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BASIC HEALTH WORKER
TRAINING MANUAL
(PRACTICAL)

ENGLISH

Islamic State of Afghanistan

Institute of Public Health (IPH)

Department of Primary Health Education

**BASIC HEALTH WORKERS (BHWs)
PRACTICAL MANUAL**

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BHW PRACTICAL MANUAL

Vital Signs

A - How to measure pulse:

To take the persons pulse, put your fingers on the wrist as shown.
(Do not use your thumb to feel for the pulse)

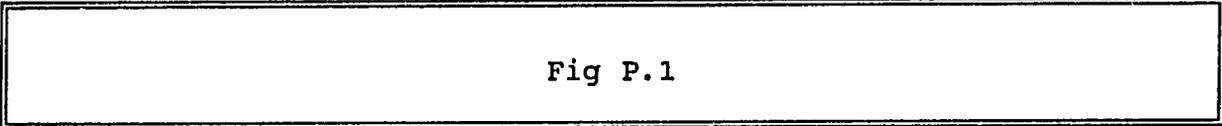


Fig P.1

If you cannot find the pulse in the wrist, feel for it in the neck beside the voice box.

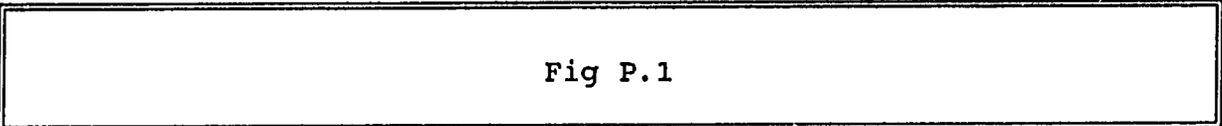


Fig P.1

Or put your ear directly on the chest and listen for the heartbeat.

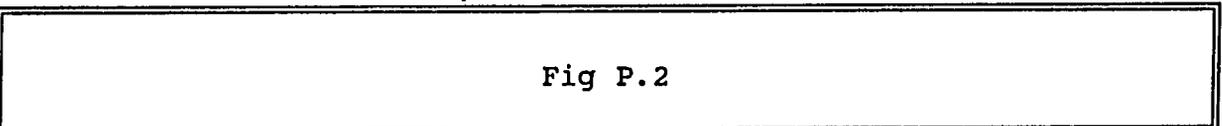


Fig P.2

B - (Method of counting respiration):

1- Adults:

- a. Ask the patient to lay down.
- b. Stand on the right side of the patient.
- c. Ask him to keep his foot on semi-contraction position.
- d. Ask him to look to his left side.
- e. Remove cloths from the chest and abdomen.
- f. Count movements of chest and belly in one minute.

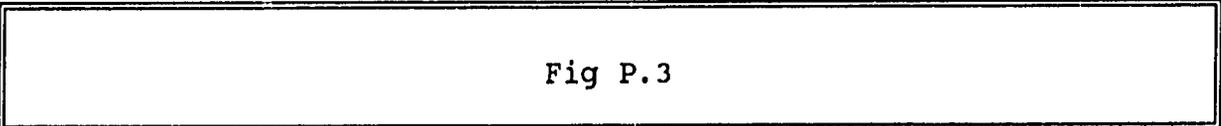


Fig P.3

2- Children:

It is the best while the child is sleeping.

- a. If he is crying try to quiet him.
- b. Remove the child's cloth from his chest and belly and sit in front of him.
- c. Count movement of chest and abdomen in one minute.

Fig P.4

If counting is not possible from the front (child is afraid of you and crying), Use the following methods:

- a. Ask the mother to put him on her shoulder and quiet him.
- b. Naked his chest and belly from the back side.
- c. Count movements of chest and belly from the back side in one minute.

C - Method of measuring temperature:

1. Wash thermometer with water and soap. If it is already put in antiseptic solution dry it with clean cotton or sterile gauze.
2. Shake it hard, with a snap of the wrist, until it reads less than 36 degrees.

Fig P.5

3. Put it under the tongue (keeping the mouth shut)

Fig P.6

In the armpit if there is danger of biting the thermometer.

Fig P.6

- Or carefully, in the anus of a small child (wet or grease it first).
- 4. Leave it for 3 or 4 minutes.
- 5. Read it (turn the thermometer until you can see the silver line).

Fig P.6

- 6. Wash the thermometer well with soap and water.

How to Inject:

Study the Method of preparing the syringe and performance of injections in pages 26,27,28,29, of text book. Method of opening and using disposable syringe should be thought practically by the instructors.

Skin test for penicillin sensitivity:

- Needed materials:
 - a. Two syringes and sterilized needles.
 - b. 400000 U. vials penicillin
 - c. Distilled water.
 - d. Cotton and antiseptic to clean the skin.

Procedure:

1. Inject 5cc of distilled water in penicillin vials and shake well.
2. Take only one line from the solution of penicillin.
3. Add 3cc distilled water with solution of penicillin and shake well.
4. Inject one line of diluted penicillin in the skin of the fore arm (Intradermal).
5. Inject one line of distilled water in the other fore arm for controlling.
6. Observe the result after 15-20 minutes.
 - a. If rash, itching and swelling is appeared in the penicillin injected arm, while such reaction is not observed in the other arm, the patient is allergic against penicillin it is better to advice another antibiotic to such patients.
 - b. If no sign is seen in both arms the patient is not allergic against penicillin.

Sterilization:

Method of equipments sterilization by pressure cooker:

Sterilizing something means killing all the organisms on it. We must sterilize syringes, needles, forceps and spatula. We can boil a few needles and syringes each time we use them. But this uses much fuel, because water must be boiling all the time while a BHW is working. Sterilizing in the hot steam of a pressure cooker is better.

When we heat water, it gets hotter until it boils at 100°C. If the water is in an open pan, it cannot become hotter than 100°C. If we heat it more, it boils faster, and it makes more steam. But, if we boil water in a strong pan with a lid fixed on, steam cannot come out. So it becomes much hotter. Steam in the pan tries to come out. It presses against the lid, it is under pressure. We measure pressure as the number of kilos pressing on every square centimeter of the inside of the pan and the lid. We write this as kg/cm². The usual pressure for sterilizing is one kilo pressing on every square centimeter 1 (kg/cm²). Steam at this pressure is about 120°C. It kills organisms much faster than does steam or boiling water at only 100°C.

Organisms do not die immediately, even at 120°C. So the length of time we sterilize equipment is important. Steam at 1 kg/cm² kills almost all organisms in 15 minutes. Most harmful organisms die in five minutes at this pressure.

The pressure cooker has a pan and a lid. Between them is a thick rubber ring called a gasket to keep in the steam. Steam kills organisms quicker than hot air, or a mixture of hot air and steam. So there is a vent (hole) to let out the air before you start sterilizing. When the air has gone, you can sterilize the equipment in pure steam. The vent is closed by a metal weight. When the vent is closed steam can only come out when it has reached more than 1 kg/cm². There is also a small piece of metal called the safety valve. This melts (becomes liquid) if the cooker becomes too hot and the pressure becomes dangerously high. Melting lets out the steam and stops the cooker bursting. You need a new safety valve before you can use the cooker again.

Inside the cooker there is a metal plate called the trivet (shelf). This keeps equipment out of the water while you sterilize it. The trivet has a rim (edge) on one side. Always use it with its rim down.

NEVER LET A PRESSURE COOKER BOIL DRY

USING A PRESSURE COOKER:

1. Put the trivet into the cooker, with its rim downward. Put about two cupfuls of water into it.

Put the equipment into the bowl and put the bowl into the cooker.

2. Put the lid on the pan, move the handle of the lid, until the handles are together and the cooker is closed.
3. Heat the cooker strongly. In a few minutes steam will come out of the vent. Wait until steam is coming strongly, about one minute. During this time it will blow away air from inside the cooker.

Put the weight on top of the vent. Leave the cooker for two or three minutes with the heat high. During this time the pressure will rise to 1 kg/cm².

4. A loud hissing noise shows that the pressure inside the pan has reached 1 kg/cm², so turn the stove low.

Start timing. Keep just a little heat during the 5 or 15 minutes of sterilization. A small hissing noise may come from the weight. This is normal.

5. At the end of 5 or 15 minutes, take the cooker off the stove. Don't touch the weight. First cool the cooker. Don't take off the weight until the cooker is cool. Cover the cooker with a wet cloth, or put it under a tap, or put it into a bucket of water. The steam in the cooker will become water again. Lift up the weight a little after about half a minute. If there is a hissing noise, there is still some steam inside, and the cooker is not cool enough.

When there is no steam in the cooker, take off the weight and open the lid.

6. A pressure cooker is easy to use, but there must always be some water in it to make the steam for sterilizing. The equipment will burn. The cooker will be spoiled. Prevent this. Never let the cooker boil dry. Put in two cupfuls of water before you start. Don't let the cooker lose so much steam that the water is all lost.

SOME RULES

Start heating with the weight off the vent. Don't put it on again until there is a good flow of steam coming out. If you don't let the air out, you will be sterilizing in a mixture of air and steam.

Start counting the time for sterilizing after you have turned the heat low in step 4 above.

Don't take off the weight until the cooker is cool.

Only open the cooker after it is cool.

Never use the cooker more than half full of water, or two thirds full of equipment.

Keep the vent clean.

Take the plungers out of the syringes. If you don't do this, they may break.

Equipment inside a tin will sterilize better if you lay it on its side. Never sterilize anything in a tin or bottle with the lid on -- take lids off.

A pressure cooker spoils some plastics.

Hand washing:

Before dressing hands should be washed with water, soap and brush.

Method:

1. Divide the soap into small piece.
2. Wash your hand upto elbow joint with water and soap.
3. Once you taken the piece of soap don't throw it away during handwashing.
4. Brush your hand carefully.
5. Use soap from fingers upto elbow in both hands.
6. First brush the right hand which is already soaped. Begin by brushing your nails, the back of the hand, from small finger to the thumb, then palm and between the fingers.
7. Then back of the hand. start from small finger to thumb then the wrist to elbow.
8. Wash left hand likewise.
9. Through away the brush and soap that the hands should not touch with any thing and rinse both hands wash for the third times likewise .
10. Keep up your hands not to touch with any thing and start dressing.

Method of performing dressing:

Before dressing prepare all the needed equipments, these are as follow:

1. dressing set which contains, 3 Forceps, one scissor.
2. bowl.
3. gauze holder.
4. Sterilized gauze.
5. Leukoplast
6. Bandages.
7. Antiseption solution, or boiled cool water and soap.

Method:

It is necessary that all the equipments should already be sterilized for dressing.

1. Wash your hands with soap and water.
2. Shave the hair with razor (if exist).
3. Wet a piece of gauze with soaped water or by an antiseptic solution. First clean the surrounding of the wound with the mentioned gauze and throw it away.
4. With another sterilized cloth the wound itself should be cleaned. Clean it until it is cleaned enough.
5. Wash the wound completely with boiled cool water. (for pouring of water one can use sterilized 50cc syringe or sterilized bowl)
6. Dry the wound with a sterilized piece of gauze, and wound surrounding area should also be dried by the other cloth.
7. Cover the wound with gauze if wound is dried and doesn't have discharges only 2-3 layers of gauze is enough to cover the wound. If there is discharges or bleeding put few layers of guazes to absorb discharges of wound.
8. Fix guazes by leukoplast (leukplast should cover the margins of wound completely.) or bandage according to the region.

Note: If wound has a lot of discharges or is contaminated, clean it with soap and water or antiseptic solution and sterilized gauze. Wash with boiled cool water. Avoid coughing and breathing over the wound. If during dressing piece of gauze fallen down don't use it again.

9. If wound is clean, dress it after 2 or 3 days. If it is not clean and has discharges, then it should be cleaned everyday.
10. If wound is already dressed open it. If the pieces of gauze over the sound is stuck, pour boiled cool water over the wound to soft it don't force for removal, do it slowly. Then dress it as mentioned above.

Warm and water dressing:

Method of performance in closed abscess:

Wet a piece of sterilized gauze in warm water, put it on abscess region & repeat this many times daily. It will cause softness of abscess and will be opened by itself.

First aids in Burn:

Prevention:

Most burns can be prevented. Take special care with children:

- * Do not let small babies go near a fire.
- * Keep lamps and matches out of reach.
- * Turn handles of pans on the stove so children cannot reach them.

Minor burns that do not form blisters (1st degree):

To help ease the pain and lessen the damage caused by a minor burn, put the burned part in cold water at once. No other treatment is needed. Take aspirin for pain.

Burns that cause blisters (2nd degree):

Do not puncture blisters. If the blisters are punctured, wash gently with soap boiled water that has been cooled. Sterilize a little Gasoline by heating it until it boils and spread it on a piece of sterile gauze. Then put the gauze on the burn area. If there is no vaseline, leave the burn uncovered. Never smear on grease or butter.

**It is very important to keep the burn as clean as possible.
Protect it from dirt, dust, and flies.**

If signs of infection appear; pus, bad smell, fever, or swollen lymph nodes; apply compresses of warm salt water (1 teaspoon salt to 1 liter water) 3 times a day. Boil both the water and cloth before use. With great care, remove the dead skin and flesh. You can spread on a little antibiotic ointment. In severe cases, consider taking an antibiotic such as penicillin or ampicillin.

Deep Burns (3rd degree):

In this case skin is completely destroyed and flesh (sometime charred) could be exposed. This burn is always serious, as are any burns that cover large areas of the body. Take the person to a health center at once. In the meantime wrap the burned part with a very clean cloth or towel.

If it is impossible to get medical help, treat the burn as described above. If you do not have vaseline, leave the burn in the open air, covering it only with a loose cotton cloth or sheet to protect it from dust and flies. Keep the cloth very clean and change it each time it gets dirty with liquid or blood from the burn. Give penicillin.

Never put grease, fat, coffee, herbs, or feces on a burn.

Special Precautions for Very Serious Burns.

Any person who has been badly burned can easily go into shock (see BHW text for shock) because of combined pain, fear, and the loss of body fluids from the oozing burn.

Comfort and reassure the burned person. Give him Paracetamol for the pain, if you can get it. Bathing open wounds in slightly salty water also helps calm pain. Put 1 teaspoon of salt for each liter of cool, boiled water.

Give the burned person plenty of liquid. If the burned area is large (more than twice the size of his hand) give him ORS or make up the following drink:

To a liter of water add; half a teaspoon of salt and half a teaspoon of bicarbonate of soda. Also put in 2 or 3 tablespoons of sugar or honey and some orange or lemon juice if possible.

The burned person should drink the solution as often as possible, especially until he urinates frequently. He should try to drink 4 liters a day for a large burn, and 12 liters a day for a very large burn.

It is important for persons who are badly burned to eat foods rich in protein (see p.110). No type of food needs to be avoided.

Burns around the joints.

When someone is badly burned between the fingers, in the armpit, or at other joints, gauze pads with vaseline on them should be put between the burned surfaces to prevent them from growing together as they heal. Also, fingers, arms, and legs should be straightened completely several times a day while healing. This is painful but helps prevent stiff scars that limit movement. While the burned hand is healing, the fingers should be kept in a slightly bent position.

Fig P.20

How to measure Medicine:

Tablet:

In order to divide tablet in equal pieces usually use a clean knife. Tablets should always be cut by clean knife into 2,4, or 8 pieces not by hand because it can not be divided into equal pieces by hand.

Capsule:

In children who cannot eat capsule open the capsule with clean hands and mix the powder with breast milk or honey and then give it to children by spoon. If child needs half of the capsule first shake the capsule, then take horizontally in between your fingers and cut it with a very clean razor put the lower part which is already located in between your fingers in the spoon.

First aid when breathing stops:

A casualty who is unconsciousness, the first aider should know whether he is breathing or not?

To know the respiration use the following method.

1- Kneel down alongside the casualty

Fig P.22

2- Put your hands on the patient's chest and abdomen observe whether they have movement or not? up and down movement shows respiration.

Fig P.22

3- Or put your ear near the nose and mouth of the casualty, if he is breathing you hear its sound, these should be carried out (at once). Because, if he is not breathing you have only 4-5 minutes for resuscitation.

Fig P.23

Muscles of the shocked patient is completely relaxed tongue is also a muscle which is joint with the lower jaw. If the patient is laid down on the back it comes back and close the air way.

Fig P.23

To remove this problem the first aider should:

- 1- Kneel down alongside the patient.
- 2- Put one hand on his forehead and the other one under the chin.
- 3- Quickly but gently lay the person face up. Gently tilt his head back, and pull his jaw forward.
- 4- Air way will be opened by pulling the tongue forward.

Fig P.24

- 5- While first aider keep the patient in this position he will see and hear whether there is breathing or not?
If he is breathing keep the patient in recovery position.
But, if there is no breathing begin mouth to mouth breathing.

Fig P.25

Mouth to mouth or mouth to nose breathing:

When the airway is opened, but breathing doesn't start. In that case, mouth to nose or mouth to mouth breathing should start immediately.

- a- **How to give mouth to nose resuscitation:**
(artificial breathing)

Method

1. The first aider should tilt back the patients head.
2. Close the casualty's mouth with your thumb.
3. Open your mouth wide and take a deep breath, (respiration may have enough amount of Oxygen).
4. Seal your lips around the casualty's nose.
5. Push the air into the casualty's lungs.

Fig P.26

6. Look along the chest, notice does it move or not, Then take another deep respiration and continue the action as before.

Fig P.27

b- Mouth to mouth resuscitation:

Method

1. The first aider should put one hand under the patient's neck and another on his forehead.
2. Tilt back the patient's head that chin should place above the nose.
3. Then see and hear whether breathing starts or not. In case breathing doesn't start even after opening airway start mouth to mouth breathing immediately.
4. Open your mouth wide, take a deep breath and pinch the nostrils together with your fingers.
5. Seal your lips around the patient's mouth. (If a piece of cloth is put on the casualty's mouth is better).
6. Push (enter) the air into the casualty's lungs.
7. See whether the casualty's chest moves or not?

C- Resuscitation for children:

Tilt back head of the child but not that much that you do for adults. Since, child's face is small it is difficult to use only mouth or nose for ventilation. In children seal your lips around the child's mouth and nose and breathing gently into the lungs at a rate of 20 breaths per minute in a rhythm of every second.

When one needs artificial respiration, first aider should provide medical aid.

First aid for the unconscious casualty:

The first aider should know whether the casualty who is unconscious is breathing or not?

If not breathing, artificial breathing should be given.

If he breaths give him recovery position.

Fig P.30 and 31

The Recovery Position:

Unconscious casualties who are breathing and whose hearts are beating should be placed in the Recovery Position. This ensures that a casualty maintains an open airway, that the tongue cannot fall to the back of the throat, that the head and neck will remain in the extended position so that the air passage is kept open, and that any vomit or other fluid in the casualty's mouth will drain freely. The position of the casualty's limbs provides the necessary stability to keep the body in a safe and comfortable position. Depending upon the casualty's injuries or condition, you may have to modify the technique in order to avoid causing further damage to injuries.

The Recovery Position may not be an ideal position initially if you are examining a casualty or for treatment of a spine injury. However, it must be used immediately if a casualty's breathing becomes difficult or noisy and is not relieved by opening the airway or if a casualty has to be left unattended.

1. Kneel upright at right angles to the casualty's side, about nine inches away and level with the chest. Turn the head towards you and tilt it back keeping the jaw forward in the Open Airway Position.

2. Loosen his clothing at neck, chest and waist. Empty his pockets. Remove glasses. Tuck the hand nearest you under his bottom plam upwards. Keep the arm and fingers as straight as possible.
3. Protect and support the casualty's head with one hand. With the other hand, grasp the clothing at the hip furthest from you and pull the casualty quickly towards you. Support the casualty on the side against your knees.

Fig P.33

4. Still supporting the casualty's body against your knees, re-adjust the head to ensure that the airway is open.
5. Cross the casualty's far arm into a convenient position to support the upper body.
6. Bend the casualty's far leg at the knee to bring the thigh well forward to support the lower body.
7. Carefully pull the other arm out from under the casualty, Leave it lying parallel to the casualty to prevent the casualty rolling on to the back.
8. Position the arms and legs as shown. Make sure the head is to one side and tilted well back. If the ground is hard, put the casualty's face on his hand. Cover him with a coat or blanket. Pug one underneath, if possible, as well.

Fig P.34 and 35

Basic procedures to stop Bleeding:

Use these methods to stop bleeding:

1. Lay down the patient.
2. Raise the injured part above the level of heart.

Fig P.36

If wound is in head, neck, hands and foot raise the injured part, it results in decrease of bleeding. If pain is felt or there is bone fracture don't raise the injured part.

3. Direct Pressure:

Bleeding can be stopped by putting a thick compress (which is made of any cloth) over the wound and press it down firmly this method is called direct pressure. Because you press directly on wound. Whenever you find compress put it on wound, you can use handkerchief fiber, your cloth or cloth of casualty as well.

Fig P.37

Press strongly on wound.

Direct pressure is the best method to stop bleeding, because this method will not damage other parts of the body. If blood is seen in compress another piece should be put over the previous one.

4. Pressure Bandage:

Pressure bandage is a thick compress which is tightly fasten over the wound.

Direct pressure and raising of the part are the best methods to stop bleeding. But in some cases it is better to use pressure bandage method.

- a- Raise the part while continuing direct pressure.
- b- Fold in few layers a large piece of cloth to cover the whole area.
- c- Put these compresses over the previous compress.

Fig P.39

- d- Place the center of bandage over compress, be sure it extends well beyond the edges of the wound. Press it down firmly and thght it enough.

Points of Pressure:

Direct pressure and raising of part usually stop fatal bleeding. If direct pressure and raising of part is not useful putting more compresses and pressure will be useful.

In some rare cases methods like, pressure point might be useful. Pressure point is used in foot and hand wounds.

While using pressure point infact, you adhere artery over the bone. As a result blood flow to that side will decrease or stops. Direct pressure in contrary, to press on pressure points stops blood only in the wounded area.

Pressure point of the arm:

Arm pressure point or the brachial artries are along the inner side of the upper arm between elbow and armpit. To press on brachial artery stand at the back of patient. Put the flat surface of your finger over the pressure point, press strongly and pull it back, keep continuously direct pressure and raising of part. To prevent more shock and trauma lay down the patient.

So, you can find the pressure point either in upper or lower part. Keep your finger straight while pressing, don't enter (embed) the top of your finger in skin. Use strong pressure if the patient is adult and only in case direct pressure and raising of the part is not useful, use pressure point.

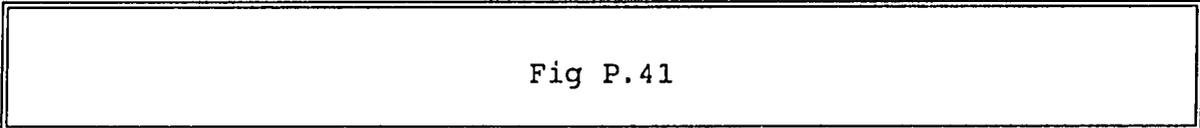


Fig P.41

When bleeding stops, continue direct pressure and raising of part and leave gently the pressure point.

If bleeding starts again, be ready to press pressure point. When bleeding stops, bandage compress in the region. Prevent shock and provide medical help.

Pressure Point in the thigh) Femoral artery:

The femoral artery passes into the lower limb at a point corresponding to the center of the fold of the groin and runs along the inside of the thigh. To apply pressure, lay the casualty down with knee bend. Locate the artery in the groin and press it against the rim of the pelvis with fist plam of your hand. Keep your arm straight to avoid getting tired. Keep direct pressure and raising of the part and continue until bleeding stops, then leave it slowly. If bleeding starts again, be ready for pressing over the pressure point.

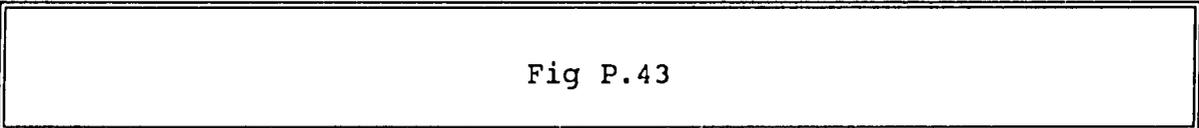


Fig P.43

Torniquet:

Torniquet is a band or clamp. Which can be fasten around a place in a lower or upper extremity, to stop bleeding in the lower part of the fasten area.

Torniquet is very dangerous, it is used only if the part is completely cut. When hand or foot is cut due to injury, torniquete should be fasten directly over the wound. Raise the injured part. Use a triangular bandage or a long piece of cloth with a width of (5cm) to fasten torniquete. Don't use, rope, nylon soak or wire which damages the muscle. Band should be fasten in the nondamaged area over the wound that while fastening it shouldn't slip.

How to fasten Torniquet:

Turn tightly a piece cloth or folded triangular bandage around the arm or thigh twice and form a loose knot.

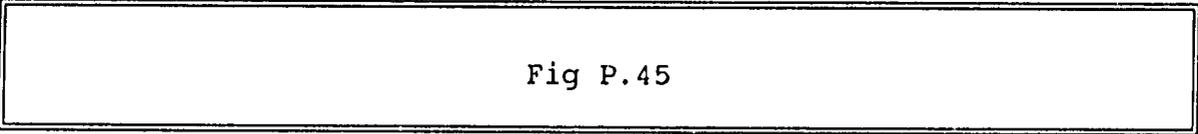


Fig P.45

Place a short strong piece of wood over the knot and fasten it tightly.

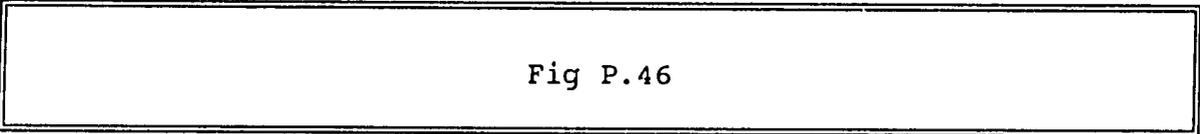


Fig P.46

Turn the wood to press the torniquet. Turn the wood until bleeding stops.

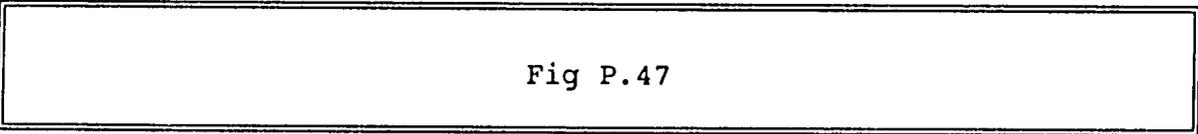


Fig P.47

At the end of the wood, fasten a strip of cloth and tight it in arm or thigh to avoid opening of torniquet.

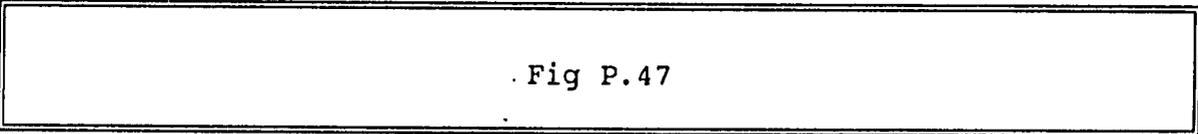


Fig P.47

Give first aid for casualty, prevent shock, and provide medical help. Don't loose tourniquete until doctor advice. One who has tourniquete needs urgent medical help. Time factor is in great importance in the next treatment of the patient.

How to Prevent shock:

Follow these points to treat one who is suffered from shock.

1-Have the person lie down with his feet a little elevated than his head, as shown in figure p. 48.

Fig P.48

However, if he has a head or shoulder injury put him in a 'half-sitting' position.

Fig P.49

If the casualty has difficulty in breathing, if he is vomiting or if the casualty becomes unconscious, give him recovery position.

Fig P.49

2- Observe if he is breathing.

To seek this, sit beside the casualty and see movements of his belly, if breathing stop, begin resuscitation immediately.

Fig P.50

Keep the casualty comfortable.

3- Don't keep too cool or hot, if feels cool, cover him with a blanket.

- keep calm and reassure the person.
- if he is complaining of pain give him Paracetamol.
- seek medical help as soon as possible.

If someone is really in shock, simple help of the first aider may not be enough to save him from death, but casualty needs advanced medical help.

Bandages and How to use them:

There are 2 kinds of bandage:

- 1- Triangular Bandages
- 2- Roll Bandages

There is 2 kind of Roll Bandages:

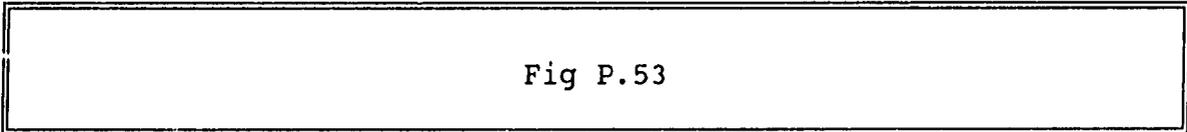
- a- Cotton roll bandage or gauze bandage.
- b- Allastic roll bandage or cripp bandage.

In general bandages have the following functions:

- 1- Fix dressing in the related region part.
- 2- Stop bleeding
- 3- Immobilization of fractures (also in dislocation and sprains)
- 4- For making stretcher.

a. Triangular Bandages:

Triangular Bandage is more often used in first aid, because these can be made by cutting a piece of any cloth. It has one point one base two ends. Length of the base should be 3ft (1 meter) and space between bases and point is 2ft (60 cm). To cover wounds it can be used in form of open, fold or combination of both.



Triangular Open Bandage is used to cover the wounds of head, arm, hand, knee, thigh and chest.

Head:

- 1. Cover the wound with the cleanest cloth.
- 2. Fold slightly along the base of the triangular bandage.

3. Carry the ends round to the back of the head pass just above the ears.
4. Cross the ends above the point of the bandage in the nape of the neck and bring them around to the front.
5. Turn up the point and fix it somewhere.
6. Fasten lower to avoid slipping.

Arm:

1. Cover the wound with the cleanest cloth.
2. Place the triangular bandage parallel to arm as the top of the bandage on wrist and end of the bandage over the shoulder.
3. Take the free end and turn up around the forearm and arm toward the shoulder.
4. Finally secure it with a safety pin.

Fig P.55

Elbow:

1. Flex the elbow to 90°.
2. Cover the wound with cleanest cloth.
3. Put the bandage over elbow toward the shoulder (point toward shoulder)
4. Fold the base.
5. Pull the ends of bandage around the elbow and in front side of elbow over each other.
6. Take the ends over the elbow.
7. Knot it.
8. Fold the point over the knot to cover it.

Fig P.56

Hand:

1. Put the hand on bandage that the wrist should be in the middle of base of bandage and fingers toward the point of bandage.
2. Cover the wound with the cleanest cloth.
3. Pull point of bandage toward the wrist.
4. Turn two ends of bandage over the wound around the wrist and knot it.
5. Fold the point over the knot to cover it.

Knee:

1. Bend the knee (flexation).
2. Cover the wound with the cleanest cloth.
3. Put the bandage point toward the body.
4. Fold the base.
5. Pull the end of bandage around the knee.
6. Pull the end over the knee.
7. Knot it and fold the point over knot to cover it.

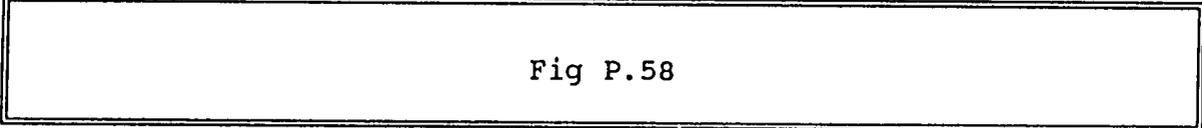


Fig P.58

Foot:

1. Put the foot over bandage. In case there is wound on front, point of bandage should be toward fingers, or toward heel if wound is at the back of foot.
2. Cover the wound with the cleanest cloth.
3. Pull point of bandage upward.
4. Turn both ends over the upper surface of foot and pull toward the ankle.
5. Knot it.

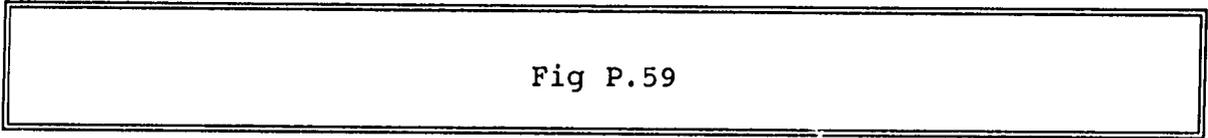


Fig P.59

Chest:

1. Put point of bandage over the shoulder.
2. Fold the base.
3. Cross the end of the bandage beyond shoulders and knot directly with the point of bandage.
4. Tight the long end of knot with the point of bandage.

Follow the same procedure for wound on or between the shoulder in the back side of chest.

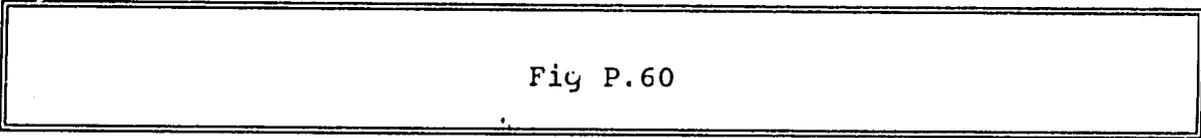


Fig P.60

Method of preparing folded triangular bandage:

The folded bandage should be 3.5-5 inch (almost 10cm) width, it is used for the following purposes.

- To fix splints.
- To apply pressure bandage.
- To support other bandages.

Simultaneous use of open and folded Bandages

Covering injuries of shoulder, hip and thigh upper part.

Shoulder injuries:

1. Cover the wound with cleanest cloth.
2. Put the open triangular bandage over shoulder as its point reach the neck.
3. Fold the base.
4. Twist the ends of bandage around the arm and fasten over the base.
5. Put the point of bandage inside the fold of folded bandage.
6. Put end of folded bandage over the chest and knot it in the next arm pit.

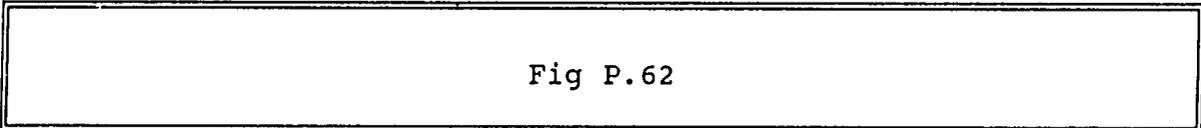


Fig P.62

The same method is used for hip and upper parts of the thigh.

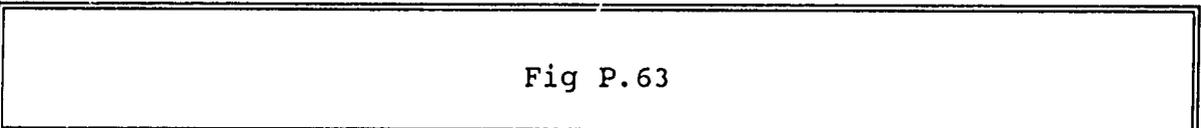


Fig P.63

Bandages of eye by triangular bandage is shown in the following illustrations.

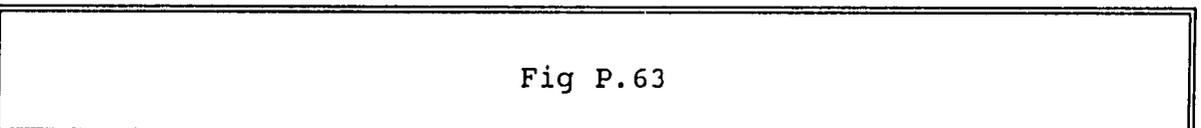


Fig P.63

Fastening of face and jaw injuries:

Wounds and fractures of face and jaw fastens by one triangular bandage as it is shown in the picture.

Fig P.63

Roller Bandages:

First aid should use roller bandage as follow:

- Roll tightly the bandage which has proper width.
- Make firm the part to be bandage, and stand against the casualty who sits or layed down.
- Bandage the part as its natural position.

Fig P.64

- Cover the wound with the cleanest available cloth.
- Bandage the part with proper pressure inside to outside and from extrimity toward the body.
- Fasten end of the bandage.
- Always control the part after giving roller bandage for the proper blood circulation to that part. (check color of the nail or region).
- Each round should cover 2/3 of the previous round.
- Place bandage always in the opposite hand i.e. if the casualty's right side is injured take bandage with left hand and the same for the other side.
- Roller bandage always Fasten like 8 figure of English, but it can be fastened like spring as well.

Bandage of elbow and knee Injuries:

1. Cover the wound with the cleanest piece of cloth.
2. Begin bandaging from the point put the Bandage over the dress and rotate it twice.

Fig P.65

Bandage of Foot and hand Injuries:

1. Cover the wound with cleanest piece of cloth.
2. Rotate the bandage over the wrist and ankle twice.
3. Turn the bandage over the dress around the foot or hand.

Fig P.67

Bandage of arm forearm, Leg and thigh Injuries:

1. Cover the wound with the cleanest piece of cloth.
2. Rotate bandage twice over the lower part of dress which is fixed by bandage.

Fig P.67

In order to support the dress bandage should be reached back to wrist and ankle and should be turned around and fixed.

The mentioned parts can also be fixed by roller bandage in form of spring. It can be fasten like the (8) of English, as its shown in the picture. Bandaging wounds of head, shoulder, finger, and hipe is shown in the pictures.

Fig P.68, 69, 70, 71, 72, 73

Chest Open Wounds:

Chest injuries caused by sharp knife or gun shot penetrating the body or ribs being forced outward through the skin allow air directly into the chest cavity. Even though the lungs work well, the cavity should be covered to avoid entering of the air inside. This can be done immediately by hand, prepared cloth, a piece of plastic bag, Leukoplast or thick cloth. If casualty is unconscious keep him in recovery position, toward the injured side.

If the patient is not unconsciousness, he does not need recovery position. In summary first aid of an open wound of chest contains 3 points.

1. Cover the patient as its mentioned.
2. Recovery position toward the wound.
3. Evacuation of casualty to hospital or health center.

Fig P.75

ABDOMINAL INJURIES:

All kind of abdominal injuries should be considered as an emergency. The casualty need an immediate surgery and soon will go to shock.

First Aids:

1. Cover the wound with the cleanest cloth.
2. Avoid replacement of intestine inside the belly, if they are out.
3. Lay down the patient, but put pillow, blanket or quilt under the knee to reduce abdominal pressure, ask the patient to have his head to one side.
4. Don not advice anything for eating or drinking even if he fells sever thirst. (If the patient's throat is very dry wet a piece of cloth and give it to patient to suck it).
5. Prevent shock.
6. Clean intestines with salt solution (serum physiologic).
7. Put a piece of cloth on it and support the intestine with triangular bandage, moisted with serum physiologic.
7. Don't use enema.
8. Carry the patient to hospital or health center immediately.

Fig P.77

Basic Methods for immobilization:

Immobilize all doubtful fractures of neck arm and shoulder bones. Also all trauma cases of shoulder and elbow joint should be immobilized. Use one triangular bandage and 2 folded bandage as it is shown in the picture.

Put one end of triangular bandage over the injured shoulder that the point of bandage should be toward the elbow joint and another on the other shoulder, knot both ends at the side of neck and secure the point with pin.

Fig P.78

Use of two folded triangular banges

- Place the first bandage near and parallel to the arm.
- Place the second bandage parallel to the first bandage but a little higher.
- Knot both bandages at the side of the chest.

Fractures of arm and hand to be immobilized as follow:

- Support the arm over a long piece of wood (splint), carton or folded magazine which has length from elbow joint to the tip of fingers, but not longer.
- Put a bandage on the casualty's palm.
- Fix arm and splint with an open triangular bandage and 2 folded bandages.

Fig P.79

Skull Fracture:

Trauma to head could cause the skull fracture, and odema, heamatomea and ocasionaly brain tissues rapture.

Trauma could also caused fracture of the base of skull, which causes bleeding from ear and nose of the casualty.

1. Keep the patient in recovery position.
2. Cover the wounded part with a clean gauze either in the skull or ear to avoid spread of infection to the brain.
3. Put the patient in recovery position to the side, where the ear has bleeding and not block the ear for the danger of infection.
4. Cover the patient.
5. Send the patient to the health center or hospital.

Fig P.80

Face injuries and Jaw fracture:

Fracture of the lower jaw and a big wound in one side of the face, should be immobilized by a triangular bandage as it is shown in the picture. Wound should be covered with a clean piece of cloth.

Fig P.81

Suspected Fractures of leg:

To immobilize the leg fractures first aider needs assistance of some one else. Before immobilization the following things are needed:

Splints and other things such as piece of wood, walking stick, blanket, cotton, blanket, as supportive materials and etc.

- Folded triangular bandages or strips.
- Using the available resources first aider should perform as follows:
 1. Put enough amount of supporting material in two sides of the thigh, specially on the ankle joint, knee joint, groin area and on the top of splint.
 2. Put a splint in the internal side, long enough from groin area upto the sole.
 3. Put another splint over the external part of foot long enough from the waist to the sole.
 4. Ask your assistance to kneel near casualty foot and keep splint and supporting material in its place. Ask him not to move casualty's foot.
 5. Put at least six bandages (folded triangular) very carefully under the casualty's leg. First pass the bandages under the foot by a sharp wood then put splint. Put folded bandage in the upper and lower part of the injured area and surrounding parts of the joint. Don't bandage the knee joint.
 6. In case there is no material to be used casualty's other leg to immobilize the fractured part.

If necessary put folded triangular bandages in the following regions:

1. Above the fractured part.
2. Below the fractured part.
3. Around the ankle.
4. Above the knee joint.
5. In the upper part of internal splint.

6. In the upper part of external splint.

Fasten bandage as follow and put the knot over the external splint:

1. Fasten bandage of ankle.
2. Bandage over knee joint.
3. Bandage below the knee joint.
4. A bandage a little above the fractured part.
5. A bandage a little under the fractured part.
6. Bandage at the upper end of internal splint.
7. Bandage at the upper end of external splint.

The above method of fastening bandage can be used in the fractures of thigh and leg.

Suspected leg Fracture:

Fractures of leg is immobilized exactly the same as of the thigh, do as follow:

1. External splint should be long enough from sole to armpit.
2. Internal splint from groin area upto sole.
3. Folded triangular bandages (at least 7 bandages).

Bandages should be placed as follow:

1. over the fractured part.
2. below the fractured part.
3. two bandage in the thigh.
4. around the ankle.
5. around the waist.
6. over the upper extremity of external splint.

Fig P.85

Method of fastening bandages in leg fracture is similar as fastening of thigh fracture.

Open Fractures/First Aid:

An open fracture can occure as follow:

1. Fracture with a minor wound without bleeding.
2. Fracture with bleeding.
3. Open fracture that a piece of bone is revealed from.

- a. If fracture occurs with a minor wound without bleeding cover the wound with the cleanest cloth then immobilize it.
- b. If fracture is accompanied by a bleeding wound in this case first control bleeding (bandage pressure) then immobilize the fractured part.

Fig P.87

- c. In an open fracture which reveals piece of bone, first put a clean piece of cloth over the piece of bone then make a ring pad and put it over revealed bone then can be fastened by a triangular bandage and immobilize it.

Fig P.88

Pelvis Fracture:

Pain and tenderness in the pelvis and groin region which is increased by movement. Casualty is unable to walk or even stand. Lay down the casualty straight the legs, or if it is more comfortable, bend the knees slightly and place a rolled blanket underneath.

Important Points:

Some times there are few pieces of fractured bone which damage bladder too. The casualty desire to pass urine. Advice not to micturate for a while, because passing urine increase the possibility of damaging the bladder.

Method to Immobilize Pelvis Fracture:

1. Place the casualty on the back.
2. Put supporting material between legs such as pillow blanket etc.
3. Bend slightly the knees and put something underneath.
4. Fasten the foot with four triangular bandage. One bandage in

the ankle (like figure of 8) second over the knee joint and two other bandages in the hip should be fasten tightly.

Fig P.90

Sole Fracture:

1. remove shoes and socks of the patient.
2. clean the wound.
3. put splint from heal upto finger.
4. put supporting material under splint.
5. fracture should be bandaged like figure 88, start bandage from sole and turn twice around the ankle knot on the sole.
6. keep foot in comfortable position.

Fig P.91

Kneecap Fracture:

Fracture of knee-cap may happen because of direct pressure and Muscles corstractions.

Sings:

- Knee joint sweeling, pain which gets worse by moving the foot.

For complete protection of the foot the following points should be considered:

- a- Lay down the patient.
- b- Put splint from groin area to heal.a
- c- Bandage sole and ankle by triangular bandages in form of 8.
- d- Fasten the leg by a bandage.
- e- Fasten the thigh by a bandage.
 - keep the leg higher and in comfortable position.

Fig P.92

Spine Fracture:

Sign and symptom:

In spine fracture there is pain in the spine and neck. Sometime person loose his ability to move. There is a severe danger in spine fractures i.e. Spiral cord damaged which cause limbs paralysis. If medical assistance is available.

- patient shouldn't be moved.
- advice the casualty not to move.
- cover the casualty and put him in a comfortable position.

If medical aid is not available:

First lay down the patient one aider should take his head and another one his feet. Then put supporting material between legs, knee-caps and ankles, then bandage ankles by triangular bandage in form of Figure 8 and bandage kneecaps as, well.

Fig P.94

Until casualty is carried over stretcher one aider should hold his head while another one take his feet then half-roll the blanket and put near the casualty's waist then very carefully put him over the blanket and cover him. He should be carried very carefully to the hospital, avoid further movement because spine movement damage the spiral cord and may cause Paralysis.

Fig P.95

Put the stretcher in the lower part of his foot and put supporting material in proper places. Then roll the blanket, keep up the patient and put him over the stretcher. Two aiders hold the blanket from the head and foot, and for putting him over the stretcher at least 4 or 6 aiders are needed.

Fig P.95

If spine fracture is happened in the neck, then two bag of sand or pillow should be put on two sides of neck to prevent neck movements. Also when he is put on the stretcher fasten the casualty with the stretchen in several points.

Fig P.96

Method of recovering shoulder dislocation:

Lay down on the ground next to casualty. Put your bare foot under his armpit. Pull the casualty's arm downward for about 10 minutes.

Fig P.96

Then while you are using your foot to fix the bone. Bring his arm close to his body shoulder with appearing a sound the shoulder will be fixed in its proper place. After fixation bandage the arm tightly with the body and ask the casualty not to open the bandages for one month. Check for limb circulation. In older people the bandage should be opened three times aday.

Fig P.97

If you can not fix fix. Try to get medical help as soon as you can.

Strain and Sprain of Joint:

In joints strain wrap cotton around the damaged joint then fasten by roller bandages as shown in figure page 98, 99.

Fig P.98, 99

How to remove foreign body from the airway:

If the patient is adult and in stand position, bent his head and hite the casualty between his shoulder as shown in the figure p. 100.

Fig P.100

If there are two aiders:

- As in the picture aiders should take each others hand and casualty should lean over their hands.
- If the above methode is not helpful stand behind the patient and circle your hands around his waist and press a sudden direct pressure in the belly upward and internal to remove foreign body.

Fig P.101

If the casualty lays down:

- The aider should flex his knee and place the casualty's chest on it.
- Then perform a strong force with open hand between the shoulders.

Children:

- Place the child as it is shown in the picture.
- Have a force slowly with open hand in between the shoulders of child. When the blockage removed and the casualty could not breath again perform artificial breathing.

Fig P.102

How to make a Stretcher:

You can make it by using wood sticks and the following tings: Coat, Jacket, Shirt, blanket, bandage, turben.

Fig P.103

Always before use the carpet, stretcher try to exam it. You can carry the casualty on the blanket, carpet and etc but its sides should be taken by 4-6 person.

Door or a big piece of wood to can be used for carrying the casualty.

Fig P.103

In order to carry a stretcher at least 4 or sometimes 6 person are needed.

Carrying Casualtys:

- A- Walking with the aider assistance:
This methode is used when the damage is very less, and the casualty is able to stand.
- 1. Walking with help of one aider:
 - a- Stand beside the casualty (except when wound is in hand, arm and shoulder).
 - b- Put your hand around his waist and hold his cloth in buttocks.
 - c- Round the casualty's arm over your shoulder and hold his hand as shown in figure page 105.

Fig P.105

- 2. Walking with the help of two aiders perform as shown in figure page 105.

Fig P.105

B- Carrying of the casualty by one aider.

- 1- In form of cradle:
This methode is used for children and the casualty who is not over weight.
 - a- Put one hand under casualty's knees.
 - b- Put another hand on his back.

Fig P.106

2- Over the Shoulders:

It is used when casualty is not in unconsciousness and can keep himself fite on the aider's shoulders.

Fig P.106

- a- Sit in front of the casualty.
- b- Round his hands arround your neck and shoulders.
- c- Turn one of your hands under one foot and another hand under the other foot of the casualty.
- d- Stand up and move.

Never carry the casualty alone, who is in trouble and needs medical help.

C- Carrying by 2 aiders:

This methode is used when the casualty has the ability to use one or both hands.

- 1- hold your left wrist with right hand and ask your cooperator to do so.
- 2- hold wrist of your cooperator with your left hand, and ask him to take your wrist with his left hand.

Fig P.107

- 3- advice the casualty to put his hand over the shoulders of each aider and sit over your hand.
- 4- stand slowly and move as it is shown in the picture. Right side aider should start walking with right foot and left side aider with left foot.

Fig P.108

D- Two hand Chair: (Two aiders)

- 1- Both aider should bend over each other on either sides of the casualty.
- 2- Turn your hand on the back and under the shoulders hold his cloths.
- 3- Turn your other hand under the casualty's leg and hook each other as it is shown in the picture.
Use folded handkerchief to avoid your hands injury by each others nails.
- 4- Raise up the casualty slowly and move as it is shown in the picture.

Fig P.109

E- Carry the casualty with the help of four aiders:

This methode is used when the casualty is not able to move.

1. One first aider should knee in the right side of the casualty.
2. Three other first aiders should knee in the left side of the casualty.
3. The first aider near to the casualty's foot in the left, should support the casualty's feet and legs.
4. The second first aider in the left should support the casualty's buttocks with his right hand and should hook his hand with the right hand of the first aider sate in the right side of casualty.
5. The third first aider in the left should support the casualty's head and shoulders.
6. According to the instructors by the first aider in the right, casualty should be raised and then be held on the right knee of the three casualties sate in the left side.
7. While the casualty is over the knee of the three aider in the left, the aider in the right should bring the stretcher and put it under the casualty.
8. The first aider in the right side again should hook his hand with the hand of the two aider in the left should carefully put the casualty on the stretcher.
9. The casualty should be carried to the health center to his food direction.