EMERGENCY MEDICAL CARE

Natural disasters often increase morbidity and mortality rates. Regular channel of communication and life support services like medical facilities are jeopardised in the event of a disaster. People suffer from mental shock. Panic and confusion prevails. A prompt response must provide first aid and organise a tiered system of care to victims before they are moved to hospitals.

Emergency medical care is and should be an integral part of the overall Disaster Preparedness plan. The programme has as its primary objective the treatment of the wounded in the immediate aftermath of a cyclone and flood in order to reduce the number of deaths and disabilities and bring about recovery.

Focus, in the following pages, is on how to identify patients using tag system, treatment of shock, pressure points to stop bleeding, use of bandages and splints to deal with fractures and methods of resuscitation. With simple and easy-to-implement measures, the manual is useful for training personnel in the disaster prone areas.

HEALTH PROBLEM COMMON TO ALL DISASTERS

Social reactions	· Panic, stunned waiting, reluctance to obey order
Communicable disease	: Contamination of food and water, disruption of services, vector borne diseases, poisonings
Population displacement	: Increased morbidity, mortality
Climatic exposure	
Food and Nutrition	: Damage to food stock, disruption of distribution system
Mental health	

SHORT TERM EFFECTS OF MAJOR NATURAL DISASTERS

EFFECT	FLOODS	TIDAL WAVE FLASH FLOODS	HIGH WINDS	EARTH QUAKE
Death	Few	Many	Few	Many
Severe Injuries	Few	Few	Moderate	overwhelming
Increased risk of communicable diseases	Potential risk rising with overcrowding & deteriorating sanitation			
Food Scarcity	Common	Common	Rare	Rare
Major Population Movement	Common	Common	Rare	Rare

Be clear about . . . . . .

- Who is affected? How many? Where?
- What are the present needs?
- What would be the future needs?
- What would aggravate the problem?

IDENTIFYING PERSONS WITH HIGHEST NEED

The principle of triage (sorting of patients)

Classifying the injured on the basis of the benefit they can expect from medical care and not according to the severity of injuries.

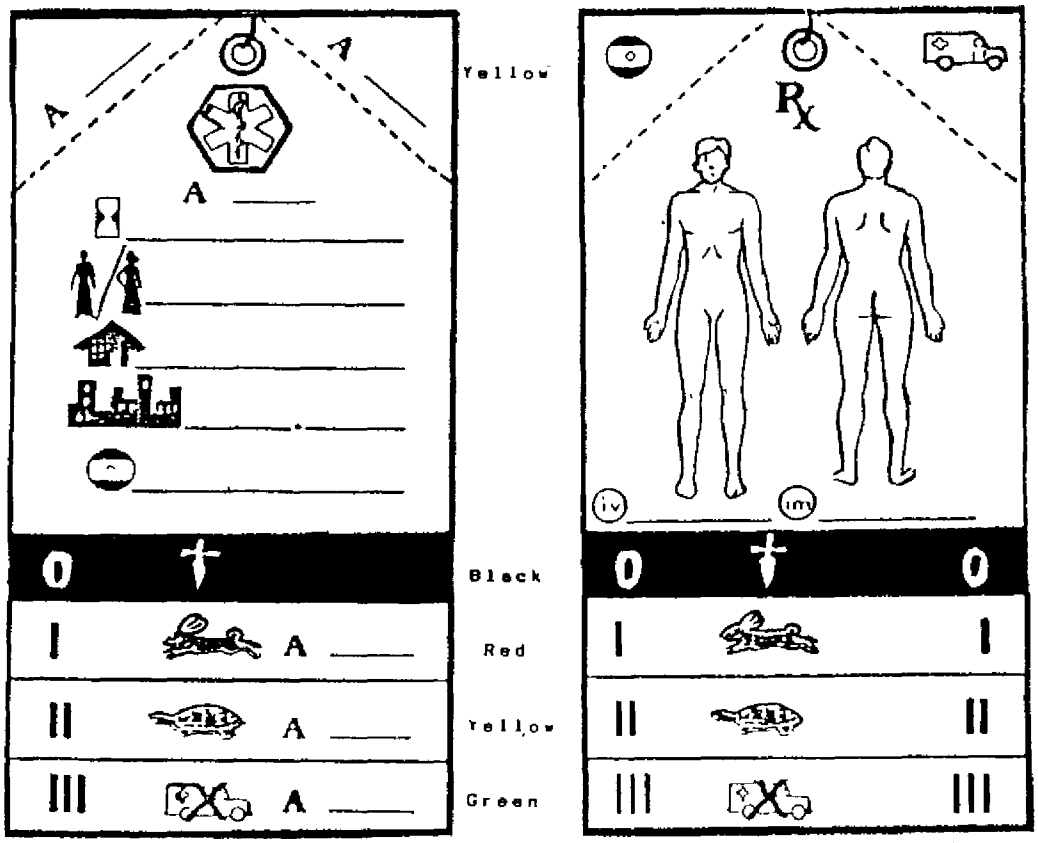
i.e. If simple intensive care would dramatically increase the chance of saving a person, s/he gets the top priority over a dying person who needs many resources.

Three categories:

- Those who cannot benefit from the treatment available at that time
- The seriously injured who should be first attended to
- Patients who can move about - whose injuries are less severe
- This classification should be done at
  - Disaster site
  - Hospital admission

TAGGING

All patients must be identified with tags stating name, place of origin, initial treatment, age, triage category, sex, diagnosis



Colour of tag	Interpretation
Red	First priority for evacuation. Needs immediate care
Green	Second priority for evacuation Needs care but injuries are not life threatening
Yellow	Third priority for evacuation. Minor lesions or fatal injuries.
Black	Dead i.e. no pulse (respiration for over 20 minutes) or Injuries for which resuscitation procedure are impossible

Red Tag

This tag signifies that the patient is a first priority for evacuation. Red-tagged patients need immediate care and fall into one of the following categories:

- Breathing problems that cannot be treated at the site.
- Cardiac arrest (witnessed).
- Appreciable loss of blood (more than a litre .)
- Loss of consciousness.
- Thoracic perforations or deep abdominal injuries
- Certain serious fractures.

a) pelvis;

b) thorax;

c) fractures of cervical vertebrae;

d) fractures or dislocations in which no pulse could be detected below the site of the fracture or dislocation ;

e) severe concussion;

f) burns (complicated by injury to the air passages).

Green Tag:

Identifies patients that receive second priority for evacuation. Such patients need care, but their injuries are not life- threatening. They fall into the following categories:

- Second degree burns covering more than 30 per cent of the body.
- Third-degree burns covering 10 per cent of the body.
- Burns complicated by major lesions to soft tissue or minor fractures.
- Third-degree burns involving such critical areas as hands, feet, or face but with no breathing problems present.
- Moderate loss of blood (500-1,000cc).
- Dorsal lesions, with or without injury to the spinal column.
- Conscious patients with significant craniocerebral damage (serious enough to cause a subdural hematoma or mental contusion).Such patients will show one of the following signs:
- secretion of spinal fluid through ear or nose;
- rapid increase in systolic pressure;
- projectile vomiting;
- changes in respiratory.frequency;
- pulse below 60 ppm;
- swelling or bruising beneath the eyes;
- anisocoric pupils;
- collapse;
- weak or no motor response;
- weak reaction to sensory stimulation (profound stupor).

Yellow Tag:

Used on patients who are given third priority for evacuation and who fall into the following categories:

Minor Lesions

- Minor fractures(fingers, teeth, etc)
- Other minor lesions, abrations, contusions

Minor burns:

- second-degree burns covering less than 15 per cent of the body;
- third-degree burns covering less than 2 per cent of the body surface;
- first degree burns covering less than 20 per cent of the body, excluding hands, feet, and face

Fatal Injuries

- Second and third-degree burns over more than 40 per cent of the body, with death seeming reasonably certain.
- Second and third-degree burns over more than 40 per cent of the body, with other major lesions, as well as major fractures, major craniocerebral lesions, thoracic lesions, etc.
- Craniel lesions with brain tissue exposed and the patient unconscious;
- Craniocerebral lesions where the patient is unconscious and has major fractures.
- Lesions of the spinal column with absence of sensitivity and movement.
- Patient over 60 years old with major lesions.

Black Tag:

Black tags are placed on the dead, i.e. casualties without a pulse or respiration who have remained in that condition over 20 minutes or whose injuries render resuscitation procedures impossible.

INJURIES

TYPES:

1 . External Injuries: Wound, laceration, contusion.

2 . Damage to internal organs.

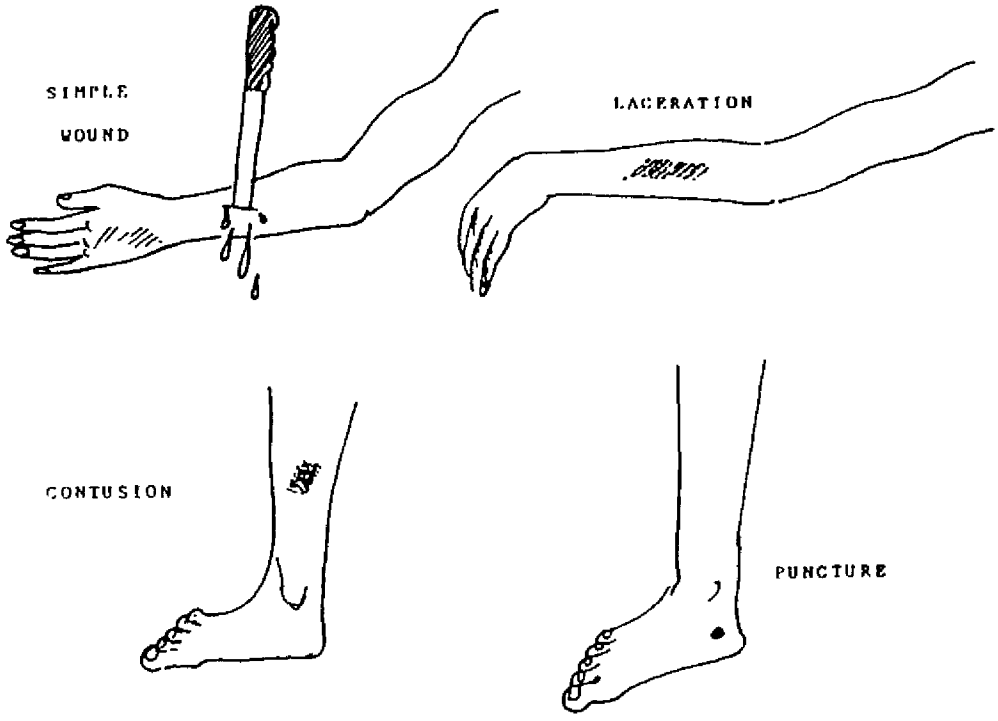
3 . Fracture/dislocation.

External Injuries

A simple injury caused by an object (eg) Knife cut. If this has jagged ends it is a laceration.

When an object falls on the body causing only internal haemorhage seen as bluish discolouration of the skin, it is a contusion.

Wounds cause bleeding and infection. They could also damage internal organs



Internal Injuries

This is not easy to make out.

Pain may be severe. A conscious person may be able to pinpoint the area of pain.

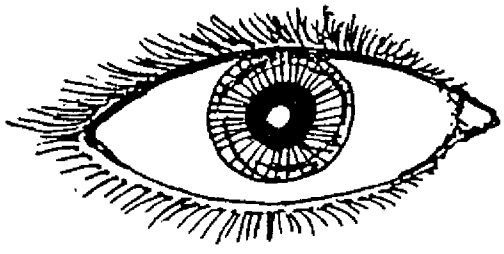
Head, chest or abdominal injuries are frequently associated with internal damage.

Shock results if a person has internal bleeding. This can be made out by a rapid pulse (normal 72 - 80 mt), cold clammy skin, shallow breathing and blurred vision.

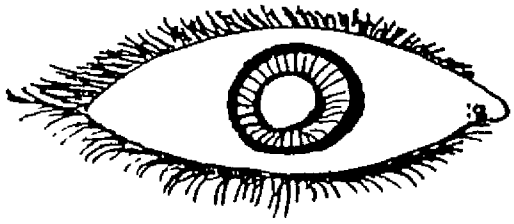
Fresh blood in the vomitus, urine or motion or tar coloured vomitus or motion indicate internal bleeding.

Swelling, hardness and pain on touch indicate internal injury.

Brain injury results in unconsciousness, fits or stupor. The pupils may not react in normal way to light.



NORMAL REACTION



DILATED PUPIL

FRACTURES

SIMPLE FRACTURE

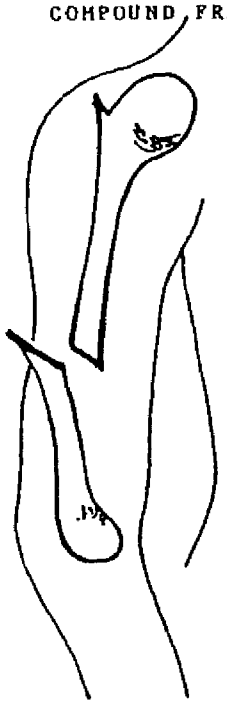
Fracture is a word used to describe a break in the bone. It could be:

Simple - If no wound is present over the area of fracture, leading to

Compound - a wound directly leads to the fracture

Complicated - accompanies an internal injury.

COMPOUND FRACTURE



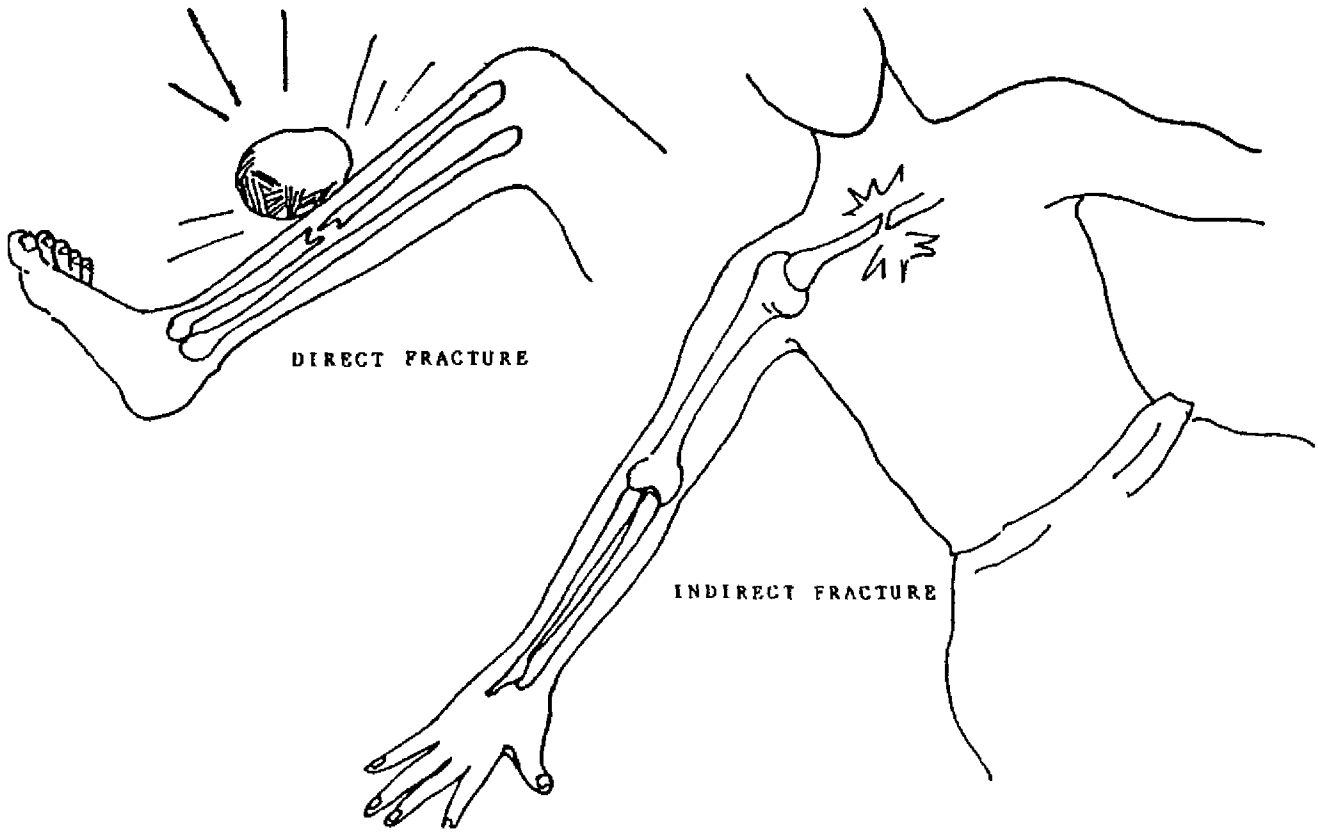
It is best to treat fractures on the spot - only if you are experienced and trained If not, immobilise the fracture and seek medical attention immediately.

Direct Fracture

if the bone breaks at the points of external injury

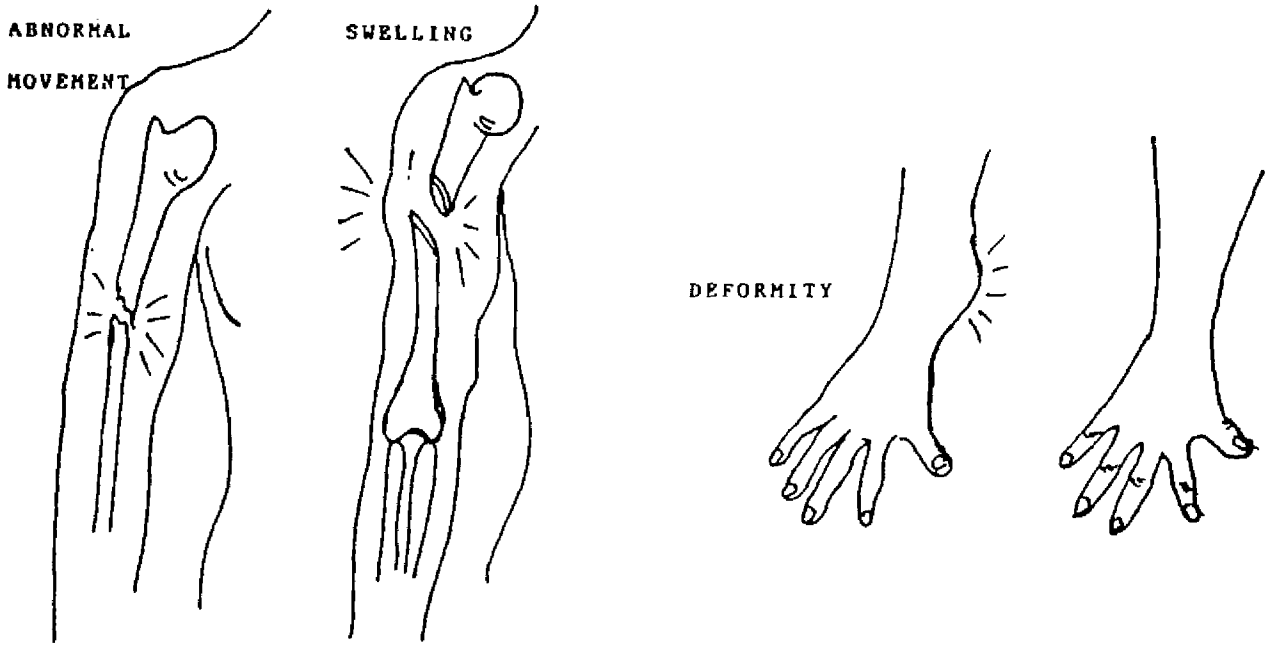
Indirect Fracture

The bone breaks at a point away from the point of external injury.

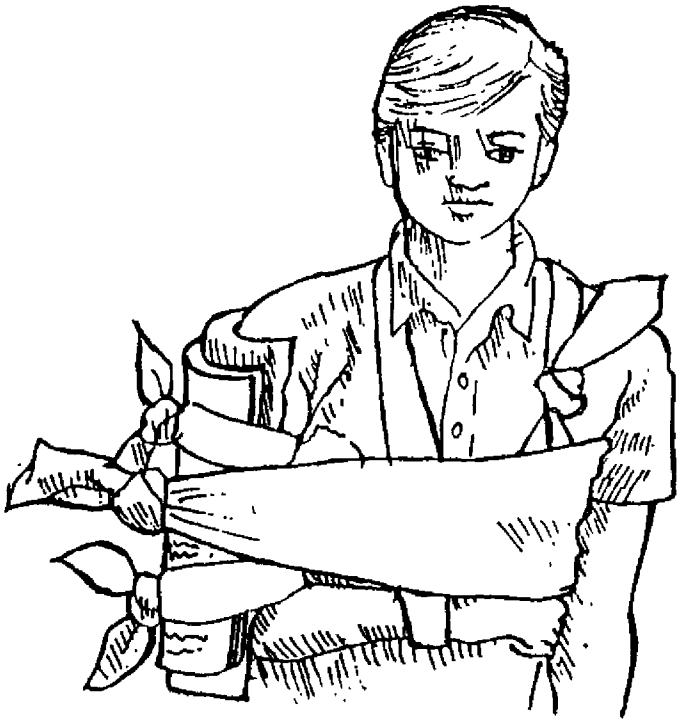


Identification of fracture

- Pain over the bone or joint.
- Abnormal Shape/deformity or movement of the overlying part..
- The person heard or felt a 'Snap'
- Swelling.
- Grating sound or feeling.
- Numbness, loss of pulse, or twigling in the affected area.
- Always compare the suspected area with the other half.



Immobilisation

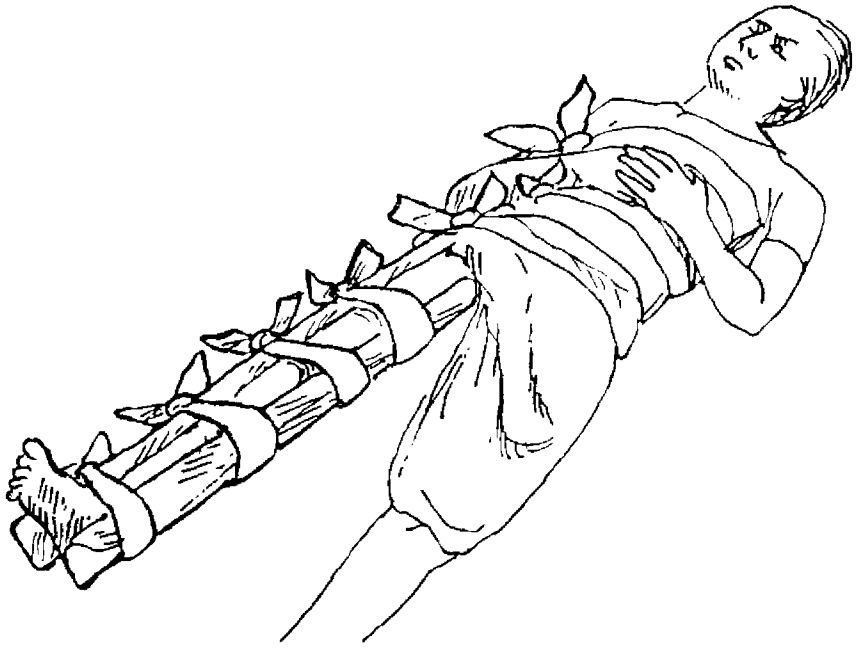


- Do not move the affected area if possible, or keep at an absolute minimum.
- Do not straighten the injured part
- Use any straight object- ruler, bark of trees, pieces of timber, even folds of paper or other limb as a splint.
- Check for pulse and numbness frequently. Relax bandage if too tight.

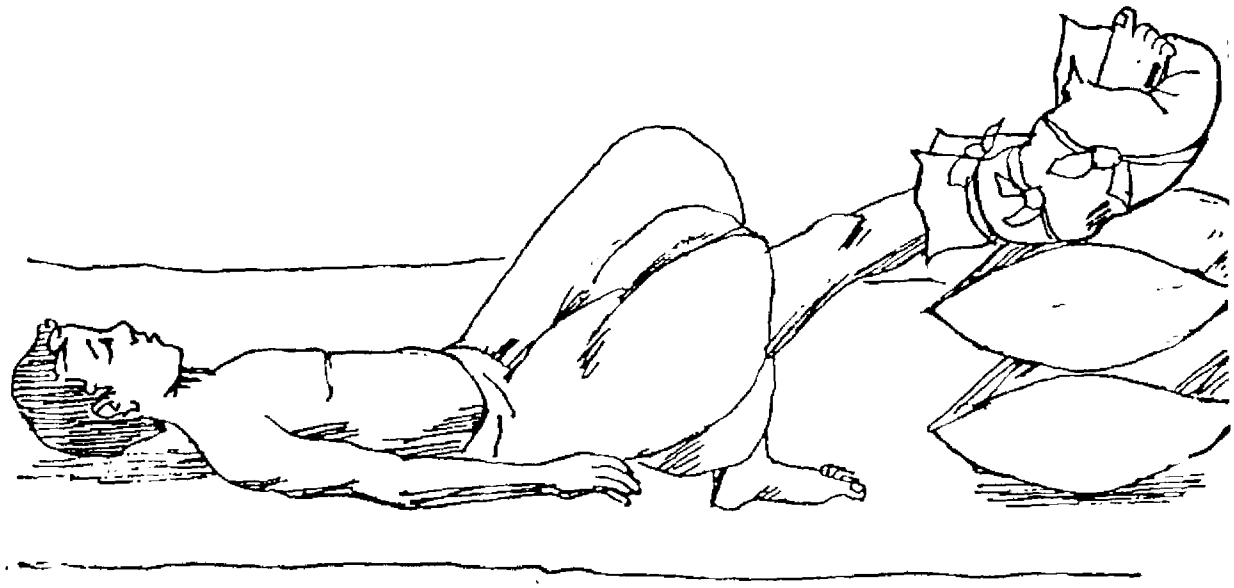
Management

- Always check the pulse and respiration first.Control any bleeding.
- Do not move the patient before immobilising the affected part.
- Keep the skin clean and covered
- Immobilise joint using available splint.
- For details of immobilisation see section on bandages.

Immobilisation of Leg



Immobilisation of Foot



CONTROL OF BLEEDING

Direct Pressure:

Wipe the bleeding area.

Cover the point of bleeding with a clean cloth or bare bands.

Press firmly on the entire wound for 10 minutes without releasing pressure.

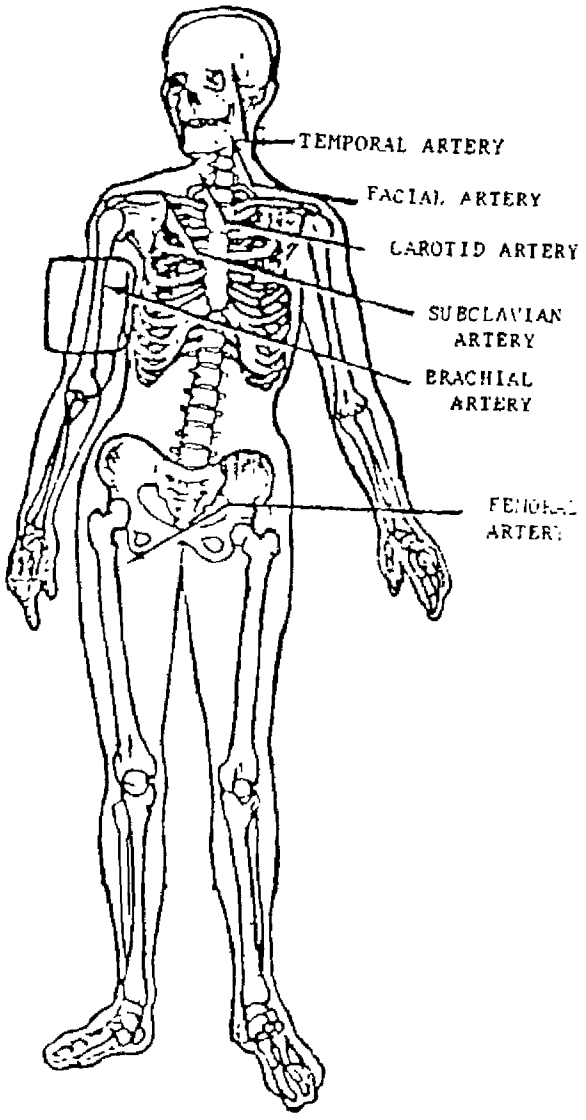
While pressing, raise the injury above the level of the heart.

When the bleeding stops, tie the cloth pad firmly.

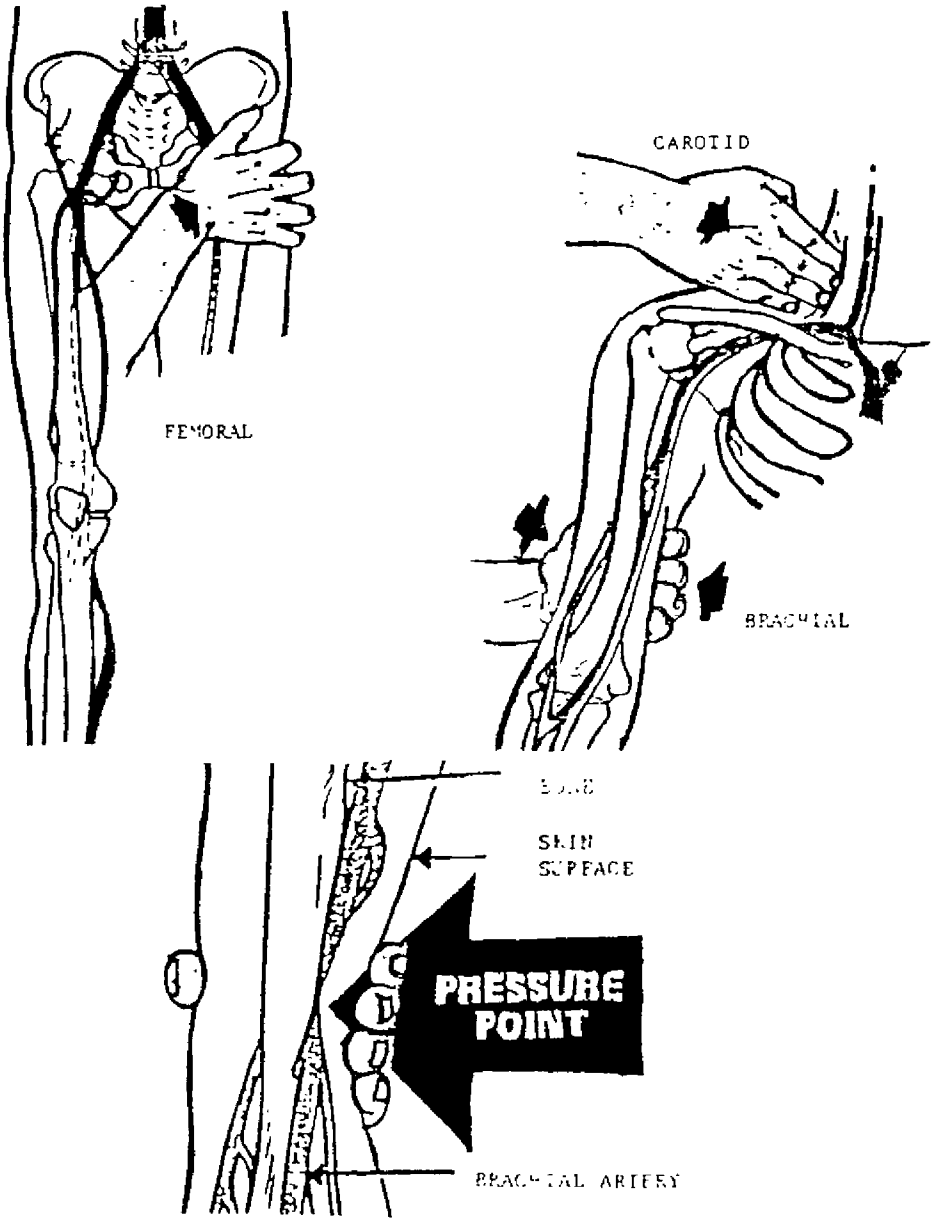
If the injury is on a limb feel for the pulse beyond the injury If not felt, loosen the bandage.

If the bleeding does not stop, you are not pressing hard enough. Press harder.

Cold water/ice applied on the bandage will control bleeding



Pressure Points



REMEMBER .....

- Do not remove embedded objects.
- Do not remove bandages if they become blood soaked.
- You may disturb the clot and bleeding will resume.
- Add another layer and press harder
- Seek medical attention.
- Do not use a tourniquet.

Indirect pressure

If the wound is large and if a foreign body or fracture is suspected :

- Apply pressure for 10 minutes on what is known as pressure point as near as possible to the wound, towards the heart side, where the artery can be pressed against the underlying bone.

- Relax pressure and note whether bleeding has ceased.

As soon as the bleeding is controlled apply a bandage over this area making sure that the blood supply to the limb is not completely cut off.

If not controlled within 10 minutes, relax and reapply pressure. Repeat this until medical aid is obtained.

Bleeding From Scalp

Place a firm pad on the bleeding point and secure it by a narrow bandage with its centre laid on the pad, the ends carried round the head in the most convenient direction and tied tightly over the pad.

Internal Bleeding

If any of the following are present, the person is probably bleeding inside:

- Coughing foamy red blood.
- Vomiting with red or brown material.
- Bowel movements containing red or black tar like materials.
- Red or Brown urine.
- Remains unconscious, pale and cold.

If the person is unconscious, or vomits blood or is bleeding in or around the mouth, lay him on his side to keep his airway open.

In all other situtations make him lie on his back with legs elevated about 1' above floor level.

- Do not give the person anything to eat or drink as surgery may be necessary.
- Conserve body heat by covering the person lightly.
- Seek medical assistance immediately.

SHOCK

A person is in shock if :

- he is unconscious and may be restless.
- extremities of pale or cold.
- does not respond to stimulus.
- Pulse is weak and thready.
- The usual causes are bleeding, physical pain or painful news or event.

If shock is not treated on time it could become irreversible.

Therefore .....

- Reassure the casuality. Speak to him gently and keep calm. Do not appear panicky or excited. Remember what ever you say about his condition could be heard by him even if he is not conscious.
- Make him lie down and raise his feet (Unless it is a chest/head injury when head and shoulders shoud be kept slightly raised).
- Keep the patients still and wrap him warmly.
- Loosen all tight clothing especially around the waist and chest (like dhoties and sarees).

Check and Treat the Cause:

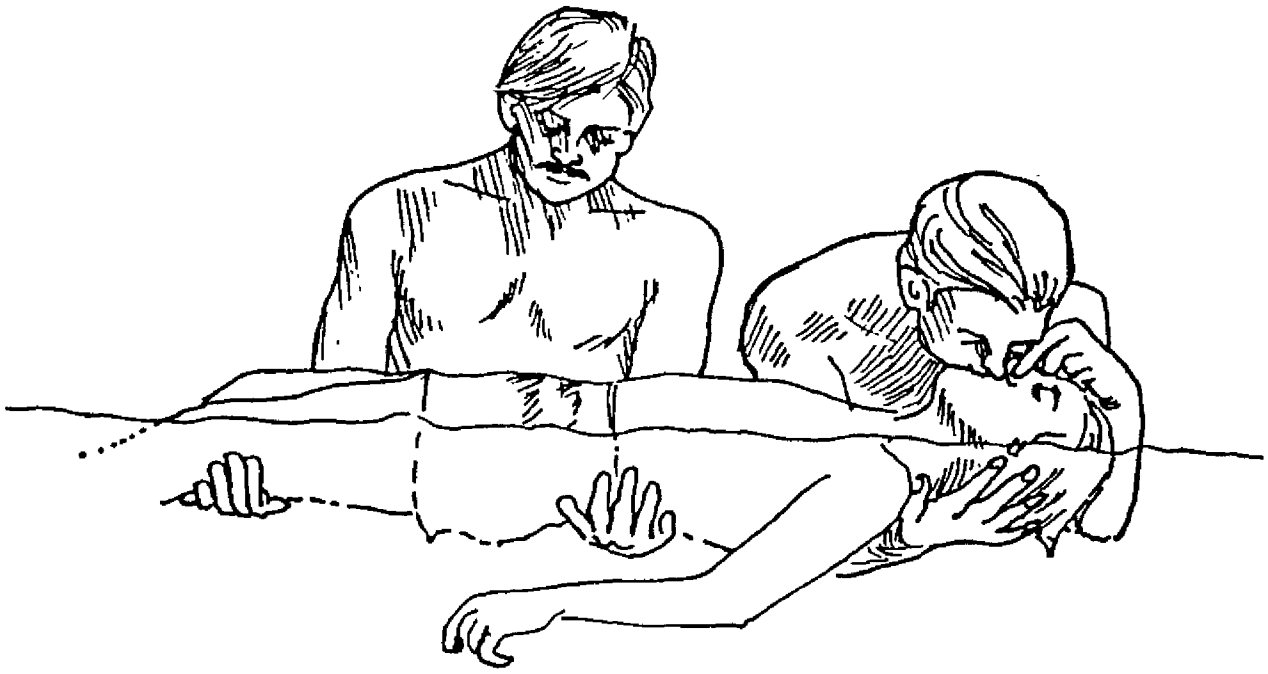
- If he has lost blood this has to be replaced.
- If the victim has lost fluids by way of vomiting or diarrhoea he has to be given fluids by mouth or through drip.
- If the shock is due to pain, it can be diminished only with the use of drugs.
- Hysteria can be checked by a slap on the cheek.
- Do not give anything to drink, in case he needs an operation, just give sips if necessary.
- Do not use heat or hot water bottles as this might give rise to burns, the patient being unconscious.
- Do not move the patient unnecessarily
- If vomiting is likely or if there is interference in breathing place him, head turned sideways.

If there is excessive bleeding severe injuries, or if you suspect internal injury, or if the patient does not become conscious inspite of our efforts to revive him, remove the patient to hospital.

Do not delay . . . . . .

Always see that level of the head is lower than that of the body on the stretcher. Do not do this for head, chest or abdominal injuries when head and shoulder should be raised slightly even on a stretcher.

RESUSCITATION IN DROWNING

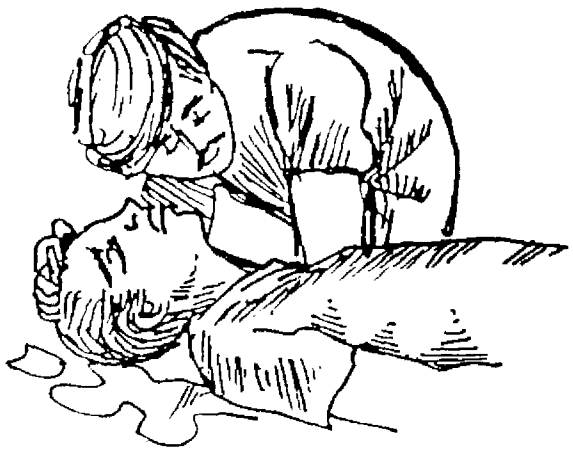


- On saving a person drowning in water immediately check for breathing and pulse.
- Before doing anything else restart breathing and pulse.
- Do not attempt to expel water from the person's lungs unless it is difficult to blow air into his lungs.
- Send for medical help urgently.

Methods Of Resuscitation

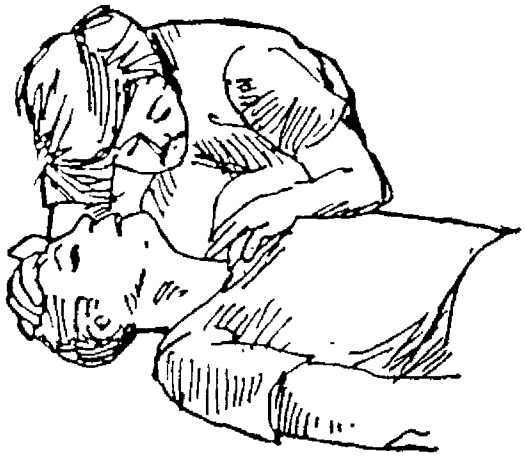
Step I

Quickly remove anything stuck in the mouth or throat.



Step II

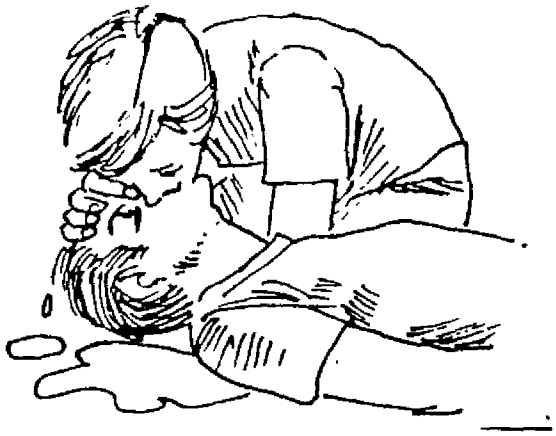
Quickly lay the person face up tilt his head (except in neck injuries) way back and pull his jaw forward.



Step II

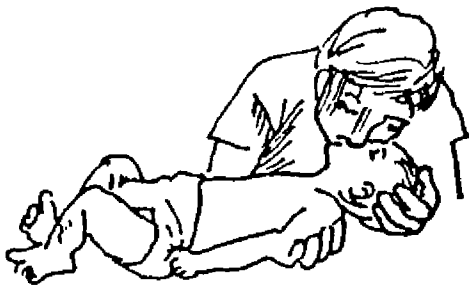
Pinch his nostrils closed with your fingers. Open his mouth wide, take a good breath, cover the person's mouth with yours and blow strongly into his lungs so that his chest rises. Pause to let the air come out. Inhale fresh air. Blow again.

Repeat about 15 times/minute.



CAUTION . . . . . .

With new born babies breathe very gently about 5 times per minute.



Check pulse and recheck breathing.

Do not give up till medical help arrive.

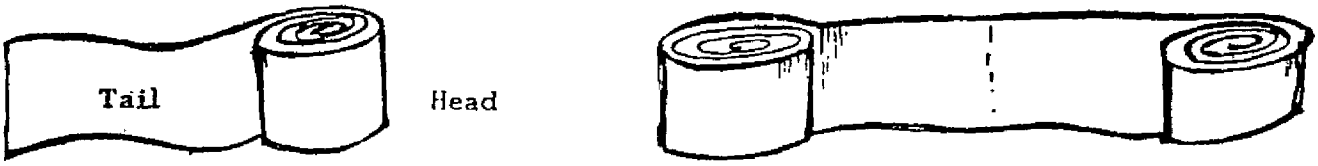
USES OF BANDAGE

Bandages are used to keep the dressing in position and to exert on the wound the necessary amount of pressure. They may be of calico or Tarlatan, or less frequently of cotton or Flannel.

The usual width of bandage is from 2" to 4". It could be either rolled by hand or by roller. Adhesive bandages (Elasto-Plast) are very useful for keeping dressing in position on different parts of the body where the normal bandages are difficult to be tied . These bandages may be used when strong pressure is required temporarily. It must be used with caution and not left on long enough to arrest the circulation in the region.

The proper application of bandages is important and requires considerable practice. To discuss in detail where and which type of bandage is applied, see the following pages.

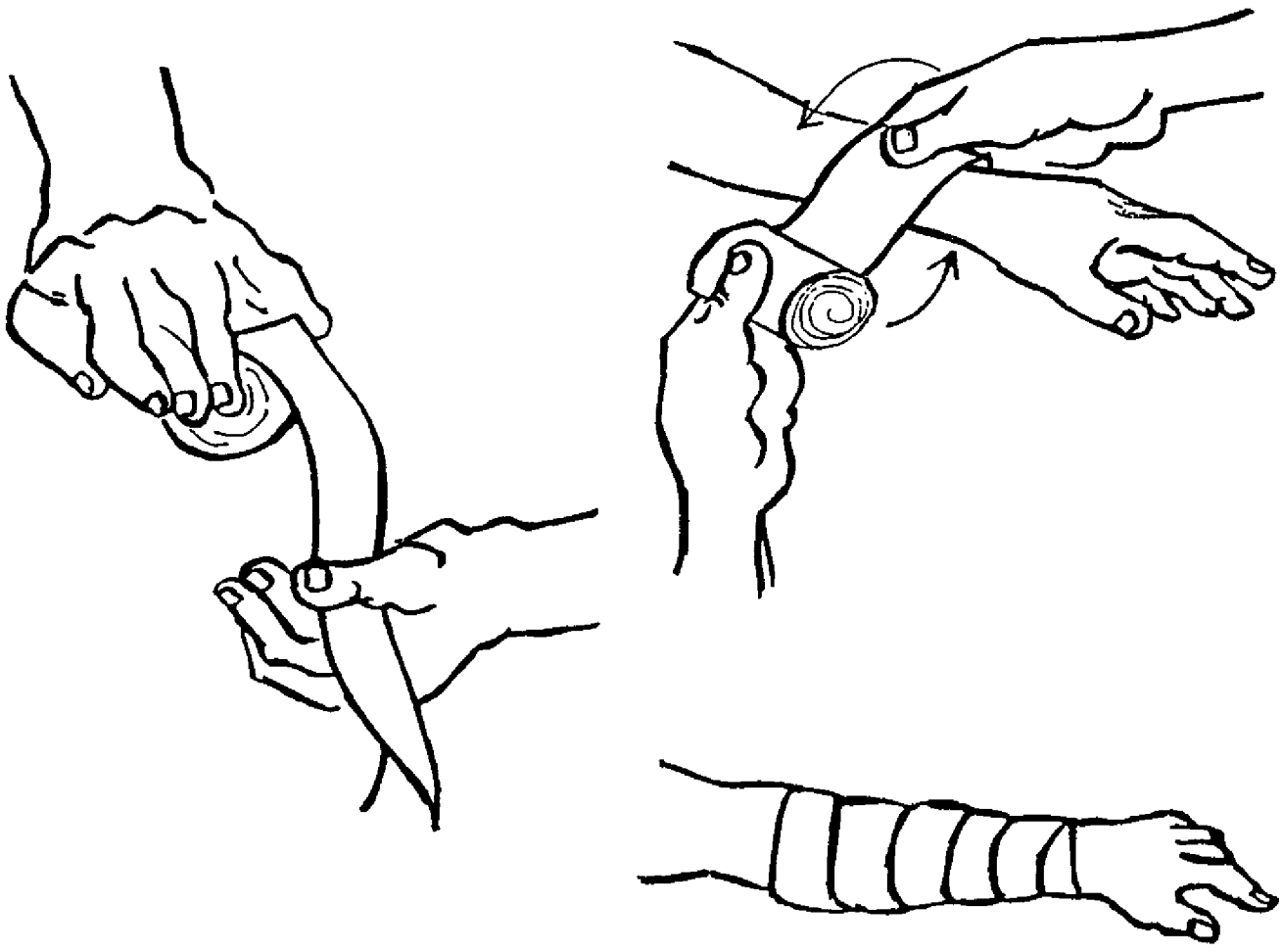
ROLLER BANDAGE



- The parts of the bandages are referred to as the head and the free end or tail.
- Usually a single roller bandage is used, but for certain parts a double headed roller bandage is required.
- In this, the free ends of two roller bandages are sewn together, leaving two heads close together on the same side of the bandages.
- usually 6 yards long, except very narrow ones, which are shorter.
- The width vary according to the part of the body to be bandaged.

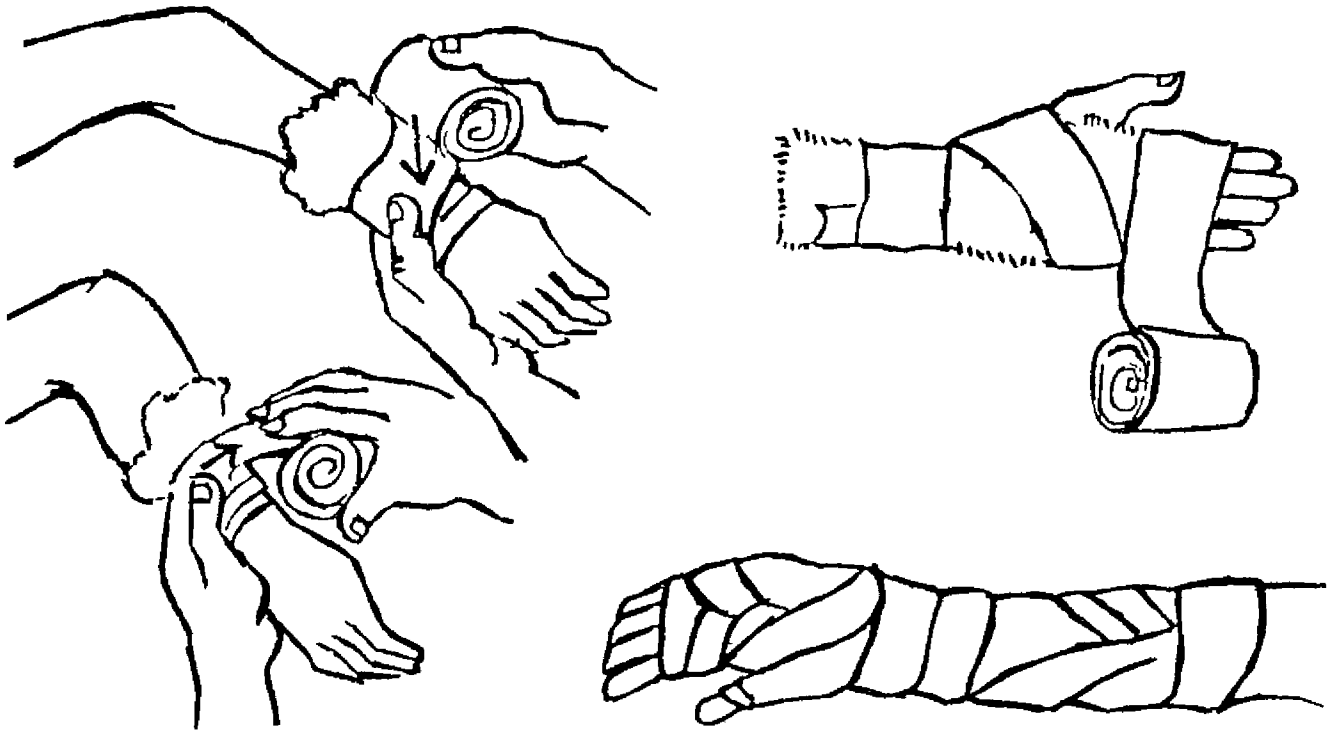
PARTS BANDAGED	WIDTH
Finger	1 inch
Arm	2 - 2 1/2 inches
Leg	3 - 3 1/2 inches
Trunk	4 - 6 inches
Head	2 inches

Simple Spiral Bandage



- Used in parts which are of uniform thickness, such as finger or wrist.
- Bandage is applied obliquely round the part, each turn covering two-thirds of the preceding one and the edges being kept parallel.

Reversed Spiral



- Used for parts which vary in thickness and upon which simple spiral will not lie evenly
- One or two simple spiral turns are usually made to carry the bandage to the point at which the spiral can longer be employed
- Fix the lower edge of the spiral with the thumb about half-way between the mid-line and outer surface of the limb.
- Reverse the bandage and bring down Carry it round the limb. Make another reverse above the former one.
- Repeat the reverse as far as necessary.
- Complete the bandage with one or two spiral turns straight round the limb.
- See that each reverse occurs immediately above the previous one, so that the pattern is even.
- Each turn should cover two-thirds of the preceding one, as in the simple spiral

FIGURE OF EIGHT

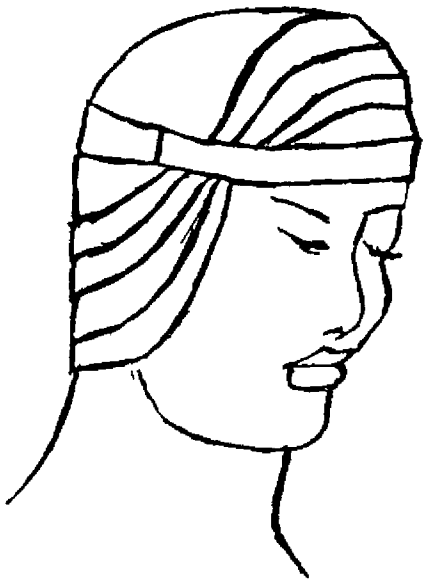
- Used for bandaging limbs and coveri ng joints.
- Consists of series of loops encircling the part in the form of figure of 8.
- The upper loop is completely hidden by the successive turns and the lower loop forms the pattern.
- Each one covers two-thirds of the preceding loop and crossing in the same line.

The Spica

- is a form of the figure of 8.
- One turn is very much larger than the other.
- Used for joints at right angles to the body. Eg Shoulder, groin ,thumb.

EAR BANDAGE

- Lay the outer surface of the bandage against the forehead.
- Carry the bandage round the head in one circular turn, bandaging away from the injured ear towards the sound side.
- Carry it round to the back of the head, low down in the nape of the neck and bring it up over the lower edge of the dressing to the fore-head.
- Continue across the top of the head to the nape of the neck again.
- Repeat, each turn being slightly higher than the previous one as it covers the dressing, but slightly lower as it covers the hair.
- Continue until the whole dressing is covered.
- Complete by one straight turn round the forehead.
- Pin where all the turns cross one another.



EYE BANDAGE

- Lay the outer surface of the bandage against the forehead.
- Take one circular turn round the head, bandage away from the injured eye.
- Carry it round the head until it reaches the ear on the sound side for the second time.
- Take it obliquely to the back of the head, under the prominence at the back of the skull.
- Bring it now upwards beneath the ear of the affected side, over the pad on the eye to the circular turn.
- Continue over the head to the starting point.
- Repeat two or three times until the dressing is covered.
- Finish with a safety pin just above the good eye.
- Pattern resembles ear bandage but there are fewer turns.
- The bandage should be light in weight.
- should not obstruct the view of the good eye.

FOOT AND ANKLE BANDAGE

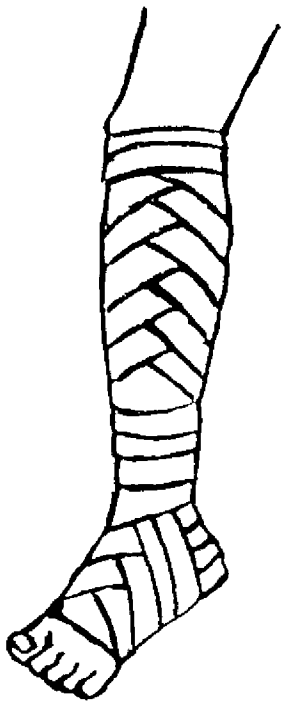
- Take one or two turns round the ankle to fix the bandage.
- Take it obliquely across the foot to the root of the little toe.
- Make one horizontal right turn round the foot at this level.
- Carry the bandage back over the foot.
- Take a turn round the ankle just above the heel.
- Figure of 8 turns are then repeated round the foot and ankle.
- Each turn overlaps the preceding turn by two-thirds of its width, until the whole foot is covered.

LEG BANDAGE

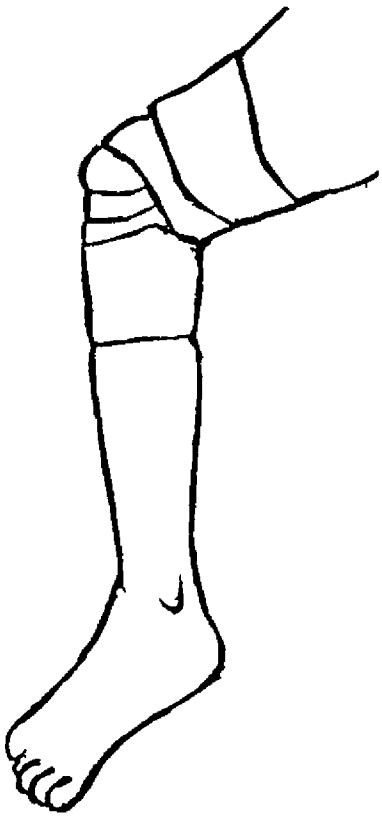
If the bandage is to be continued up the leg, the reverse spiral or figure of 8 turns may be used, as for the arm.

- Support leg so that the heel projects well over the edge of the chair, stool or cushion on which it is placed.
- The foot should be at right angles to the leg.
- Start the bandage with a turn over the tip of the heel, so that the centre of the bandage lies immediately over the tip.
- Carry it round the foot just below the tip of the heel so that the margin of the bandage covering the tip of the heel is well covered.
- Bring it over the ankle, take round the leg just above the tip of the heel, so that the other margin of the bandage covering the tip of the heel is also covered.
- Repeat turns. Each turn is made just below and above the preceding one, until the heel is well covered.
- The bandage extends from half-way along the foot to well above the ankle.

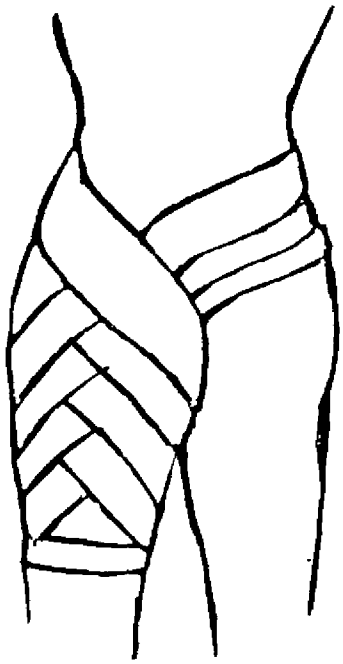
LOWER LIMB



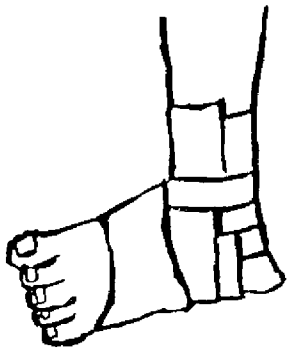
KNEE



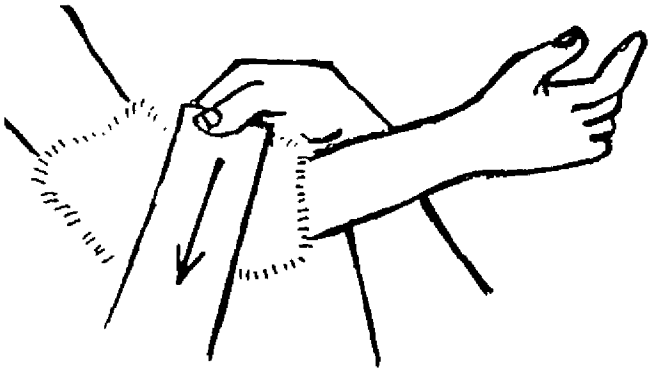
SPICA OF HIP



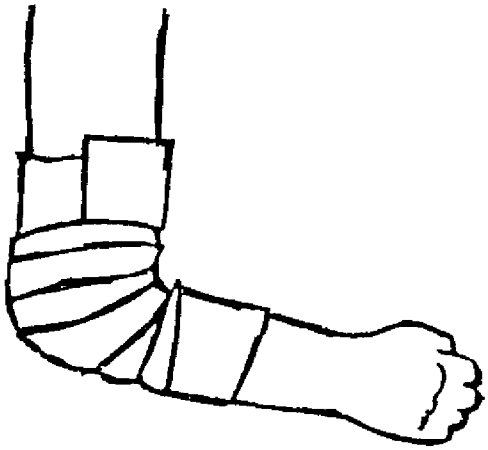
HEEL



ELBOW BANDAGE

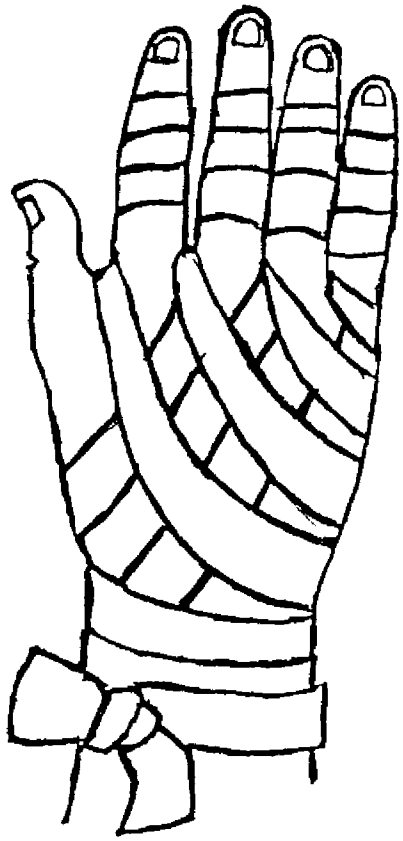


- Bend the elbow at right angles.
- Lay the outer side of the bandage on the inner side of the joint.
- Take one straight turn.
- Carry the bandage over the elbow tip and round the limb at the elbow level.
- Make second turn to encircle the fore arm and the third arm.
- Each turn must cover the margin of the first turn.
- Continue the turns alternately below and above the first turn, allowing each to cover 2/3 of the previous turn.
- Finish above the elbow.

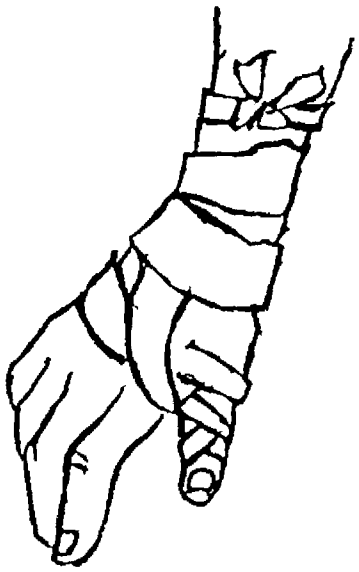


FINGER BANDAGE

- Hand pronated, bent with palm down.
- Fix the bandage by two circular turns round the wrist.
- Leave the end free for tying off afterwards.
- Carry the bandage obliquely over the back of the hand to the base of the finger to be bandaged.
- Taking the fingers in order, start from the little finger.
- Take one spiral turn to the base of the finger - nail.
- Cover the finger with simple spiral turns.
- Carry the bandage across the back of the hand to the wrist.
- Complete it with one straight turn round the wrist.
- Secure by a safety pin or by tying two ends together.
- If more than one finger is to be bandaged, take a turn round the wrist, between each two fingers.
- Continue as above.



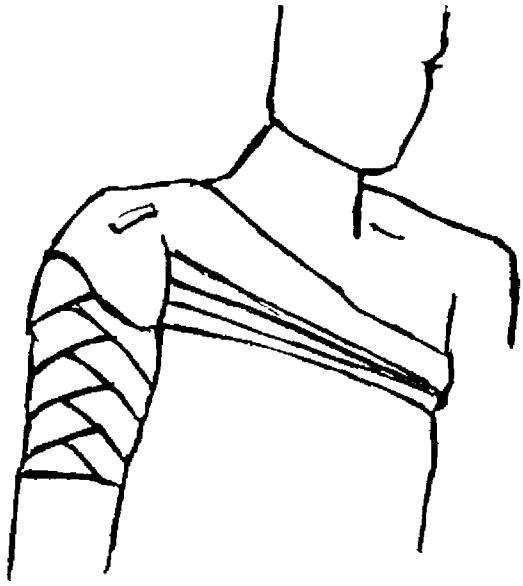
SPICA OF THUMB BANDAGE



- Hold the hand downwards, so that the back of the thumb is uppermost.
- Take two turns round the wrist.
- Carry the bandages over the back of the thumb.
- Encircle the thumb with one or two straight turns, so that the lower border of the bandage is level with the root of the nail.
- Carry the bandage back over the back of the hand, round the wrist.
- Repeat with the figure of 8 turns round the thumb and wrist, until the thumb is completely covered.
- Complete it with one straight turn round the wrist.

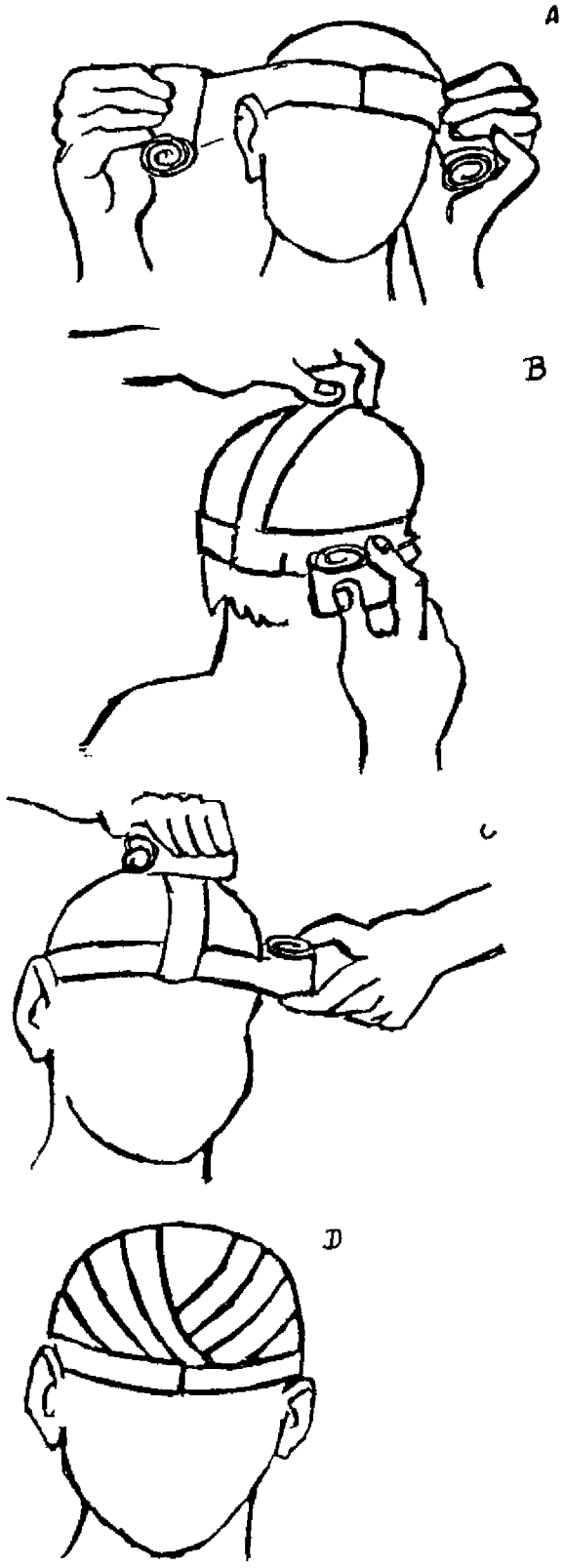
SPICA OF SHOULDER BANDAGE

- Place small pad of cotton-wool in each armpit.
- Take a 3/4 inch bandage.
- Fix it with two spiral turns round the upper part of the arm.
- Make two or three reverse spiral turns round the upper arm until the bandage reaches the point of the shoulder.
- Carry the bandage over the shoulder, across the back and under the opposite armpit.
- Bring it back across the chest and arm, round under the armpit and above the shoulder again, covering 2/3 of the previous turn.
- This forms a figure of 8 round the arm and the body
- Repeat until whole shoulder is covered.
- Secure with a pin over the injured shoulder.



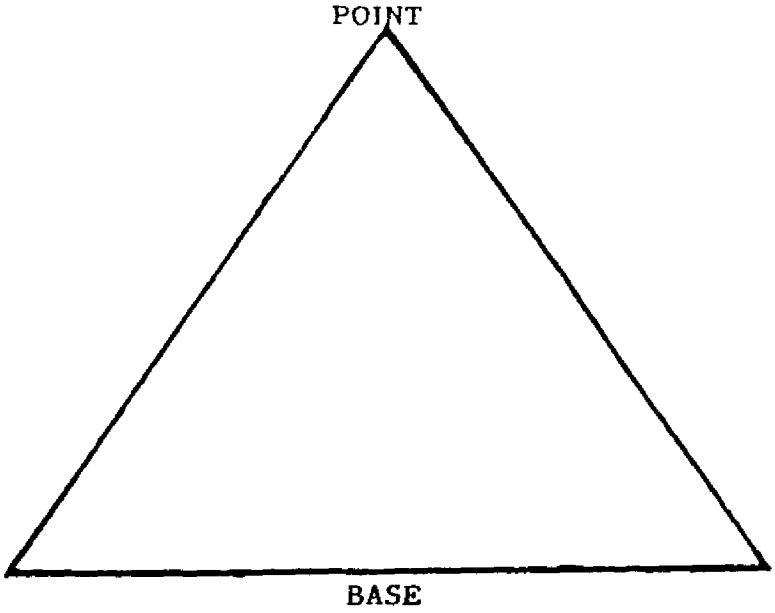
HEAD BANDAGE - CAPELINE

- Used to cover the whole scalp.
- A double-headed roller bandage is used.
- Seat the patient.
- Standing behind, place the centre of the outer surface of the bandage in the centre of the forehead, the lower border of the bandage should lie just above the eye-brows.
- Bring the heads of the bandage round over the temples and above the ears to the nape of the neck Cross the ends here.
- The upper bandage is now carried round the head. The other is brought over the centre to the top of the scalp of the root of the nose.
- The bandage encircling the head is now brought over the forehead, covering and fixing the bandage which crosses the scalp.
- Bring this bandage now over the scalp, slightly to one side of the centre, thus covering one margin of the original turn.
- Cross it again at the back and fix it by the encircling bandage. Now turn it back over the scalp to the opposite side of the centre line, now covering the other margin of its original turn.
- Repeat these backward and forward turns to alternate sides of the centre, each one being in turn fixed by the encircling bandage, until the whole scalp is covered.
- Complete with a circular turn round the head.
- Pin in the centre of the forehead.



TRIANGULAR BANDAGE

Parts Of A Triangular Bandage



Made by cutting a cloth 4 meters square diagonally into 2 parts.

Uses Of Triangular Bandage

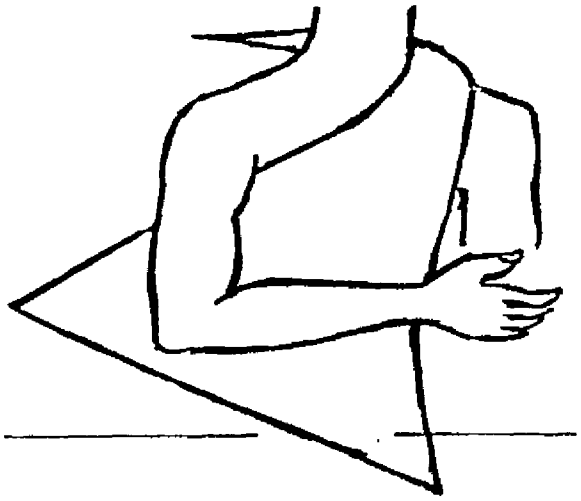
It can be used in various forms:

- As a whole cloth spread out fully.
- The point is brought down to the centre of the base. The bandage is again folded in the same direction.
- As a narrow bandage, by folding the broad bandage once again in the same direction.
- A reef knot and not a granny knot should always be used ,as granny knot slips easily.
- Place the knots in the hollow areas or where it does not cause discomfort.

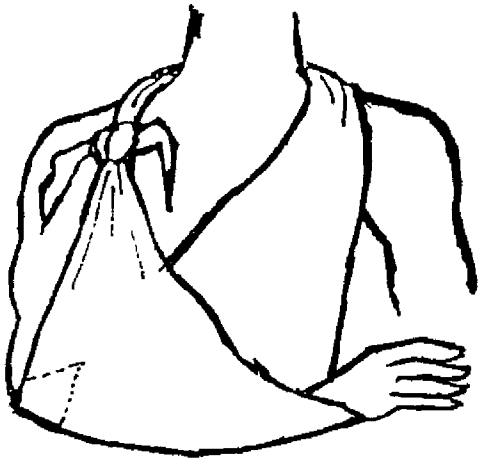
Use Of Triangular Bandages As Slings

Arm Sling

A1



A2

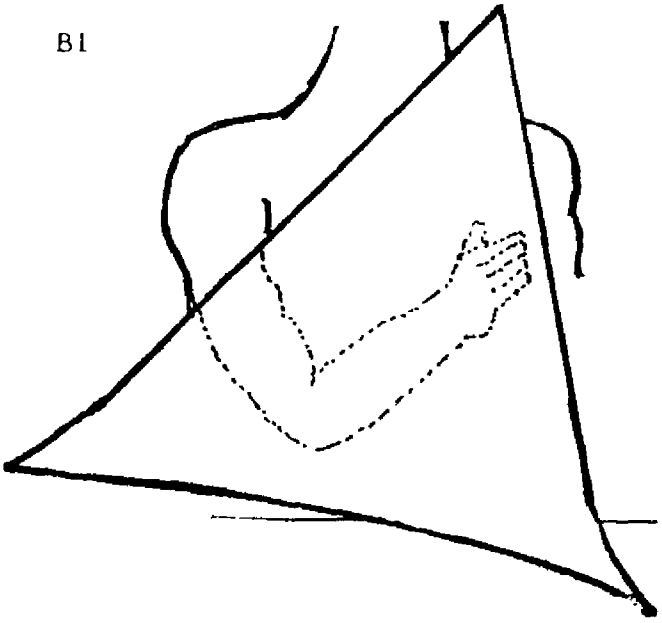


- For fracture of Fore-arm and shoulder wounds. Place a fully open triangular bandage between the arm and the chest with one end around the back of the neck from the uninjured to the injured side

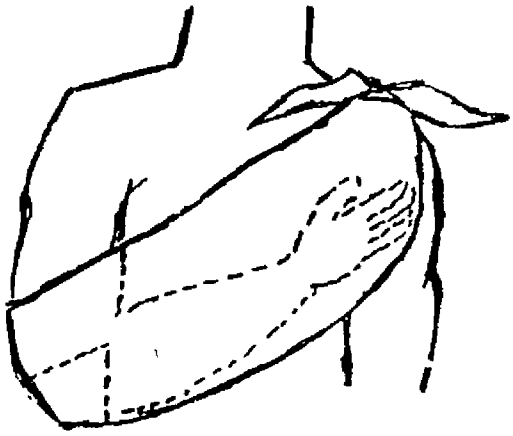
- Place the arm across the trunk with the hand slightly higher than the elbow. Lift the lower end up to the other end and tie with a reef knot so that the arm is supported with the hand slightly higher than the elbow. Tidy the point by tucking it out of the way.

Triangular Sling

B1



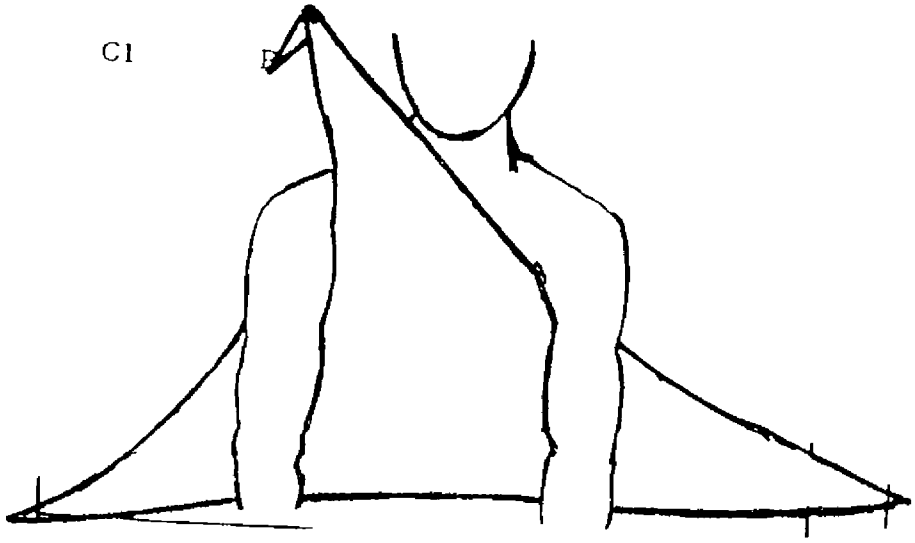
B2



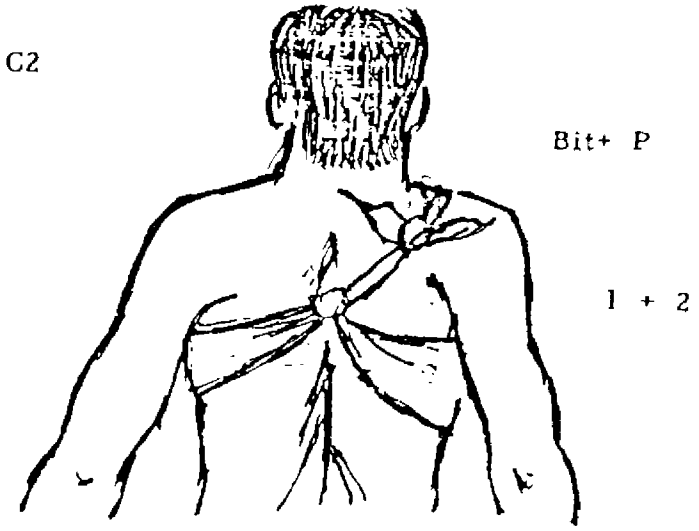
Triangular Bandage is used for fracture of the upper arm, hand injuries and chest injuries.

Chest Bandage

Place a fully open triangular bandage against the chest with the point for the injured shoulder.



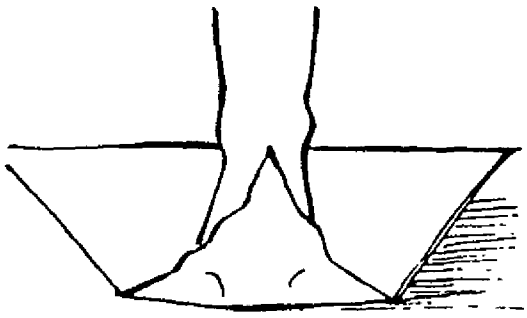
Take the ends around the body to the back and tie with a reef knot leaving one long bit. This bit is tied to the point.



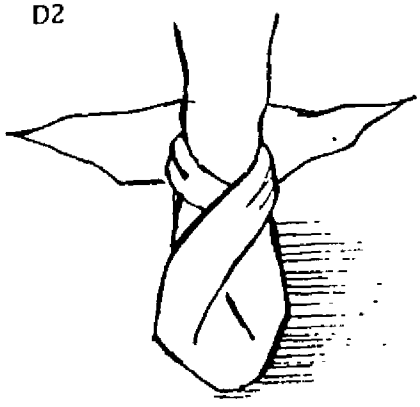
Foot Bandage

As indicated in the figure : D_1, D_2, D_3

D1



D2



D3