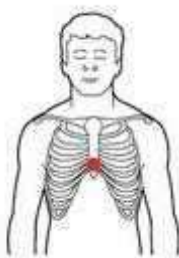
If they start breathing normally again, stop CPR and put them in the recovery position.



Step 4 of 5: Giving chest compressions



- Kneel down beside the casualty on the floor level with their chest.
- Place the heel of one hand towards the end of their breastbone, in the centre of their chest.



- Place the heel of your other hand on top of the first hand and interlock your fingers, making sure you keep the fingers off the ribs.
- Lean over the casualty, with your arms straight, pressing down vertically on the breastbone, and press the chest down by 5-6cm (2-2½in).



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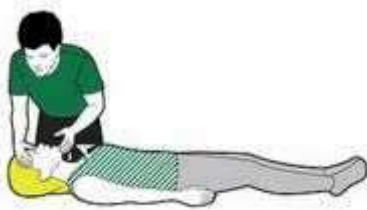
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- Release the pressure without removing your hands from their chest. Allow the chest to come back up fully – this is one compression.

Repeat 30 times, at a rate of about twice a second or the speed of the song ‘Staying Alive’.

Give two rescue breaths.

Step 5 of 5: How to give a rescue breath



- Ensure the casualty’s airway is open.
- Pinch their nose firmly closed.
- Take a deep breath and seal your lips around their mouth.
- Blow into the mouth until the chest rises.
- Remove your mouth and allow the chest to fall.

Repeat once more.

Carry on giving 30 chest compressions followed by two rescue breaths for as long as you can, or until help arrives.

If the casualty starts breathing normally again, stop CPR and put them in the recovery position.

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Bleeding

Bleeding

In this section you can find out what to do about bleeding and blood loss. You can learn how to give first aid treatment for cuts, grazes, and nose bleeds as well as finding out what to do if someone is bleeding severely.

You can usually control bleeding from cuts and grazes by elevating the wound and applying pressure.

A nose bleed can be serious if someone loses a lot of blood – and severe bleeding can cause distress, lead to shock and loss of responsiveness. This advice will help to give you the confidence to know what to do when a person is bleeding severely.

Bleeding topics:

[Cuts and grazes](#)

[Nose bleeds](#)

[Severe bleeding](#)

Cuts and grazes

Cuts and grazes are common injuries that can usually be treated at home. A cut is when the skin is fully broken, and a graze is when only the top layers of skin are scraped off.

Usually, all you need to do is clean the cut or graze to reduce infection and apply pressure and raise the injury to stop the bleeding. The wound should heal by itself in a few days.

What to look for - Cuts and grazes

If the bleeding doesn't stop, or if there's a foreign object in the cut, or you think it might be infected, then you should tell them to see a health care professional.

What to do - Cuts and grazes

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Clean the wound by rinsing it under running water or using alcohol-free wipes.

Pat it dry using a gauze swab and cover it with sterile gauze. If you don't have these, then use a clean, non-fluffy cloth.

Raise and support the part of the body that's injured. If it's a hand or arm, raise it above the head. If it's a lower limb, lay them down and raise the cut area above the level of the heart. This will help stop the bleeding.

Remove the gauze covering the wound and apply a sterile dressing.

If you think there's any risk of infection then suggest they see a health care professional.

Nose bleeds

A nose bleed is when blood flows from one or both nostrils. It's normally caused by the tiny blood vessels inside the nostrils being ruptured.

Common causes of nose bleeds include a blow to the nose, sneezing, picking or blowing the nose, and high blood pressure.

What to look for - Nose bleeds

Most nose bleeds are minor and only last a few minutes, but they can be dangerous if someone loses a lot of blood.

If someone has had a blow to the head, the blood may appear thin and watery. This could mean that their skull is fractured and fluid is leaking from around the brain. If that happens, it is very serious and you should call for emergency medical help.

What to do - Nose bleeds

If someone is having a nose bleed, your priority is to control the bleeding and keep their airway open.

Get them to sit down (not lie down) as keeping the nose above the heart will reduce bleeding.

Get them to lean forward (not backwards), to make sure the blood drains out

Ask them to breathe through their mouth and pinch the soft part of the nose, taking a brief pause every ten minutes, until the bleeding stops.

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through their nose, rather than down their throat which could block their airway.



Severe Bleeding

When bleeding is severe, it can be dramatic and distressing. If someone's bleeding isn't controlled quickly, they may develop shock and lose consciousness. Shock does not mean emotional shock, but is a life-threatening condition, often caused by loss of blood.

If someone's bleeding from their mouth or nose, they may find it hard to breathe, so you should keep a close eye on them in case they become [unresponsive](#).

If there's an object in their wound, don't press directly onto it, as it will hurt, but leave it in there and bandage around it.

With all open wounds, there's a risk of infection, so wash your hands and use gloves (if you have any) to help prevent any infection passing between you both.

What you need to do - severe bleeding

Your priority is to stop the bleeding. Protect yourself by wearing gloves.

If the wound is covered by the casualty's clothing, remove or cut the clothes to uncover the wound.

If there an object in the wound

If there's an object in there, don't pull it out, because it may be acting as a plug to reduce the bleeding. Instead, leave it in and apply pressure either side of it with a pad (such as a clean cloth) or fingers, until a sterile dressing is available.

If there's no object in the wound



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Follow the steps below for treating severe bleeding.

Step 1 of 2: Press it



- Put direct pressure on the wound with your fingers, using a sterile dressing if possible, to stop blood escaping.

Step 2 of 2: Call for medical help



- Firmly wrap a bandage around the pad or dressing on top of the wound to control the bleeding. Make it firm enough to maintain pressure but not so tight that it restricts their circulation.
- Treat them for shock: lay them down with their head low and their legs raised and supported.

Waiting for help

- If blood shows through the pad or dressing, don't remove it: apply a second dressing on top of the first one. If blood then seeps through both dressings, remove both of them and replace them with a fresh dressing. When changing dressings, make sure you keep pressure applied to where the bleeding is coming from.
- If you can, support the injured area. For example, you can rest a leg on some cushions, or for an arm you can make a sling.
- Keep checking the casualty's breathing, pulse and level of response.
- If they become unresponsive at any point, open their airway, check their breathing, and prepare to treat someone who has become [unresponsive](#).

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Management of shock

Shock is a disturbance of the circulation that can originate from various causes. In a state of shock, the blood pressure is too low to maintain sufficient circulation, resulting in severe oxygen deficiency. Of the vital organs, the kidneys require the highest level of blood pressure in order to function properly (systolic blood pressure at least 80 mmHg). The same level of blood pressure is necessary for the pulse to be felt from the radial artery. If the pulse cannot be felt from the radial artery, the patient is in shock, or he/she will probably go into shock.

Causes

Shock has many causes. It can be caused by an insufficient amount of blood, due to, e.g. bleeding. Internal bleeding is usually not visible, and is therefore detected only when the symptoms of shock appear. Simple fractures (no open wound at the site of fracture) may bleed substantially into the tissues. The amount of blood that the patient has lost can be estimated by following the general state of circulation and the appearance of possible symptoms of shock (pulse, blood pressure, skin temperature). Dehydration due to widespread burns, severe diarrhea or vomiting may also cause shock. A strong allergic reaction, anaphylactic shock or sepsis may result in failure of the regulation mechanism of the blood vessels. This causes the blood vessels to expand and the circulating amount of blood can no longer maintain sufficient pressure. Failure of the heart's pumping strength in connection with myocardial infarction may also lead to insufficient blood pressure and shock.

Amount of bleeding in different fracture types

Type of fracture	Amount of bleeding
Simple fracture	
rib	125/rib
humerus	350–800
shin bone	500–1 000
thigh bone	1 000–2 000
pelvis	1 500–2 000
Compound fracture	Amount of bleeding may be double that of a corresponding simple fracture.

Symptoms

The body tries to compensate the fall in blood pressure in many ways to ensure a sufficient blood supply to the vital organs, such as the heart and the brain. First, the heart rate increases. Then, peripheral blood vessels start to contract, peripheral circulation decreases strongly, and the skin, especially in the limbs, turns cold. The sweat glands are activated, making the skin feel cold and clammy.

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Low blood pressure is a sign that the disorder has already progressed quite far. The pulse can no longer be felt from the wrist (systolic blood pressure under 80 mmHg) and the circulation of the internal organs deteriorates. When systolic blood pressure has dropped to 60 mmHg, the brain starts to suffer from oxygen deficiency. The patient becomes restless or even aggressive. If the blood pressure keeps falling, the patient becomes confused, his/her level of consciousness then diminishes further until unconsciousness and death occurs. The relationship between symptoms of bleeding shock and the amount of blood lost is presented in Table.

Allergic (anaphylactic) shock is caused by expansion of blood vessels due to paralysis of the muscles in the vessel walls. In this case, the normal amount of blood cannot sustain sufficient blood pressure, because the volume of the blood vessels has increased. The pulse is rapid, but the hands and feet stay warm, unlike in shock due to other causes.

Symptoms of bleeding shock in relation to amount of blood lost

Amount of blood lost	Symptoms
10% (= 500 ml)	no symptoms
15–25% (= 750–1 250 ml)	slightly increased pulse (ca. 100/min)
25–35% (= 1 250–1 750 ml)	increased pulse (100–120/min) pallor, cold clammy skin blood pressure 90–100 mmHg
50% (= 2 500 ml)	pulse over 120/min blood pressure under 60 mmHg disturbances in consciousness

Treatment

Bleeding shock

The treatment of bleeding shock is primarily efficient first aid, securing basic vital functions and treating the causes of shock. Make sure that the airways are open and the patient is breathing. Stop the bleeding. The circulation in the vital organs can be supported by placing the patient on his/her back and raising his/her legs.

- Elevating the lower limbs enhances the circulation of the brain, the heart and other vital organs.

Dehydration is treated with intravenous infusion therapy, that is, intravenous fluid replacement (see Chapter 45 Intravenous(IV) infusion therapy). The oxygen supply

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of the tissues is supported by giving oxygen(e.g. 28%) with a mask. Do not give the patient anything to eat or drink.

The patient's condition and level of consciousness must be continuously monitored, because his/her status may change very rapidly, and the treatment should respond immediately to any changes. It is important to monitor the blood pressure, pulse and temperature of the skin. Keeping the patient warm, and calming and reassuring him/her help to reduce the body's need for oxygen.

- Consult a doctor via Radio Medical for further treatment of bleeding shock.

Allergic shock

A sudden allergic reaction can be caused by an insect sting, food or a drug. Symptoms that may appear within minutes can be dyspnoea, runny nose, bloods hot and itching eyes, rash, or even shock and death.

The first symptoms of an allergic shock may be reddening and itching skin, swelling of the tongue and the pharynx, wheezing breathing, a feeling of pressure in the chest, and difficulties in breathing. The blood pressure can drop and cause weakness, vertigo and fainting. The throat, the larynx and the respiratory tract may swell up, making breathing and swallowing difficult. Speech is often slow and clumsy. The condition can rapidly become life-threatening.

The first aid in allergic shock is always adrenaline (8/A, 1 mg/ml). The dose given to an adult is 0.5–1.0 ml subcutaneously or intramuscularly. If the symptoms are severe or shock is developing, or has already developed, the adrenaline is injected into the muscles of the tongue, where the circulation is good despite shock, and the drug is absorbed rapidly. Take hold of the tongue with a piece of cloth or paper, and inject the drug directly into the tongue(Figure 9). The injection can be repeated after 10–20 minutes.

After alleviating the most dangerous situation with adrenaline, hydrocortisone 2ml (5/C, 125 mg/ml) is administered intramuscularly. Treatment is continued with prednisolone (5/D) given daily in the morning. On the first morning the dose of prednisolone (5/D) is eight 5 mg tablets, all given at one time. The dose is reduced every other morning by 1–2 tablets, until the treatment is completed. The patient should visit a doctor to try to determine the cause of the allergic reaction, so that, by avoiding the allergen, the reaction can be prevented from recurring.

- Consult a doctor via Radio Medical on further treatment of an allergic reaction.



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Injection into the tongue

In mild disorders (hay fever, itching eyes, nettle rash) without circulatory or respiratory symptoms, sufficient treatment usually consists of cetirizine hydrochloride (5/B) one 10 mg tablet once or twice a day, or prednisolone (5/D). To begin with, six 5 mg prednisolone tablets are given, all at one time. The dose is reduced every other day by 1–2 tablets, until the treatment is completed. The patient should visit a doctor to try to determine the cause of the allergic reaction, so that, by avoiding the allergen, the reaction can be prevented from recurring.



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08: Burns and Scalds, and Accidents caused by Electricity

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Burns and Scalds, and Accidents caused by Electricity

Burns and scalds, a type of burn caused by wet heat, are potentially fatal injuries. They can cause life-threatening shock through serious fluid loss and, if around the face and neck, can restrict breathing.

WHAT ARE THE RISKS FROM BURNS?

In burns, fluid is lost in three main ways:

- Blistering
- Swelling around the injury
- Directly from the injury

While the fluid loss may not be visible as liquid lying around the victim it is nevertheless lost from the blood as a straw-colored substance known as plasma. Severe burns therefore can and often do prove to be fatal.

The second risk from burns is infection. The damaged tissue provides little or no resistance to infection and serious problems may arise some time after the initial injury. The risk of infection increases with the size and depth of the burn, and the victim will probably suffer from shock as well.



CAUSES OF BURNS

Dry heat

This is the most common type of burn and includes burns caused by hot objects such as exhausts or by cigarettes or lighters.

Wet heat

Also known as a scald, wet heat usually refers to hot water or steam but it can also include other hot liquids such as oil or fat.

Friction



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When two objects rub together very quickly friction generates heat, causing another kind of dry burn.

Chemical burns

Industrial and household chemicals can cause serious burns.

Electrical burns

These can be caused by the everyday low-voltage currents found in switches, wires, appliances around the home or from the high-voltage cables scattered around the countryside in the form of power lines, subway tracks, and so forth. In rarer cases electrical burns can be caused by lightning strikes.



Radiation burns

While this may sound dramatic, most of us have suffered some degree of radiation burn at some point in our lives—more commonly known as sunburn.


DEPTH OF BURN

First degree burns

Involve only the outer layer of skin and, although often extremely painful, are generally not life-threatening unless a very large surface area of the body is covered. The burned area is very sore and is usually red and possibly a little swollen. If good first aid treatment is applied and the area burned is not extensive, then further medical treatment is unlikely to be needed.

Second degree burns

Include the top layers of skin and involve blistering. They are characterized by red, raw-looking skin, blisters that weep clear fluid, and pain. The risk of shock is high with second degree burns and any burn of this type needs medical attention. Second degree burns covering a substantial percentage of the body can kill.

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Third degree burns

Involve damage to all the layers of skin, usually including the nerve endings and other underlying tissues and organs. Characterized by charred tissue often surrounded by white waxy areas of dead skin with damaged nerves, third degree burns will always need emergency medical attention and in the long term will often require plastic surgery.

AREA OF THE BODY BURNED

Generally, the larger the area of the body burned, the more serious the burn. Any burn to the face or neck needs urgent medical attention. As a general principle, if the victim has other injuries, appears to be in a great deal of pain, is showing signs and symptoms of shock, is having difficulty breathing, or you have other reasons to suspect that his or her condition is more serious, then call an ambulance whatever the extent or depth of the burn.


HOW DO YOU TELL HOW SEVERE A BURN IS?

Many burns are minor and can be safely treated at home or with help from local doctor or pharmacist. However the size of the burn will tell you if it needs urgent medical treatment.

The general principle of treating burns remains to cool and cover the affected area but some types of burn need extra consideration. With burns to the neck and mouth, beyond the risk of shock and infection, the greatest potential problem is the risk of airway obstruction due to swelling. The obvious additional danger with electrical burns is the combination of water as a treatment and electricity as the cause.

TREATING THE BURNS TO THE NECK AND MOUTH

1. Check the victim's airway and breathing and be prepared to resuscitate if necessary.
2. Call an ambulance and reassure the victim until help arrives.
3. Get the victim into a position where his breathing is comfortable (this will usually be sitting up).
4. Loosen any constriction around the neck to ease breathing. Keep the airway clear.
5. Cool any burns continuously—do not attempt to cover.
6. Maintain a check on the victim's airway and breathing.

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LIGHTNING

Although rare, lightning strikes do happen and can kill. If caught outside in a thunderstorm, seek shelter in a car or building.

If there is no shelter, make yourself as low as possible, minimize your contact with the ground by crouching and avoid single trees, bodies of water, and tall objects.

If a person has been struck by lightning, check the airway and breathing, be prepared to resuscitate, treat any burns, and call for help.

ELECTRICAL BURNS

If a victim has suffered from an electric shock, do not attempt to touch the person unless you are absolutely certain that he or she is no longer in contact with the live equipment. If the person is still attached to an electrical current, your best option is to turn the electricity off at the main breaker. If you cannot access the breaker, you may be able to turn off electrical equipment at the wall socket but be particularly careful that you do not touch the victim or any live equipment.


If there is no way to turn the electricity off, you can attempt to move the victim away from the point of contact using a non-conducting material such as a broom handle. Be sure to insulate yourself as much as possible by wearing rubber gloves and shoes, and by standing on a telephone directory.

Electricity demands respect—if in doubt, call in professional help. Do not push yourself in any danger.

TREATING ELECTRICAL BURNS

A victim suffering from an electrical burn may well have respiratory or circulatory difficulties. An electrical discharge across the heart can make the heart stop beating, so be prepared to resuscitate the victim over and above the treatment of any burn that may be present.

1. Make absolutely sure that there is no further risk from the electricity.
2. Check to see whether the victim is conscious, if unconscious, check airway and breathing and take action as appropriate.
3. Treat any burns with cold water if safe to do so.
4. Cover burns as appropriate with sterile, non-fluffy dressings.
5. Seek urgent medical attention. Stay with the victim and reassure him until medical help arrives.

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HIGH-VOLTAGE ELECTRICITY

High-voltage electricity (power lines, subway tracks, overhead power cables, etc.)


Usually kills immediately, causing severe burns, heart problems, and potentially even broken bones and internal injuries as the victim is thrown by the shock. If somebody has been hit, your first priority is to keep yourself and the other bystander safe. High-voltage currents can jump some distance so keep people back at least 60 feet and call for professional help.

Chemical burns and eye burns

While the general rules for the treatment of burns are the same, regardless of the type of burn, there are some additional considerations for chemical burns. The key point when dealing with chemicals is not to contaminate yourself. Chemical spills are not always obvious—some very toxic chemicals look like water—so look for sign such as a HAZMAT (hazardous material) label, empty chemical containers, or guidance from bystanders. If in doubt, call help rather than approach the injured person yourself. Remember that some household substances, particularly cleaning materials such as oven cleaner, can cause chemical burns.

TREATING CHEMICAL BURNS

1. If you feel that you can safely approach the victim, then do so carefully.
2. If necessary, wear protective clothing to protect yourself from contamination.
3. Ventilate the room if possible because many chemicals affect breathing.
4. When cooling the burn with water drains away from both the victim and yourself. It may be necessary to flood the injured part for longer to ensure that the chemical is totally washed away. This take more than 20 minutes.
5. Call help. Make sure you have mentioned that it is a chemical burn so that the additional help can be sent for if necessary and so that any antidotes can be sent with the ambulance.
6. If possible, remove contaminated clothes from the victim because this may keep burning, but only do this if you can do it without contaminating yourself or causing the victim more harm.
7. Cover the burn with a clean, non-fluffy material as appropriate and tie loosely in place if necessary.

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- Treat for shock and reassure the victim until emergency help arrives the scene.

WHAT IF THE CHEMICALS REACTS WITH WATER?

Some industrial chemicals do not react badly with water. Where such chemicals are used, people working with them should have been trained in the use of an antidote. If there is nobody around with the expertise, do not waste time looking for an antidote—apply liberal amounts of water to try to wash the chemical away.

CHEMICAL BURNS TO THE EYE

Chemical burns to the eye can be very serious. Early rinsing of the eye with cold water will help flush away the chemical and reduce scarring.

TREATMENT


- Protect yourself, the victim, and bystanders from further contamination.
- Hold the affected eye under cold running water for at least 10 minutes to flush out the chemical, allowing the injured person to blink periodically. You may need to hold the eyelid open. Make sure that the water flow is gentle. Do not allow contaminated water to fall across the good eye and so contaminate that eye also.
- Ask the injured person to hold a non-fluffy sterile or clean pad across the eye, tying it in place if hospital treatment may be delayed.
- Take or send the person to hospital with details of the chemical if possible.

SIGNS AND SYMPTOMS OF CHEMICAL BURNS TO THE EYE

- Known exposure to the chemical
- Intense pain
- Redness and swelling
- Reluctance or inability to open the eye
- Tears from the eye

FLUSH BURNS TO THE EYE

Caused by looking into very bright light, flash burns damage the surface of the

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cornea, the transparent front of the eyeball. Recovery can take some time and in some instances the damage can be permanent (for example, if a person has looked at the sun through a telescope without appropriate protection).


TREATMENT

1. Check the history to rule out chemical burns or a foreign body in the eye.
2. Reassure the injured person, and wear gloves to prevent infecting the eye.
3. Place pads over both eyes and bandage in place if it will be some time until medical help arrives. Remember that this will effectively blind the person temporarily so stay with her to reassure and guide.
4. Take or send the person to hospital because she will need medical attention.



SIGNS AND SYMPTOMS OF FLASH BURNS TO THE EYE

- Known exposure to intense light (which may happened some time ago)
- Intense pain
- Feeling that there may be something in the eyes
- Redness and watering
- Both eyes affected

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Rescue and Transport of Casualty

After evaluating the casualty's illness or injury and administering first aid, you may need to decide the most effective means of transporting a casualty. Casualties moved by manual carries must be carefully and correctly handled; otherwise, moving the casualty could result in additional injury. Manual carries are often used to transport casualties in tactical situations. Your choice of which type of carry to use depends upon the seriousness of the illness or injury, the weight of the casualty, the strength of the carrier (s)), and the distance to be traveled. Using a two-man carry benefits the casualty and the bearers by spreading the load. Improvised litters are the preferred method when the distance may be too far for manual carries or the casualty has an injury that may be aggravated by manual transportation. These litters are for emergency measures and must be replaced by a standard litter at the first opportunity.

ONE-MAN CARRIES

CHOOSE THE APPROPRIATE METHOD TO MOVE A CASUALTY

If you need to move (evacuate) a casualty to an aid station or collection point, you must decide which evacuation method is appropriate. The following are general rules. (The rules are listed in order of most likely to be used.)

CAUTION: Do not transport a casualty with a suspected fracture of the neck or back unless a life-threatening hazard is in the immediate area. Wait until medical personnel arrive.

If no other help is available, use an appropriate one-man carry to move the casualty.

If a litter cannot be used (no time, no materials) and another person is available to help carry the casualty, use an appropriate two-man manual carry to move the casualty.

If a standard litter is not available and if the time, materials, and litter bearers are available, construct and use an improvised litter. A door, ladder, cot, bench, chair, or similar objects can be used as an improvised litter.

If the casualty is to be moved, use a standard litter if one can be obtained and two or more litter bearers (including yourself, if applicable) are available. A litter allows a casualty to be moved a greater distance than do manual carries. Also, a casualty is less likely to aggravate existing injuries or to suffer additional injuries if a litter



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is used.

If possible, use a vehicle to transport the casualty.

CHOOSE AN APPROPRIATE ONE-MAN CARRY

Manual carries are tiring to the bearer. Choose an appropriate carry based upon the casualty's condition, the nature of the casualty's injury, the situation, the distance to be covered, the weight of the casualty, your strength and endurance, and obstacles that will be encountered.

1. PERFORM THE FIREMAN'S CARRY

Raise the casualty to a standing position.

Grasp the casualty's wrist and lift his arm over his head while continuing to support the casualty with your other arm.

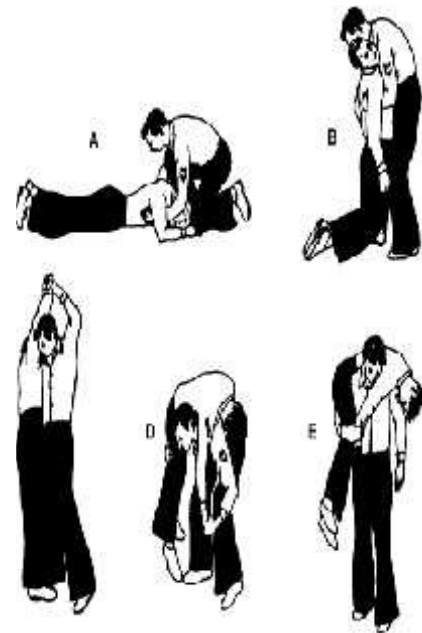
CAUTION: If the casualty has an injured arm, grasp the wrist of the uninjured arm.

Bend at the waist and kneel, pulling the casualty over your shoulder. At the same time, slip your arm from his waist, pass the arm between the casualty's legs, and grasp behind the casualty's knee.

Move the hand grasping the casualty's wrist to the hand at the casualty's knee. Grasp the casualty's wrist with the hand at the casualty's knee, freeing your other hand.

Place your free hand on your knee and slowly rise to a standing position. Use the hand on your knee to help you rise without straining your back. Adjust the casualty's body so his weight is distributed comfortably.

Move forward, carrying the casualty.





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2. PERFORM THE SUPPORT CARRY

Position the casualty in a sitting position.

Bend down at the casualty's side so that you are facing in the same direction as the casualty.

CAUTION: If the casualty has an injured leg, position yourself so that the injured leg is next to you.

Bring the casualty's near arm over your shoulder and grasp his wrist with your hand that is away from the casualty. Put your near arm around the casualty's waist. Stand up, helping the casualty to rise to a standing position also. Assist the casualty to walk or hop on one leg. Adjust your walking motion as needed to help the casualty maintain his balance.



3. PERFORM THE ARMS CARRY

Raise the casualty to a standing position. Slide one of your arms under the casualty's arm, behind his back, and under his other arm. Move to the casualty's side, bend down, and place your other arm behind the casualty's knees. Lift the casualty from the ground and stand erect. Carry the casualty high on your chest to lessen fatigue.





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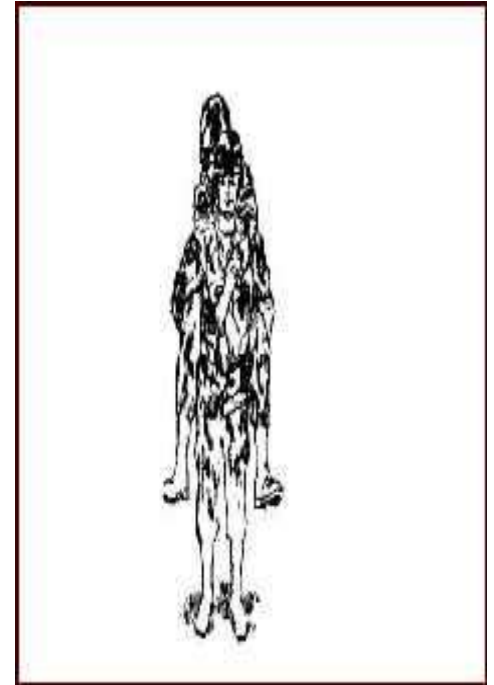
4. PERFORM THE SADDLEBACK CARRY

Raise the casualty to a standing position. (Since the casualty is conscious, he may be able to rise with assistance.)

Grasp the casualty's wrist and lift his arm over his head while continuing to support the casualty with your other arm. Turn so that your back is to his front and bring his arm over your shoulder. Support the casualty's waist with your other arm, if needed.

Have the casualty put his other arm around your neck. If possible, he should grasp one of his wrists with his other hand. Stoop and move your arms back and around the outside of the casualty's thighs. Bring your hands inside of his thighs to your sides, lifting the casualty's thighs.

Stand up and clasp your hands together in front of you. Adjust the casualty's weight to make the weight distribution more comfortable and walk forward.



5. PERFORM THE SADDLEBACK CARRY

Raise the casualty to a standing position. Grasp one of the casualty's wrists and lift his arm above his head while continuing to support the casualty's waist with your other arm. Turn and bring the casualty's raised arm over your shoulder as you turn so that your back is to the casualty's front. Bend your knees somewhat so that your shoulder fits under his arm.



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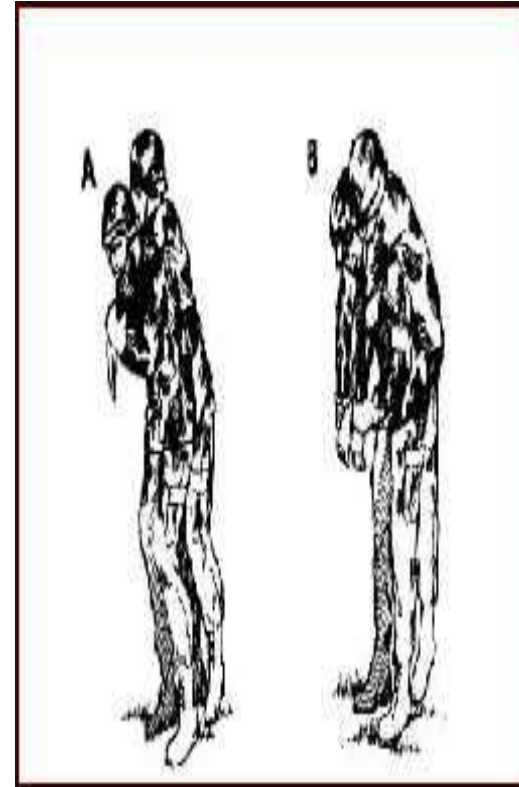
Turn and bring the casualty's raised arm over your shoulder as you turn so that your back is to the casualty's front. Bend your knees somewhat so that your shoulder fits under his arm.

Release his waist, grasp his other wrist, and bring that arm over your other shoulder.

CAUTION: Hold both wrists so that his hands are in a palms down position (palms toward your abdomen). Twisting his hands could result in injury to the casualty's wrists, elbows, or shoulders when he is lifted and carried.

Bend forward and hoist the casualty as high on your back as possible so that his weight is resting on your back.

Walk forward, keeping bent so that the casualty's weight is balanced on your back and his feet are not dragging.



6. PERFORM THE NECK DRAG

Tie the casualty's hands together with material that will not cut his wrists, such as the casualty's field dressing or a cravat. Do not tie the materials tight enough to interfere with blood circulation. If the casualty is conscious, have him interlock his fingers. Face the casualty's head and straddle his hips on your knees. Loop the casualty's arms around your neck. Crawl forward on your hands and knees, dragging the casualty beneath you.

CAUTION: If the casualty is unconscious, keep his head from dragging on the ground.





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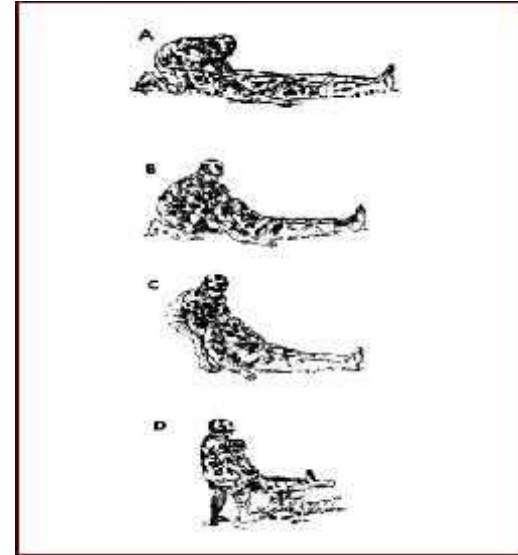
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7. PERFORM THE CRADLE DROP DRAG

Position the casualty on his back. Kneel at the casualty's head. Slide your hands (palms up) under his shoulders and grasp the clothing under his armpits. Partially rise so that the casualty is pulled to a semi sitting position. Support his head on one of your arms. If possible, bring your elbows together and use both forearms to support the head. Rise to a stooped position and drag the soldier backward.

CAUTION: *If you are going down steps, walk down them carefully going backward. Support the soldier's head and shoulders, letting his hips and legs drop from step to step.*



TWO MAN CARRIES

MOVE A CASUALTY USING THE TWO-MAN FORE-AND-AFT CARRY

Sometimes, a litter is not available and cannot be improvised. In such cases, manual carries may be used to evacuate the injured soldier. A two-man manual carry is usually preferred over a one-man manual carry. The two-man fore-and-aft carry can be used to move a conscious or unconscious casualty. It is not as tiring as other carries; therefore, it is usually the preferred two-man carry for moving a casualty for a long distance. Position the casualty on his back with his arms by his sides. The taller of the two bearers kneels at the casualty's head and faces toward the casualty's feet. He then slides his hands under the casualty's arms and across the casualty's chest. Then he locks his hands together over the casualty's chest. The second bearer spreads the casualty's legs and kneels between the casualty's legs with his back to the casualty's head. He then reaches down and places his hands under the casualty's knees. Both bearers rise together and lift the casualty. Bearers walk forward with the casualty.





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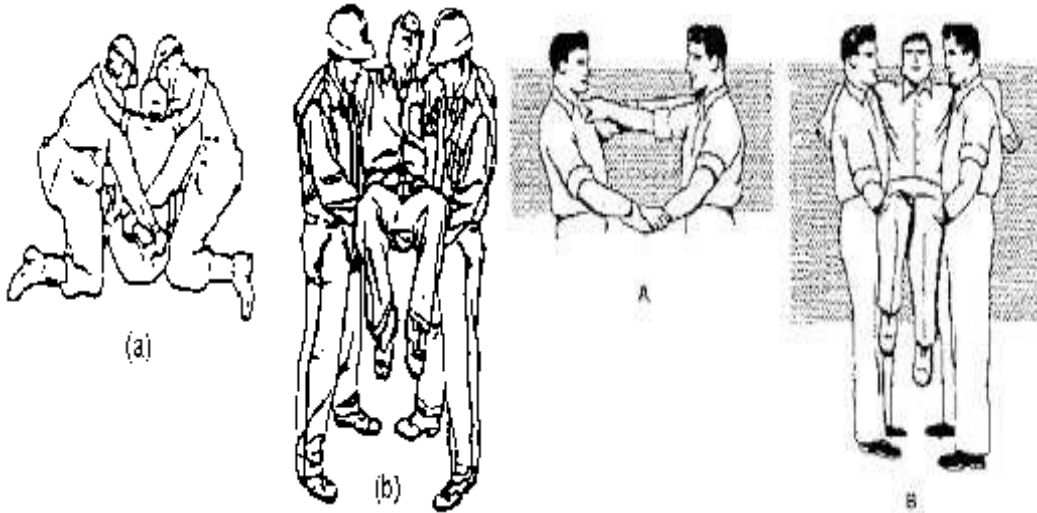
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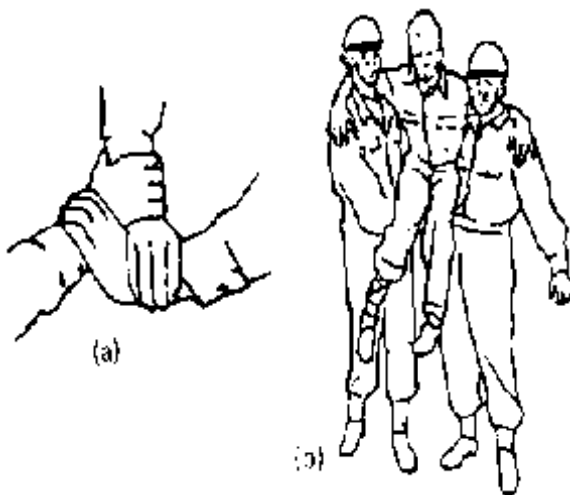
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MOVE A CASUALTY USING THE TWO-MAN SUPPORT CARRY



Three hand seat

Four hand seat





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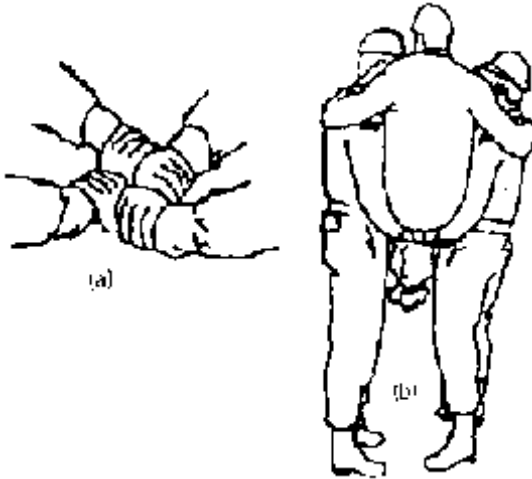
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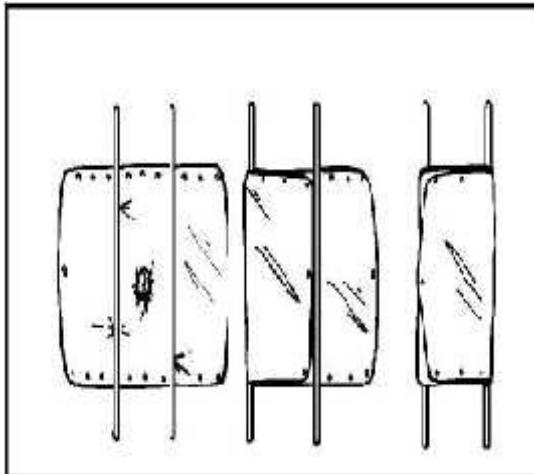
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STRETCHER CARRY

HOW TO MAKE AN IMPROVISED POLE AND PONCHO STRETCHER



An improvised stretcher can be made using two tent poles and a poncho. Variations of this stretcher include using straight tree limbs or other rigid objects for the poles. When the casualty is placed on the stretcher, his weight will hold the stretcher together. Open the poncho and lay it flat on the ground. Lay two poles lengthwise across the poncho so that the poncho is divided into thirds. Reach in and pull the hood toward you and lay it flat on the poncho. Make sure that the draw strings are not hanging out of the hole. Fold one outer third of the poncho over the pole. Fold the other outer third of the poncho over its pole.

HOW TO MAKE AN IMPROVISED POLE AND JACKET STRETCHER

An improvised stretcher can be made using two tent poles and two or three field jackets. Tree limbs or other straight, rigid objects can be used instead of the poles. Heavy shirts or other jackets can be used instead of field jackets.



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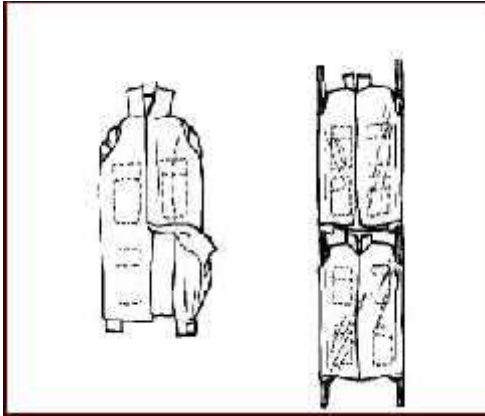
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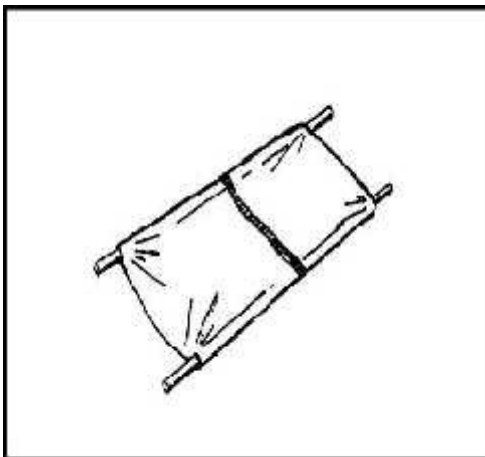


Close (zip or button) the jackets (or other garments).

Turn the garments inside out, but leave the sleeves inside. (Turning the garments inside out puts buttons and zippers inside and keeps them from getting snagged on bushes or other obstacles.)

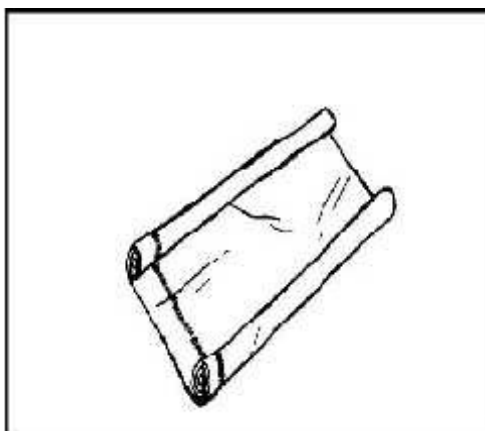
Pass the poles through the sleeves.

HOW TO MAKE AN IMPROVISED POLE AND SACK STRETCHER




An improvised stretcher can be made using two tent poles or similar rigid objects and two empty heavy-fabric sacks such as potato sacks. Cut holes in the two corners of the closed end of each sack. Place the sacks lengthwise so that the open ends of the sacks are facing each other. Slide the poles or limbs through the holes. Overlap the open ends of the sacks about three inches to provide extra strength in the middle of the stretcher.

HOW TO MAKE AN IMPROVISED BLANKET STRETCHER



An improvised stretcher can be made using only a blanket or similar material. The blanket is laid on the ground. Two opposite edges of the blanket are then rolled toward the middle. When the casualty is placed on the blanket, the rolled edges of the blanket are used as grips. Four or more stretcher bearers should be used when transporting a casualty using the blanket stretcher.

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Neil Robertson stretcher

The Neil Robertson stretcher is designed for removing an injured person from spaces wherein access, doors, or hatches are too small to permit the use of regular stretchers. Spaces such as

engine-room spaces, Cargo holds, Pump rooms, [Boiler](#) room etc. are few examples of such compact spaces on ship. The Neil Robertson stretcher is made of flexible semi rigid canvas and can be folded easily when not in use or during accessing small spaces.

The stretcher is provided with strong straps which when firmly wrapped around the victim, give strong support to hold the person with almost negligible movement with respect to stretcher, which is very important when rescuing or transferring injured person. The stretcher straps are such made that when tied up over the victim, it covers the person in mummy-fashion, giving sufficient support.

Advantages

- The victim is tied up firmly with the stretcher, avoiding unwanted fall.
- Can be removed vertically from confined spaces like hatches etc, as victim is secured with the stretcher.
- When a life line is tied to the stretcher, unwanted swaying can be avoided.
- Easy to use and bring to the accident site.
- Light weight and ready to use



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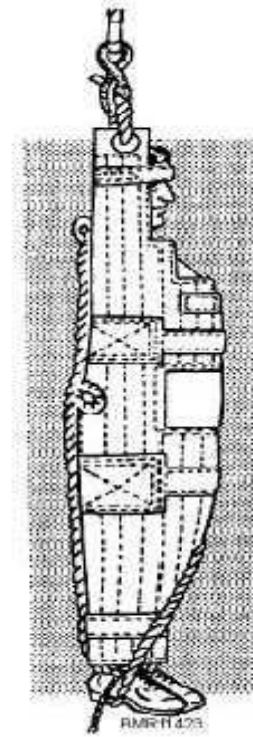
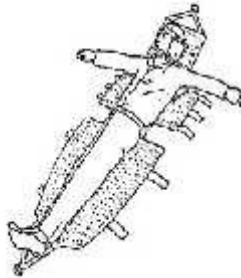
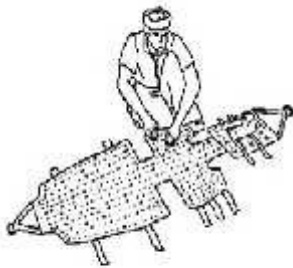
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Other Topics

Poisoning is caused by exposure to a harmful substance. This can be due to swallowing, injecting, breathing in, or other means. Most poisonings occur by accident. Immediate **first aid** is very important in a **poisoning** emergency.

Poisons are substances that can cause temporary or permanent damage if too much is absorbed by the body. Get more information on the effects that different types of poisons have on the body.

Find out how to treat someone for poisoning, understand when you might need to get emergency medical help, and what to do if someone loses responsiveness.

Alcohol poisoning – Can happen when someone has drunk an excessive amount

Drug poisoning – Caused by an overdose of prescription or illegal drugs

Food poisoning – Caused by eating contaminated food

Swallowed poisons – When someone ingests poisonous substances, such as: chemicals, drugs, plants, fungi or berries.



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10: Other Topics

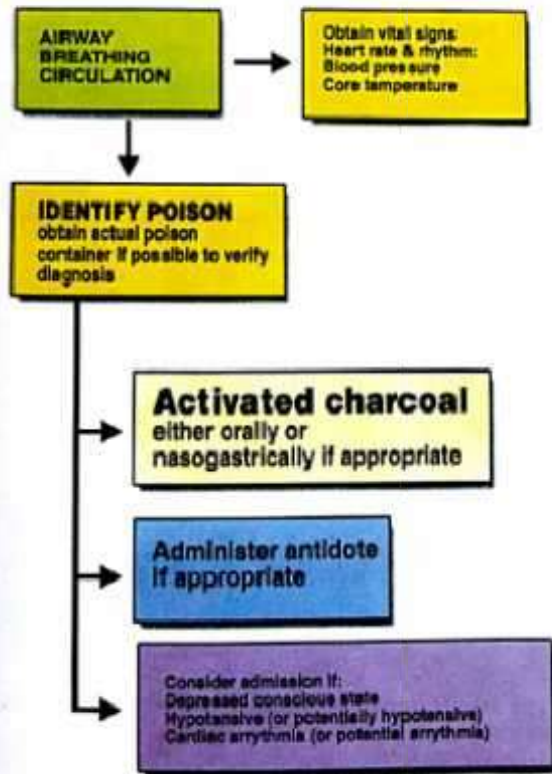
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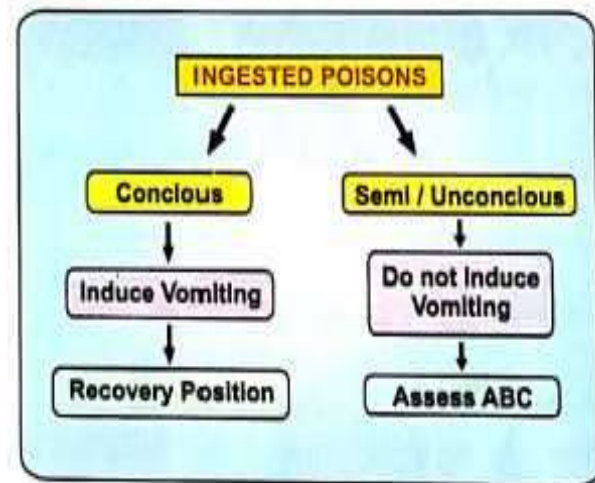
FLOWCHART SHOWING THE POISONING PROTOCOL



POSSIBLE WAYS OF ENTRY OF TOXIC SUBSTANCE INTO OUR BLOOD CIRCULATION:

1. Through Mouth (Ingested Poisons)
2. Through Nose (Inhaled Poisons)
3. Through Skin (Absorption)
4. Through Eyes

INGESTED POISONS



Inhaled poisons

1. Enter with proper breathing apparatus.
2. remove the casualty out.
3. check ABC.

THROUGH SKIN

1. Give thorough washing of affected area.
2. Treat the local reaction (Burns)

THROUGH EYES

Check for foreign body before giving eye wash using eye wash bottle.

No foreign body

**foreign body is present
but not sticking**

**foreign body is present
but sticking**

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Give eye wash and put eye drops	Give eye wash and put eye drops	Do not Give eye wash
		Blind fold both eyes
		shift

Heatstroke

Heatstroke is caused by a failure of the thermostat in the brain which regulates the body temperature. If someone has a high fever or has been exposed to heat for a long time, then their body can become dangerously overheated.

Someone can also get heatstroke after using drugs such as ecstasy.

Sometimes, people get heatstroke after suffering from [heat exhaustion](#). When someone gets too dehydrated they stop sweating which means their body can't cool down anymore, so they develop heatstroke.

Heatstroke can develop with very little warning, causing unresponsiveness within minutes of someone feeling unwell. Your priority is to cool them down as quickly as possible and get them to hospital.

What to look for - heatstroke

These are the six key things to look for:

1. Headache, dizziness and discomfort
2. Restlessness and confusion
3. Hot flushed and dry skin
4. A fast deterioration in the level of response
5. A full bounding pulse
6. Body temperature above 40°C (104°F)

What you need to do - heatstroke

- Quickly move them to a cool place and remove their outer clothing but ensure you maintain their dignity.
- Then call for help.
- Wrap them in a cold wet sheet and keep pouring cold water over it until their temperature falls to at least 38°C (or 100.4°F). Measure this with a thermometer

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under their tongue or under their armpit.

- If you can't find a sheet, fan them or sponge them down with cold water to keep them cool.
- Once their temperature seems to have gone back to normal, replace the wet sheet with a dry sheet.
- While waiting for help to arrive, keep checking their temperature, as well as their breathing, pulse and level of response.
- If they start getting hot again, repeat the cooling process to lower their temperature.
- If they lose responsiveness at any point, open their airway, check their breathing and prepare to treat someone who's become [unresponsive](#).

Frostbite

Frostbite happens when parts of the skin and other tissues freeze due to low temperatures. Frostbite usually affects the fingers and toes as they are the parts of the body furthest from the heart.

If someone has severe frostbite then they might permanently lose all feeling in that part of their body. Frostbite can also lead to gangrene, when the blood vessels and soft tissues become permanently damaged leading to death of the tissue.

Frostbite usually happens in freezing or cold and windy weather. People who cannot move around are more likely to get it. Someone with frostbite will probably have [hypothermia](#), so be prepared to treat them for that too.

What to look for - frostbite

If you think someone has frostbite, there are four key things to look for:

1. 'Pins and needles' to begin with
2. Paleness, followed by numbness
3. Hardening and stiffening of the skin
4. Change in skin colour: first white, then blotchy and blue. On recovery, the skin may be red, hot, painful and blistered. If they get gangrene, the tissue may become black due to the loss of blood supply and death of the tissue.

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What you need to do - frostbite

- First, encourage them to put their hands in their armpits. Then help move them indoors or to somewhere warm.
- Once inside, gently remove anything constricting like rings, gloves or boots.
- Next, warm the body part with your hands on your lap, or under their armpits. Don't rub it though because this could damage their skin tissue. (If there is a danger of it refreezing then don't warm it up yet as this can cause more damage).
- Place the body part in warm (not hot) water at around 40°C (104°F) and be careful not to put it near direct heat as this can cause more damage. Dry it carefully and put on a light dressing, ideally a gauze bandage from your first aid kit.
- Once you've done that, help them to raise their limb to reduce swelling, with cushions or a sling for instance.
- Advise them to take some painkillers if they have some (paracetamol for example).
- Then take or send them to hospital, keeping their limb raised.

Broken bones and fractures

A break or crack in a bone is called a fracture.

In most cases the damage to the bone will be under the skin, which is called a closed fracture, but sometimes bits of the bone can puncture through the skin to become an open fracture.

In both cases you'll need to treat the casualty for [shock](#). Even if you can't see any blood, the break might have caused some internal bleeding.

To break a fully grown bone, a huge amount of force is needed. But bones that are still growing are supple and can split, crack or bend quite easily, a bit like a twig.

What to look for - Broken bones and fractures

The seven things to look for are:

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1. Swelling
2. Difficulty moving
3. Movement in an unnatural direction
4. A limb that looks shorter, twisted or bent
5. A grating noise or feeling
6. Loss of strength
7. Shock

What you need to do - Broken bones and fractures

- If it is an open fracture, cover the wound with a sterile dressing and secure it with a bandage. Apply pressure around the wound to control any bleeding.
- Support the injured body part to stop it from moving. This should ease any pain and prevent any further damage.
- Once you've done this, call for medical help. While waiting for help to arrive, don't move them unless they're in immediate danger.

Waiting for medical help to arrive

Protect the injured area by using bandages to secure it to an uninjured part of the body to stop it from moving. For example, fractures on the arm can be secured with a sling, and a leg with a fracture can be tied to the uninjured leg.

Dislocated joints

A joint is where two bones join or connect. A dislocated joint happens when bones are partly or completely pulled out of their normal position. Joints can dislocate when a strong force wrenches the bone into an unnatural position, or because the muscle violently contracts.

The most common joints that dislocate are the shoulder, knee, jaw, or joints in the thumbs or fingers.

Dislocating a joint can be really painful and cause other damage, like a break in the end of the surrounding bone or tearing of the ligaments around the joint. Sometimes it's difficult to tell whether the injury is a dislocation or a fractured bone. If you're not sure, then always treat it as broken bone.

Don't try to put the dislocated bone back into its socket as you could make it

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worse.

What to look for - Dislocated joints

The four signs of a dislocated joint are:

1. Strong, sickening pain
2. Not being able to move the joint
3. Swelling and bruising around the joint
4. Shortening, bending or deformity of the joint

What you need to do - Dislocated joints

- Advise them to stay still and help them to support their dislocated joint in the most comfortable position.
- Stop the joint from moving using a bandage. For an arm injury, make a [sling](#) to support the arm. For a leg injury, use padding or broad-fold bandages.
- To give extra support for an injured arm, tie it in place by bandaging around the sling and the chest.
- Once you've stopped the joint from moving, take or send the injured person to hospital.
- Keep checking their breathing, pulse and level of response. Check the circulation beyond the bandages every ten minutes and loosen if necessary.

Keep checking the casualty for signs of [shock](#). This does not mean emotional shock, but is a life-threatening condition, often caused by losing blood.

If they lose responsiveness at any point, open their airway, check their breathing and prepare to treat someone who's become [unresponsive](#).

Spinal injury

The spinal cord connects the brain to the rest of the body. Together they make up the central nervous system.

The spine is made up of:

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- the spinal cord itself
- the bones that protect the spinal cord (called vertebrae)
- the discs of tissue between the vertebrae
- the surrounding muscles
- and the nerves which branch off it, to carry messages between the brain and the rest of the body in the form of high-speed electric pulses.

The spinal cord connects to individual muscles and tells them to move (called motor function). It also connects to organs like the skin, which communicates feelings like touch, pain and heat (called sensory functions).

The greatest risk if someone has a spinal injury is that their spinal cord will be either temporarily or permanently damaged. If this happens, they'll become paralysed from the point of injury down.

The most common cause of a spinal injury is extreme force, violent twisting or bending forwards or backwards. You should be aware of the possibility of a spinal injury if someone has:

- fallen from a height, e.g. a ladder
- fallen awkwardly, e.g. while doing gymnastics
- dived into a shallow pool and hit the bottom
- fallen from a moving vehicle, e.g. a motorbike, or a horse
- been in a collapsed rugby scrum
- been in a motor vehicle which suddenly crashes
- been hit by a heavy object falling across their back
- had an injury to the head or face.

What to look for - Spinal injury

If you think someone may have injured their spine, these are the seven key things

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to look for:

If the vertebrae (bones protecting the spinal cord) are damaged:

- 1) pain in the neck or back
- 2) unusual shape or twist in the normal curve of the spine
- 3) soreness and/or bruising in the skin over the spine

If the spinal cord is damaged:

- 4) loss of control over limbs – may not be able to move arms or legs
- 5) loss of sensation, or abnormal sensations, e.g. burning or tingling
- 6) loss of bladder and/or bowel control
- 7) breathing difficulties

What you need to do - Spinal injury

If they're responsive:

- Reassure them and tell them not to move
- Call for an ambulance or ask someone else to call one for you
- You need to stop their head or neck from moving to prevent further damage
- To do this, kneel or lie behind their head. Rest your elbows on the ground or on your knees to keep your arms steady. Grip each side of their head, without covering the ears, to support their head in this position so that the head, neck and spine are in a straight line



- You need to support the head until emergency services can take over, no matter how long it takes for them to come. If there is someone who can help you, ask them to put rolled-up blankets, towels or clothes on either side of the head to help support it.

If they're unresponsive:

- Open their airway using the jaw-thrust technique. To do this, put your fingertips

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at the angles of the jaw and gently lift to open the airway, avoiding tilting the neck

- Then check if they're breathing
- If they're breathing, continue to support their head and call for an ambulance. If you can't maintain an open airway then carefully follow the instructions of how to put someone with a spinal injury in the [recovery position](#).

If they're not breathing, you'll need to start [CPR \(cardiopulmonary resuscitation\)](#)

While waiting for help to arrive, keep checking their breathing, pulse and level of response.

Strains and sprains

Strains and sprains are common injuries which affect the soft tissues around joints – the muscles, tendons and ligaments.

They happen when the tissues are stretched, twisted or torn by violent or sudden movements, for instance if someone changes direction suddenly, or falls and lands awkwardly.

A sprain is when a ligament has been twisted or torn.

A strain is when the muscle has been overstretched and has partially torn. (A rupture is when a muscle or tendon is completely torn).

What to look for - strains and sprains

If you think someone may have strained or sprained a muscle, ligament or tendon, these are the three key things to look for:

1. Pain and tenderness
2. Difficulty moving
3. Swelling and bruising

What you need to do - strains and sprains

Remember RICE for the four steps to deal with strains and sprains:

Rest – Ice - Comfortable support - Elevation



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Treatment for strains and sprains

Step 1 of 4: Rest



Help them to sit or lie down and support in a comfortable raised position the part they've hurt.

Step 2 of 4: Ice



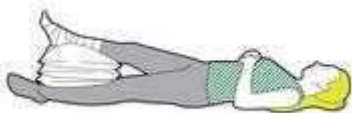
To cool the area, apply a cold compress, like an ice pack or cold pad. This will help to reduce the swelling, bruising and pain. Do not leave on for more than ten minutes.

Step 3 of 4: Comfortable support



Leave the cold compress in place or wrap a soft layer of padding, e.g. cotton wool, around the area. Tie a support bandage around it, to hold it in place, which goes up as far as the next joint on each side. For example, for an ankle injury, the bandages should go from the base of the toes to the knees.

Step 4 of 4: Elevation



Elevate the injury and support it with something soft, like cushions.

If the pain is severe, or they can't use their limb at all, take or send them to hospital. Otherwise, just tell them to rest it and to see a health care professional, if necessary.

BANDS – BANDAGES – DRESSING

They are used both to hedge or to protect wounds like pressure and control bleeding; entablillamientos to hold packs or to protect a region of impurities and

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shelter her body, and finally to prevent movement of a zone.

General Application Instructions

before applying the bandage should cover the wound with a sterile pad or gauze. Never place the band directly affected because it can lead to infection part. The bandage should be placed firmly, but not so tight as to cause pain or impede circulation. So only it occurs swelling and may even be the cause of gangrene. If you have nothing to hold the bandage when it is already placed, divide the final half centimeters (depending on the size of the body part that is binding) anudelos at the bottom, roll a few times in strips Atelas counterclockwise and then firmly, but without pressing.

To continue Bandages and most common ways to apply and How to use different types of bandages

Types of bandage on First AID techniques: (first aid supplies)
 elastic, compression, israeli, finger, hand, pressure, triangle, triangular, conforming, head, butterfly, elastic, medical, knuckle, wound.

1. ADHESIVE BANDAGES (BANDAGES, PATCHES, BANDAGES)



They come in different sizes and serve to cover minor and superficial wounds. Some are already sterilized and bring gauze with antiseptic cream.

Before applying the injured should be washed with soap and water, and then dry with a piece of gauze or a clean cloth. I Put antibiotic ointment or cream and allow to dry for a moment.

Place the bandage directly applying central gauze over the wound, catching and finally removing the plastic ends.



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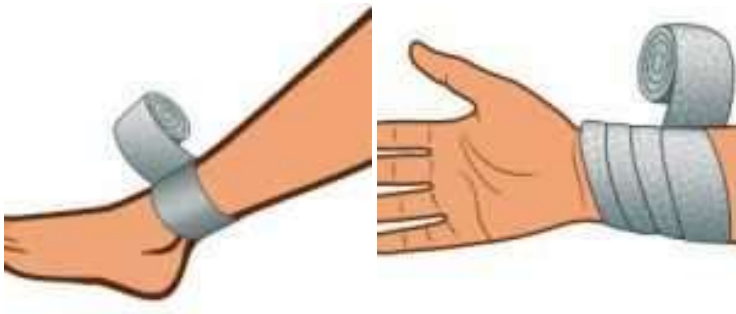
2. BANDAGE ROLLED OR CIRCULAR

Generally, the band will gauze and can be used for lesions in the wrist, ankle, neck, fingers, etc. -Come in different widths depending on the part that is needed bandaging.

You must first secure the start of the band with your left thumb and then wrapping it with two laps to go in the same place so start to hold. Then begin to wind up riding around the other in $\frac{3}{4}$ There are several methods and techniques to set the bands within which the most common are:

With tape. With a safety pin.

With a loop knot: after finishing the bandage wrap the injured area, leave free approximately 20 centimeters. Then push back the bandage until an end is twofold. Proceed to securely attach the two ends



Was mowing the band: is cut into two the final end, they knotted and wound in the affected part-each one in contrary sense and finally re-boot.

To place a circle in the toes or hands bandage proceed as follows: To ensure the start two laps bandage on the side of the base of the finger, go rolling so to go up and go around overlapping each other in $\frac{1}{4}$ of the width of the band.

To cover the fingertip pass band a few times on the basis of the finger tip and crossing to the other side. Hold these last laps with a bandage around them. A firme with pieces of adhesive tape along the finger and mud around these strips. If the finger is injured on the bottom you can hold the bandage on the wrist. Placing it in a figure eight.

SEE various types of dressings with illustrative images



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Spica bandage of shoulder



Recurrent bandage of stump



Figure-of-8 bandage of both shoulders



Spiral reverse bandage



Figure-of-8 bandage of ankle



Scultetus bandage



Four-tailed bandage



Recurrent bandage of head



Barton bandage (single turn)



Many-tailed bandage

3. TRIANGULAR BANDAGE

This type generally used for bandages tie type to apply a tourniquet or to treat injuries to the head or arms. 7

a) For the head (especially suitable for wounds on the scalp).

- Take the triangle, fold at the bottom and place it on the head, starting from the level of the eyebrows, with the hem out (Fig.1).
- Bring the ends back, crossing them behind his head and put forward to tie them (fig. 2).

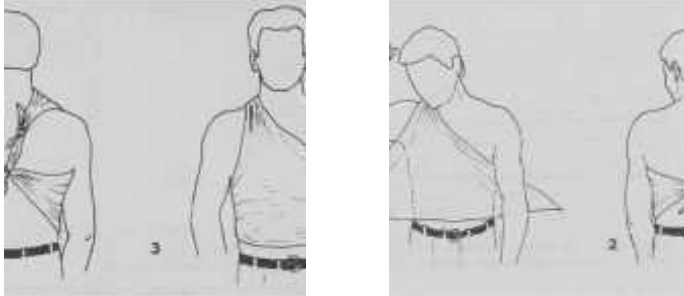
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b) To Chest

- Place the tip (apex of the triangle) on one shoulder. It should be the one

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- The tip of the triangle that hangs behind the neck pull it up and roll over previously crossed strips. (Fig. 3).



first aid triangular bandage techniques

C) Type tie

Very used for lesions in the jaw, face and ears, among others.

- Take the triangle and bent from the vertex few times as necessary, until the desired width.
- Pass the strap over the injured area, take a drive around the area, cross it and tie it in place of the crossing opposite the mud.

In the case of injury to one or more ribs place Triangular bandages that hung around to the opposite side to the injured area. Lest tighten pads placed under each of the nodes.

4. BANDAGE REVERSE SPIRAL.

Ideal for use in injuries in the legs or forearms.

- The dressing begins two turns on the thinnest part of the area affected (ankle or wrist) (fig. 1).
- Turning the roll of gauze on itself and start another turn (fig. 2).
- By giving every turn, at the same point at the same level it becomes to turn the roll of bandage. And so on.

5. BANDAGE IN A FIGURE EIGHT

Very convenient for injuries in the ankles, knees, wrists, hands or elbows.

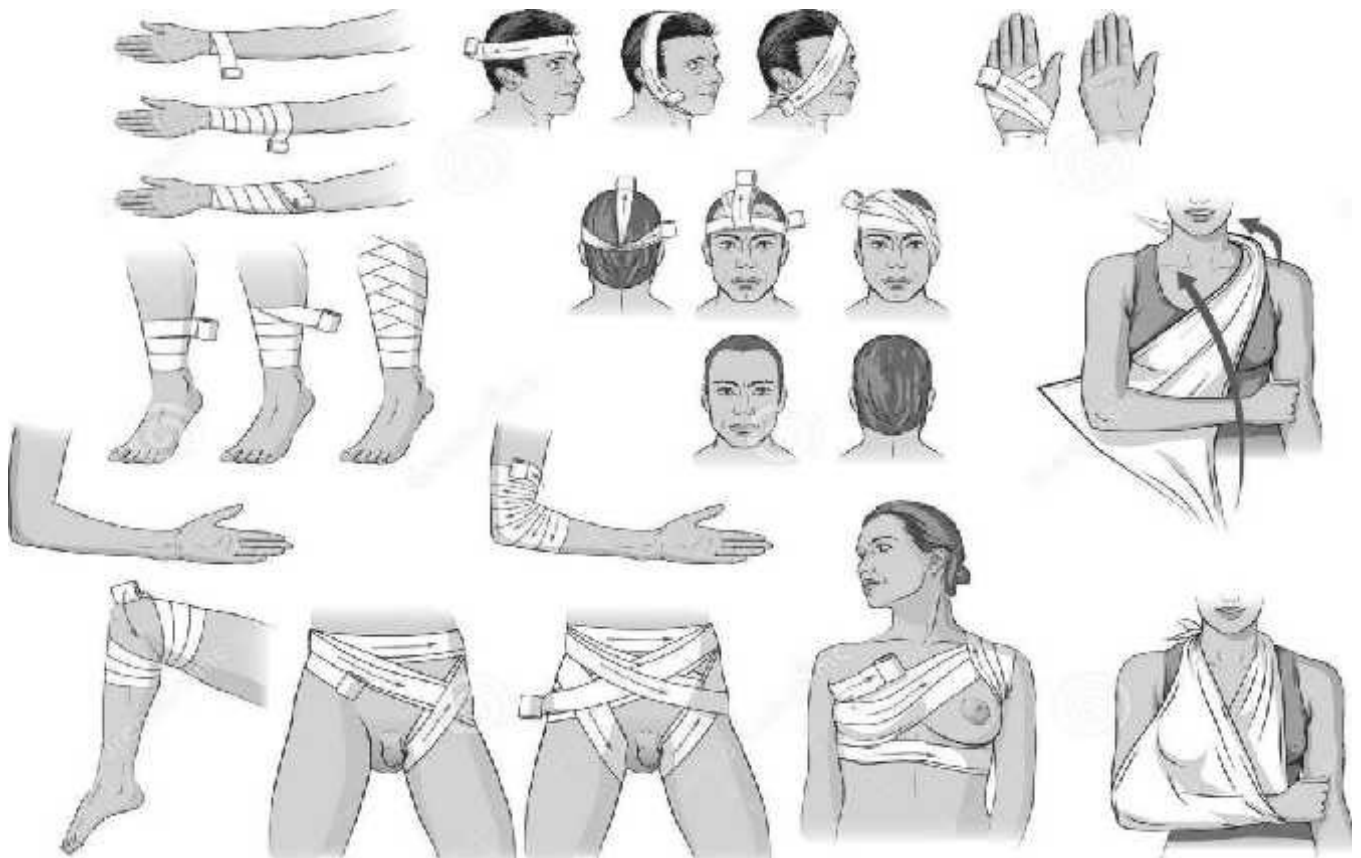
- It incia with two laps around the affected part. (Fig. 1).
- Immediately get off at an angle, then riding a seesaw back about a third of the

other and so on to cover the surface (Fig. 2).

6. TANG DRESSING

For use in groin injuries or shoulder.

- holding the gauze bandage on the opposite side to the injured area and then begins to wrap the region affected groin or shoulder (Fig. 1) part.
- It returns to the starting point passing behind the body (Fig. 2).
- Repeat as necessary to cover the injured area mud.



7. SPECIAL BANDAGES

a) For the jaw

- Surrounding the head with a couple of laps of the band.
- At get to the side, at ear level, and pass up the band over the head.
- Then lower it and run it through the chin (fig. 2).
- Repeat this a couple of times and secure the bandage with tape.

b) For the head

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- Two bands are attached at the ends and knot is placed in the center rear of the head (Fig. 1).
- Bring the ends forward and cross them in the area of the forehead (Fig. 2).
- Conduct now ends back and cross them in the same part of the initial knot, leaving a strip follow completely encircling the head and the other up (fig. 3).
- Set the band passing-up with around the head and upload again. And continue to cover the entire head (fig. 4).
- Finally a full turn around the head with one end (which comes from above is fixed] and tie a knot in the front (fig. 5).

To continue Bandages and most common ways to apply and How to use different types of bandages

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