Contents

# Practicals

# Practical 1

# Health Care Delivery System in India

**Topic:- Health care delivery system in India**

**Visiting Place:-**

1. Any Hospital
2. District Headquarters Hospital
3. Primary Health centre
4. Tertiary level centre primary hospital

**Practical work:- Observation and recording**

1. Hospital Environment
2. Hospital Routines and functions
3. Departments in the Hospital
4. Admission and discharge procedure

# Practical 2

# Health Assessment


## Topic: Health assessment

1. Assessment Techniques
2. TPR
3. BP

## 2.1 Health assessment

1. Assessment techniques:-
   a) Inspection:- Find out the abnormal conditions of the external parts of the body
   b) Palpation:- Using the sense of touch and reveals any swelling, stiffness, hardness, Pain, Vibration etc.
2. Percussion:- Striking or tapping with fingers to find out any fluid collection or solid mass.
3. Auscultation:- To reveals sounds produced within the body by using stethoscope
4. Manipulation:- Moving with the body to find out rigidity or discomfort of the parts.
5. Reflex:-Automatic response to a stimuli
6. Olfaction:- Sense of smell. To identify the nature of the disease condition.

### Recording of Vital signs:-

Temperature, pulse and Respiration

## 2.2 Vital Signs

Temperature, Pulse, Respiratory rate and oxygen saturation, blood pressure are called vital signs as indicators of health status. These measures indicates effectiveness of circulation, respiratory, neural and endocrine function because of their importance they are referred as

### *Vital signs*

Responsibility for taking TPR

1. Identify the patient
2. Check the diagnosis
3. Ability to retain thermometer
4. Previous measurement and range of TPR

Equipment:- A clean tray containing

| Sl. No. | Material required |
|---|---|
| 1. | Bottle with dettol solution |
| 2. | Thermometer |
| 3. | Kidney tray |
| 4. | Bottle with plain water |
| 5. | Cotton swabs |

| Sl. No. | Material required |
|---|---|
| 6. | Soapy swab |
| 7. | Wet and dry swab |
| 8. | Pen and watch with second hand |

### *Procedure:-*

1. Bring the tray to the bedside and explain to the patient, who should be at rest, sitting or lying down
2. Make sure the patient has not just taken a bath or had a hot or cold drink within fifteen minutes
3. Take a thermometer from the lotion dip in clean water and wipe with cotton, using a circular movement from the bulb towards the hand. Avoid touching the part that goes into the mouth
4. Read the thermometer and be sure it is shakedown at 35°C (95°F) or below
5. Place the thermometer under the patient's tongue and instruct him not to bite it but to close his lips gently. He should not talk not cough
6. Keep the thermometer in the mouth for 1 to3 minutes (the time required may be written on the thermometer)
7. Place the tip of three fingers (never the thumb) gently cover the radial artery at the wrist
8. Feel the pulsation carefully before starting to count. Note the strength and regularity of the beats.
9. Using a watch with seconds hand or a pulseoxymeter, count the number of beats for one minute. It necessary, count longer to be sure and accurate
10. Feel or watch the rise and fall of the patient's chest
11. Count each rise and fall as one respiration. Count for a full minute.
12. While counting the rate, note also
    - (i) Rhythm - regular or irregular
    - (ii) Depth - Shallow, normal or deep
    - (iii) Sound - quiet or noisy
    - (iv) Any discomfort or difficulty in breathing
13. Record the temperature pulse and Respiration on the chart or in the TPR chart.
14. Taking and replacing thermometers should be in rotation making sure they remain in disinfectant for at least 3 minutes before being used for another patient.
15. After the procedure, clean and reset the tray for next use.

### *Blood Pressure:*

Method of taking the Blood pressure

1. Explain the procedure to the patients and have him seated by a table or lying with the arm supported and relaxed.
2. Place the centre of the cuff of the BP apparatus over the brachial artery and wrap it smoothly and firmly around the patient's arm 5 cm just above elbow. Tuck the end in neatly .
3. Find the brachial pulse with the fingers and place the over it.
4. Close the screw valve and inflate the cuff until the pulse disappears and above that about 20mm mercury.

5. Open the valve slowly and listen for the first sound while watching the manometer reading. The first sound gives the systolic reading. As air escapes, the sounds become louder and cleaner.
6. Continue to let air out slowly. As you listen the sounds suddenly become dull and at this point take the Diastolic reading.
7. Allow all the air to escape and the mercury to fall to zero.
8. Repeat the procedure, if there is any doubt about the reading.
9. Record the reading. The systolic pressure is always written over the Diastolic pressure eg. 120/80 mmHg.
10. Remove the cuff.

## 2.3 Oxygen Therapy-Cannula Method

### Definition

A method by which oxygen is administered in low concentration through a cannula which is disposable plastic device with two protruding prongs for insertion into the nostrils.

### Purpose

1. To relieve dysponea.
2. To administer low concentration of oxygen to patients.
3. To allow uninterrupted supply of oxygen during activities like eating, drinking, etc.

### 2.3.1 Procedure

| | Nursing action | Rationale |
|---|---|---|
| 1 | Determine need for oxygen therapy in patient. Check physician's order for rate, device used concentration, etc | Reduce risk of error in administration. |
| 2 | Perform an assessment of vital signs, level of consciousness, lab values, etc. and record. | Provides a baseline for future assessment. |

| | Nursing action | Rationale |
|---|---|---|
| 3 | Assess risk factors of oxygen therapy, patient and environment such as patients with the dangers of smoking when oxygen is on flow. | Reduces risk of danger to the patient. |
| 4 | Explain procedure to patient and relatives and inform them how to cooperate. | Reduces anxiety and ensures cooperation |
| 5 | Post "No Smoking" sign on the patient's door in view of patient and visitors | Oxygen supports combustion, smoking in oxygen area can lead to fire hazards. |
| 6 | Wash hands | Reduces risk of transmission of microorganisms. |
| 7 | Set up oxygen equipments and humidifier<br>a. Fill humidifier up to the level marked on it with sterile water<br>b. Attach flow meter to source, set flow meter in 'off' position.<br>c. Attach humidifier to base of flow meter<br>d. Attach tubing and nasal cannula to humidifier<br>e. Regulate flow meter to prescribed level<br>f. Ensure proper functioning by checking for bubbles in humidifier or feeling oxygen at the outlet. | Filling beyond this point will cause water to enter tubing. Flow meter helps in monitoring and regulating oxygen flow to patient Humidification helps in preventing drying of mucous membranes and promotes comfort of patient.<br><br>Oxygen is a drug and is dangerous to administer at flow rates greater or lesser than prescribed level. Kinks in the tubing will obstruct flow of oxygen through tube. |
| 8 | Place tips of cannula to patient's nares and adjust straps around ear for snug fit. The elastic band may be fixed behind head or under chin | Proper fixing ensures comfort and prevents chances of cannula slipping from nostrils. |
| 9 | Pad tubing with gauze pads over ear and inspect skin behind ear periodically for irritation/breakdown | Constant pressure may cause skin breakdown. |
| 10 | Inspect patient and equipment frequently for flow rate, clinical condition, level of water in humidifier, etc. | Helps identifying any complications that may arise. |

| | Nursing action | Rationale |
|---|---|---|
| 11 | Ensure that safety precautions are followed | |
| 12 | Wash hands | |
| 13 | Document time, flow rate and observations made on patient. | |
| 14 | Encourage patient to breath through his/her nose with mouth closed | Provides for optimal delivery of oxygen to patient. |
| 15 | Remove and clean the cannula with soap and water, dry and replace every 8 hours. Assess nares at least every 8 hours. | Presence of cannula causes irritation and dryness of the mucous membrane. |

### Special Precautions

1. Never deliver more than 2-3 liters of oxygen to patients with chronic lung disease, e.g. COPD (chronic obstructive pulmonary disease)
2. Check frequently that both prongs are in patient's nares.

Oxygen concentration will vary on many factors like patient's tidal volume and ventilator pattern.

**Oxygen concentration with flow rates**

| Flow rate | Oxygen concentration |
|---|---|
| 1 Litre | 24 to 25% |
| 2 Litres | 27 to 29% |
| 3 Litres | 30 to 33% |
| 4 Litres | 33 to 37% |
| 5 Litres | 36 to 41% |
| 6 Litres | 39 to 45% |

## 2.3.2 Administering Oxygen by Mask Method

### Definition

Administering oxygen to the patient by means of a mask (simple / venturi) according to requirement of patient.

### Purpose

1. To relieve dysponea.
2. To administer higher concentration of oxygen.

### Articles

1. Oxygen source
2. Mask (simple / or with venture adaptor high flow device of appropriate size)
3. Humidifier with distilled water
4. Flow meter
5. Gauze pieces
6. "No Smoking" sign.

| | Nursing action | Rationale |
|---|---|---|
| 1 | Determine need for oxygen therapy, Check physician's order for rate, device to be used and the concentration. | Reduces risk of error in administration. |
| 2 | Perform an assessment of vital signs, level of consciousness, lab values, etc. and record. | Provides a baseline for future assessment. |
| 3 | Assess risk factors of oxygen administration in patient and environment-like hypoxia drive in patients and faulty electrical connection. | Reduces risk of danger caused to patient. Oxygen is a combustible gas. Hypoxia drive in patients is essential to maintain respiration. |
| 4 | Explain procedure to patient and relatives and emphasize how he has to cooperate. | Reduces anxiety and enhances cooperation |
| 5 | Post "No Smoking" signals on the patient's door in view of patient and visitors and explain to them the dangers of smoking when oxygen is on flow. | Oxygen supports combustion; smoking in oxygen area can lead to fire hazards. |
| 6 | Wash hands | Reduces risk of transmission of microorganisms. |
| 7 | Set up oxygen equipments and humidifiers.<br>a. Fill humidifier up to the level mark on it.<br>b. Attach flow meter to source, set flow meter in 'off' position.<br>c. Attach humidifier to base of flow meter<br>d. Attach tubing and face mask to humidifier (if venture device is used attach the color coded venture adapter to mask as appropriate)<br>e. Regulate flow meter to prescribed level | Filling humidifier above this level will cause water to enter into tubing. Flow meter helps in monitoring and regulating oxygen flow to patient. Humidification helps to prevent drying of mucous membranes and promotes comfort of patient.<br><br>Oxygen is a drug and is dangerous to administer at flow rates greater or lesser than prescribed level. |
| 8 | Guide mask to patient's face and apply it from nose downward. Fit the metal piece of mask to conform to shape of nose. | To mask should be mould to face so that very little oxygen escapes into eyes or around cheeks or chin. |

| | Nursing action | Rationale |
|---|---|---|
| 9 | Secure elastic band around patient's head. | Ensure comfort of patient. |
| 10 | Apply padding behind ears as well as scalp where elastic band passes. | Padding prevents irritation to skin around area. |
| 11 | Ensure that safety precautions are followed | |
| 12 | Inspect patient and equipment frequently for flow rate clinical condition, level of water in humidifier, etc | Identifies complications if they develop. |
| 13 | Wash Hands. | Reduces risk of transmission of microorganisms. |
| 14 | Remove the mask and dry the skin every 2-3 hours if oxygen is administered continuously. Do not put powder around the mask. | The tight fitting mask and moisture from condensation can irritate the skin on the face. |
| 15 | Document relevant data in patient's record. | |

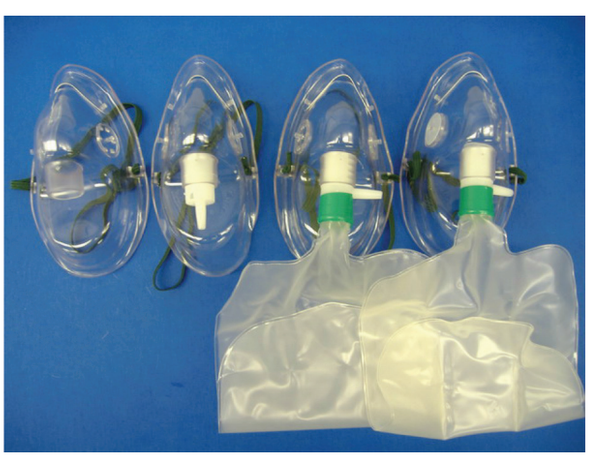
## Special Considerations

1. The dosage of oxygen may be ordered as an FIO (Fraction of Inspired Oxygen) which is expressed as a percentage or as liters per minute.
2. The venture mask will have colour-coded inserts that list the flow rate necessary to obtain the desired percentage oxygen.

**Flow rates and oxygen concentrations delivered using venturi mask**

| Nazzelcolour code | Flow rate (Litres per minute) | Concentration of oxygen to be delivered |
|---|---|---|
| Blue | 3 Lpm | 24% |
| Yellow | 6 Lpm | 28% |
| White | 8 Lpm | 31% |
| Green | 12 Lpm | 35% |
| Pink | 15 Lpm | 40% |
| Orange | 15 Lpm | 50% |


Oxygen administration by face mask



Images of different kinds of mask

## 2.3.3 ADMINISTERING OXYGEN USING OXYGEN TENT

### Definition

Process of administering oxygen by means of tent, usually for infants which gives maximum comfort and most satisfactory results.

### Description

An Oxygen tent consists of a canopy over the baby's bed that may cover the baby fully

or partially and is connected to a supply of oxygen. The canopies are transparent and enables the nurse to observe the sick baby.

### Advantages

1. Provides an environment for the patient with controlled oxygen concentration, temperature regulation and humidity control.
2. It allows freedom of movement in bed.

### Disadvantages

1. It creates a feeling of isolation.
2. It requires high level of oxygen (10-12 liters per minute)
3. Loss of desired concentration occurs each time the tent is opened to provide care for the infant.
4. There is an increased chance of hazards due to fire.
5. It requires much time and effort to clean and maintain a tent.

### Articles

Oxygen tent and oxygen source, humidifier.

### Procedure

| | Nursing action | Rationale |
|---|---|---|
| 1 | Explain and reassure the parents and child. | Helps in obtaining cooperation |
| 2 | Select the smallest tent and canopy that will achieve the desired concentration of oxygen and maintain patient comfort. | Increases the efficiency of the unit. |
| 3 | Tuck the edges of the tent under the mattress securely. This is especially important if the child is restless and can dislodge the tent by pulling the covers loose. | Dislodgement of tent leads to oxygen leakage. |
| 4 | Pad the metal frame that supports the canopy. | Protects the child from injury. |
| 5 | Flush the tent with oxygen (increase the flow rate) after it has been opened for a period of time, to increase the concentration of the gas, then reset the flow meter to the original level. | Oxygen is circulated in the tent to adjust the concentration. |
| 6 | Analyze and record the tent atmosphere every 1-2 hours. Concentration of 30 to 50% can be achieved in well maintained tents. | Concentration varies with the efficiency of the tent, the rate of flow of oxygen, and the frequency with which tent is opened to the outside environment. |

| | Nursing action | Rationale |
|---|---|---|
| 7 | Maintain a tight fitting canopy whenever possible, provide nursing care through the sleeves or pockets of the tent. | Prevent oxygen leakage and disruption of the tent atmosphere. |
| 8 | Check child's temperature routinely. | Moisture accumulation may result in hypothermia. |
| 9 | No smoking sign should be pasted in the unit. | Oxygen helps in combustion. |
| 10 | Record the flow rate of oxygen, alteration in flow rate and child's reaction. | Serves as a communication between staff members. |

## Note:

1. Oxygen can be administered to babies using oxygen hood (Oxyhood).
2. Oxygen hood is a plastic device, which is kept over the head of the infant. It permits easy access to the child without loss of oxygen. It helps in efficient delivery of oxygen.
3. While placing hood over the head of the child, the edges of the hood should not rub against the child's chin, neck and shoulders.

## Special Considerations

1. Mist is prescribed with oxygen therapy to liquefy secretions.
2. Humidified air may condense into water droplets on the inside walls of the tent, it is important to examine the child's clothing and bedding and change them as necessary to prevent chilling.
3. Electrical equipment used within or near the tent should be grounded properly.
4. It is preferable to monitor SpO2 of patent continuously.
5. Avoid the use of volatile, inflammable materials such as oils, grease, alcohol, either and acetone near the tent.
6. Nurses should be knowledgeable about the location and technique for using a fire extinguisher.
7. For the baby in oxygen tent, toys selected should be such that they retard absorption are washable and will not produce static electricity, e.g. woolen and stuffed toys. This ensures baby's safety.

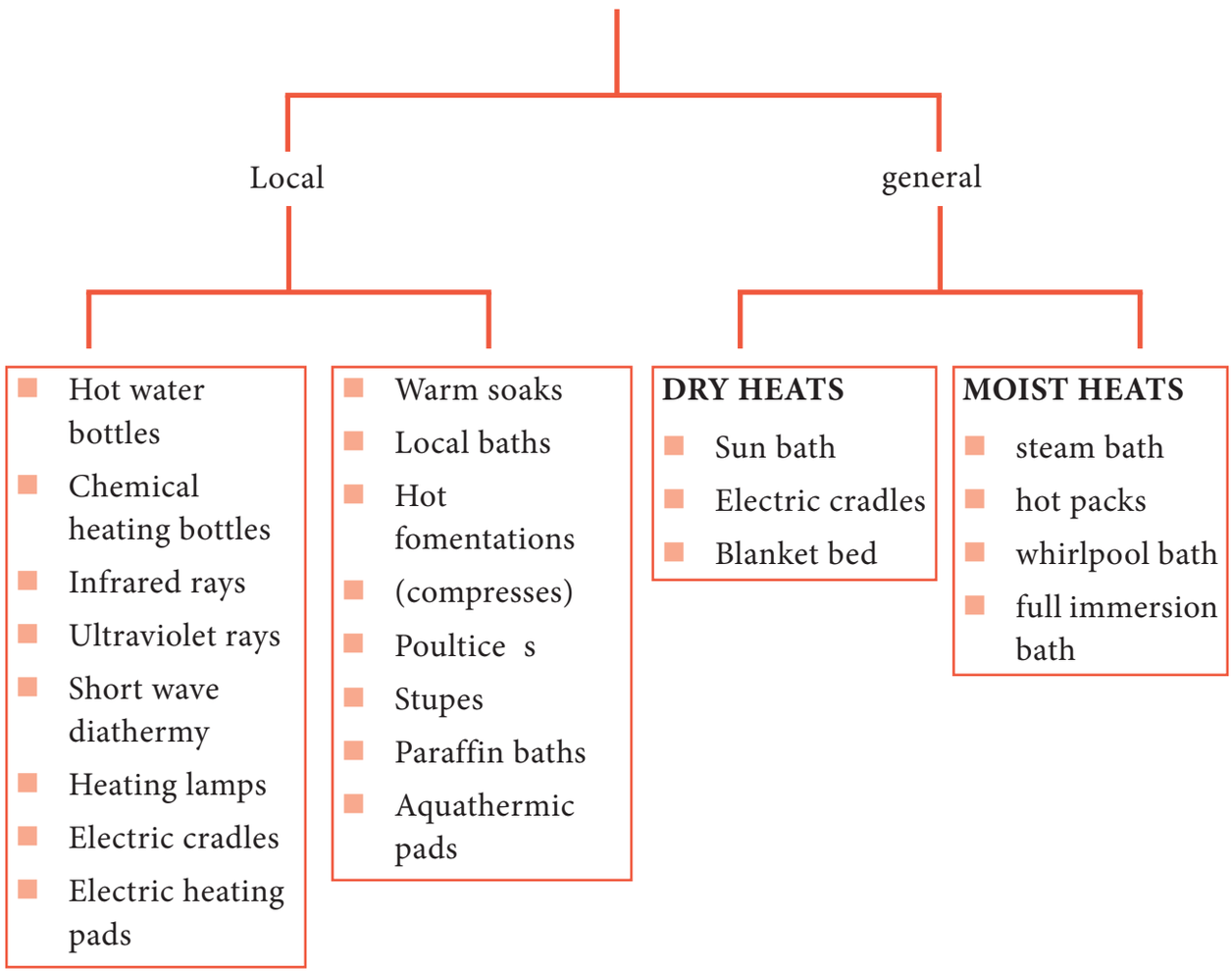
Practical **3**

# Hot and Cold Applications

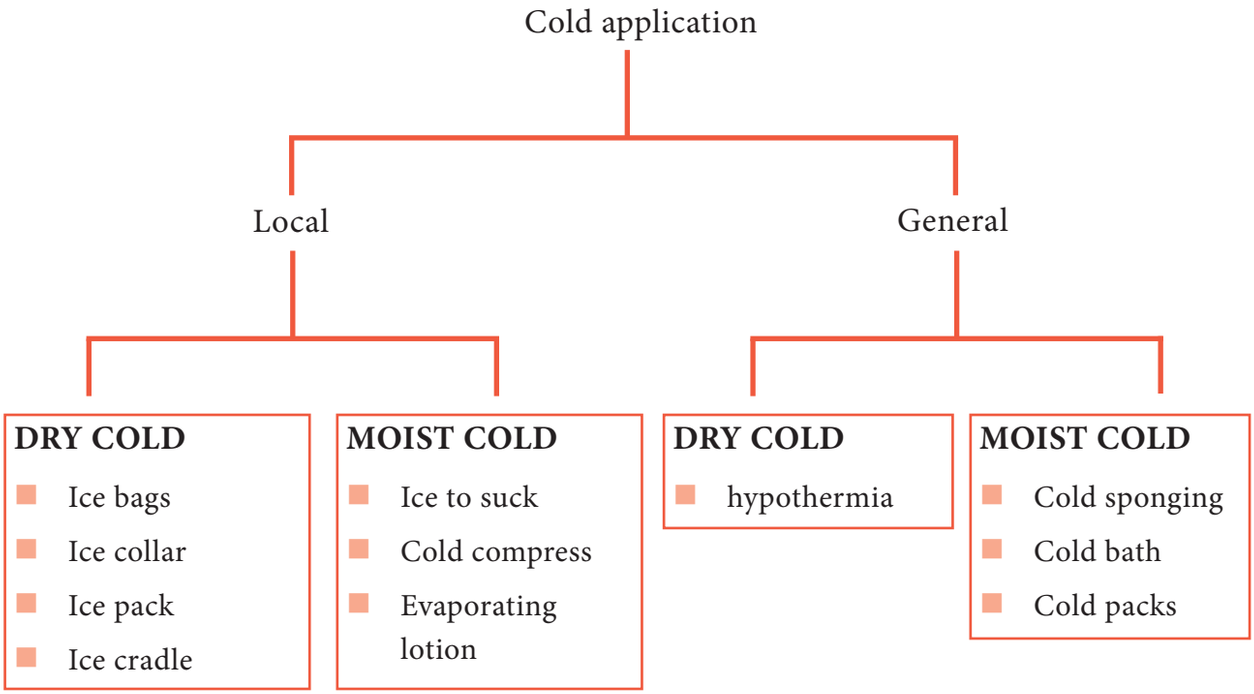
Hot application is the application of hot agent, warmer than skin either in a moist or dry form on the surface of the body to relieve pain and congestion, to provide warmth, to promote suppuration, to promote healing, to decrease muscle tone and to softens the exudates.

Cold application is the application of cold agent, cooler than skin either in a moist or dry form on the surface of the body to relieve pain and body temperature, to anaesthetize an area, to check hemorrhage, to control growth of bacteria, to prevent gangrene, to prevent edema and reduce inflammation.

## Classification of hot application



## Classification of cold application




## Effects of hot and cold applications

| Hot Application | Cold Application |
|---|---|
| Peripheral vasodilation | Peripheral vasoconstriction |
| Increased capillary permeability | Decreased capillary permeability |
| Increased o2 consumption | Decreased o2 consumption |
| Increased local metabolism | Decreased local metabolism |
| Decreased blood viscosity | Increased blood viscosity |
| Decreased muscle tone | Increased muscle tone |
| Increased blood flow | Decreased blood flow |
| Increased lymph flow | Decreased lymph flow |
| Increased motility of leucocytes | Decreased motility of leucocytes |

**NOTE:** SYMBOL CAN BE USED FOR INCREASED ↑

SYMBOL CAN BE USED FOR DECREASED ↓

## Therapeutic uses of local hot applications

- Heat decreases pain
- Heat decreases muscle tone
- Heat promotes healing
- Heat promotes suppuration
- Heat relieves deep suppuration
- Heat provides warmth
- Heat stimulates peristalsis

## Therapeutic uses of local cold applications

- Cold relieves pain
- Prevents gangrene
- Prevents edema and reduce inflammation
- Controls hemorrhages
- Checks the growth of bacteria
- Reduce the body temperature
- Cold anaesthetize an area

## Principles of hot and cold applicatons

1. Water is good conductor of heat.
2. Air is poor conductor of heat.
3. Heat always flows from hotter area to the less hot area.
4. Prolong exposure to moisture increases the skin susceptibility to maceration and skin breakdown, reducing the protection of the intact skin.
5. Moisture left on the skin cause rapid cooling due to evaporation of the moisture.
6. Presence of steam increases the temperature of the hot application
7. Oil acts as the insulator and delays the transmission of the heat.
8. Woolen materials absorb moisture slowly, but hold the moisture longer and cold off less quickly than the cotton materials.
9. When immersed in water the body becomes buoyant therefore the exercises are performed under water with less effort.
10. The temperature tolerance varies with individuals and according to the site and area covered.
11. The end organs of the sensory nerves of the skin convey the sensation of cold, heat pain and pressure. The sensation is interpreted in the brain.
12. Friction produces heat.

## Contraindications of hot applications

- Heat is not used in malignancies
- Heat is not used in patients with heart, kidney and lung diseases
- Should not used in acute inflamed areas.
- Should not be applied on patients with paralysis.
- Should not be applied on open wounds
- Should not be applied when there is an edema associated with venous or lymphatic diseases.
- Should not be applied on patients with metabolic disorders.

- Should not be applied on very young and very old patients.
- Should not be applied on clients with high temperature.

## Contraindications of cold applications

- Cold should not be applied on clients who are in the stage of shock and collapse
- Cold should not be applied when there is edema.
- Cold should not be applied on clients with circulatory disorders.
- Cold should not be applied on patients with decreased sensation
- Patients with shivering and very low temperature,
- Cold should not be applied when there is infected wound.

## Complications of hot and cold applications

| Hot application | Cold Application |
|---|---|
| Pain | Pain |
| Burns | Blisters and skin breakdown |
| Maceration | Maceration |
| Redness of the skin | Gray or bluish discoloration |
| Edema | Thrombus formation |
| Pallor(secondary effects) | Redness(secondary effects) |
| Hyperthermia | Hypothermia |

## General instructions

- Asses the condition of the clients before and after the hot and cold applications.
- Maintain the correct temperature for the entire duration of the application
- Expose the client only to the safe temperature.
- Do not allow the clients to adjust the temperature control of appliance such as short wave diathermy, electric heating pads etc.
- Never ignore the complaints of clients however small they appear to be.
- Always make sure that the client is in position to remove the application
- The client must have a calling signal within reach
- Never leave a client alone even for a short period that cannot move from the appliances.
- A thin layer of petroleum jelly or oil should be applied to the skin prior the application of moist heat application.
- Do not use electrical appliances near to open oxygen. A small spark may cause explosion.
- Do not handle electrical appliances with the wet hands.

- Hot and cold applications must be very carefully used when the clients is unconscious, anaesthetized or otherwise unable to respond pain.
- Any signs of complications should be recognized early, the procedure should be stopped immediately.
- After the procedure, dry the part gently by patting and not by rubbing to remove the moisture.
- In hyperpyrexia, the temperature of the body should be brought down gradually and steadily, sudden cooling is dangerous to the client.

## 3.1 Cold compresses

It is a local moist cold application. It may be sterile or unsterile. Sterile cold compresses are applied over open wounds or breaks in the skin. Cold compresses are made out of folded layers of gauze, lint piece or old soft linen, wring out of cold or ice water or in some evaporating lotion.

### Article Required:

1. Large basin with ice.
2. Small basin with cold water.
3. Gauze pieces or small towels.
4. Waterproof pad.
5. Bath towel.

### Procedure:

1. Explain the procedure to the client.
2. Wash hands.
3. Place the small basin with cold water into large basin with ice.
4. Place the compress in the cold water.
5. Keep the waterproof material under the part.
6. Check the area every 5 minutes.
7. Change the compress every 5 minutes or when it becomes hot.
8. Remove the compress after 20 minutes.
9. Put the area dry with a bath towel.
10. Make client comfortable.
11. Clean the equipment and place it in the proper place. Discard the used articles.
12. Wash hands
13. Document the care-time, site, duration of the application

## Temperature for hot and cold applications

| Sl.No | Description | Temperature | Application |
|---|---|---|---|
| 1 | Very cold | below15°c | Ice bag |
| 2 | cold | 15-18°c | Cold packs |
| 3 | cool | 18-27°c | Cold compress |
| 4 | tepid | 27-37°c | Alcohol sponge bath |
| 5 | warm | 37-40°c | Warm bath |
| 6 | hot | 40-46°c | Hot soak , hot compress |
| 7 | Very hot | Above 46°c | Hot water bag for adult |

### Ice Cap

Ice cap is a dry cold application. The ice cap used for the head, has a wide opening that allows it to be filled easily with ice chips, as does the ice collar, a narrow bag curved to fit the neck. Single use ice bags are frequently used.

### Hot Water Bag

Hot water bags is also called hot water bottles, are rubber bags filled with hot water and used for heat therapy. It is used to manage pain, such as headache or arthritis, or keep yourself warm on a cold night. Hot water bottle are safer than electrical heating pads, which can start fires or cause electric shocks. Hot water bags may cause injury if we don't use carefully.

### Cold Sponging

Cold sponging is used to reduce temperature in a client with hyperpyrexia. Large area of the body are sponged at one time permitting the heat of the body to transfer to the cooler solution on the body surface. Often wet towels are applied to the neck, axilla , groin and ankles where the blood circulation is close to the skin surface. Each area is dried by patting rather than by rubbing. Since the rubbing will increase the cell metabolism and raise the heat production. The vital signs are checked very frequently to detect the early signs of complications.

Cold sponging is hazardous to the client if the temperature of the body is brought down rapidly from a high temperature to a very low temperature. In cold sponging, the temperature of the water is kept between 65 and 90 degree F.

### Tepid Sponging

Tepid sponging is a safe method to reduce the body temperature in high pyrexia. It is carried out on the order of a physician. The temperature of the water is kept between 85 and 100 degree F.

## 3.2 MEDICAL FOMENTATIONS: (STUPES)

Medical fomentations are moist heat applications, in which a medicine (e.g. turpentine) is applied locally to augment the effects of the hot compresses used. Stupes are commonly used to relieve tympanites by increasing the peristalsis and relaxing the muscle spasm.

### Articles:

1. Kettle with boiling water.
2. Wringer with wringer rods placed in a basin.
3. Lint or flannel pieces, large enough to cover the area.
4. Plates (2)

### A tray Containing:

1. Cotton balls in a container.
2. Forceps.
3. Olive oil or vaseline.
4. Paper bag.
5. Kidney tray.
6. Waterproof over and cotton pad.
7. Hot water bag with cover.

It will be necessary to insert a flatus tube to expel the flatus after the application of stupes.

### The drugs used are:

Turpentine (1 part) well mixed with olive oil (3 parts) for adults. For children, turpentine (1 part) with olive oil (6 parts).

### To apply the Turpentine Stupe:

Take the turpentine and the olive oil in the correct proportion, mix them well and warm it by keeping the container in a bowl of hot water. Apply the warm oil mixture over the part, apply the hot compresses and follow the procedure as in hot compresses. After 10 to 15 minutes, insert the flatus tube and watch the expulsion of the flatus.

### Arm Soak and Foot Soak:

A soak refers to either immersing a body part (e.g. an arm, foot) in a solution or to wrap a part in gauze dressings and then saturating the dressing with a solution. Soaks may employ either "clean technique". A sterile technique is indicated for any open wounds present on the area. Soaks are usually indicated for any one of the following reasons:

1. To apply heat, thus hastening suppuration and softening the exudates.
2. To apply medications.
3. To cleanse areas such as wound in which there are sloughing tissues.
4. To relieve edema, ischemia and muscle spasm.

The body parts to receive the moist heat application is submerged in a basin of warm water at 105 to 110 degree F. The duration of the treatment is usually 20 minutes. Ideally the temperature of the solution should be checked frequently and additional solution is added or the solution is replaced in order to maintain the appropriate temperature. The client should be in a comfortable position and the limbs are supported with pillows. Dry the surface throughly at the end of the treatment.

### Infrared Rays: (Infrared Lamp)

Infrared lamps transmit infrared rays, which are visible heat rays beyond the red end of the spectrum.

### Ultraviolet Rays: (Ultraviolet Lamp)

Ultraviolet lamps transmit infrared ray, which are invisible heat rays beyond the visible spectrum at the violet end. Both these rays are used therapeutically for the production of heat in the tissues.

### Therapeutic Uses:

1. Promotes healing of decubitus ulcer.
2. Softens connective tissue.
3. Relieves pain and spasm of the strained muscle.

The radiation heat produced by the infrared and ultraviolet lamps are more intense than the heat given off from the heating lamps. The effects of the exposure to the ultraviolet lamps are

1. Pigmentation of the skin.
2. Production of Vitamin-D.
3. Bactericidal effects.

The duration of the treatment is usually 20 to 30 minutes.

### Precautions:

Observe the skin carefully during and after the treatment. The client and the therapist must use protective goggles during the treatment to shut out reflected harmful rays.

## 3.3 Sitz bath (hip bath)

Sitz bath is a method of applying heat using tepid or hot water to the pelvic or rectal area by sitting in a tub. The client is usually immersed from the mid thigh to the iliac crest. The temperature of the water is 110-115 degree F and the duration of the bath is 15 to 30 minutes.

### Purpose:

1. To relieve congestion of the pelvic organs e.g. in dysmenorrhoea.
2. To relieve pain following cystoscopy.
3. To reduce inflammation.
4. To promote drainage of rectal abscess and haemorrhoids.

### Solutions Used:

1. Potassium permanganate solution 1:5000
2. Boric acid 1 dram to 1 pint.
3. Eusol solution.

### Contraindications:

1. Pregnancy.
2. Menstruation.
3. Renal Inflammation.
4. Increased irritability of the genital organs.

### Procedure:

1. Test the water in the bath tub with a thermometer before the client is allowed to enter into the water.
2. Assist the client to the tub or into the sitz bath and position properly.
3. Wrap a blanket around the shoulders to prevent exposure and chilling.
4. Monitor the client closely for sign of weakness and fatigue and discontinue the bath if faintness, pallor, rapid pulse or nausea occurs.
5. Check the temperature of the water in between and keep it at the desired temperature by adding hot water.
6. Do not leave the client alone in the bath tub.
7. When the bath is completed, assist the client to come out of the bath and dry well.
8. If the client complaints of fainting or weakness, assist him out of the bath.
9. The client may feel sleepy due to the sedative effect of the sitz bath, so care should be taken to prevent falling.
10. Record the procedure.

# Practical 4

# Medical and Surgical Asepsis

## 4.1 Aseptic Techniques

Aseptic techniques is the effort to keep a client as free from hospital micro-organisms as possible.

### Principles of Asepsis

Three things that are extremely important is achieving asepsis are the reduction of time, trauma and trash.

1. Time: The time taken for any medical or surgical procedure is an important factor. Longer the time taken, have the possibility or greater exposure to contamination.
2. Trauma: Trauma occurred due to rough handling, excessive dead space, foreign bodies will contribute to infection.
3. Trash If refers to contamination by bacteria or foreign matter.

Essential Components of Maintaining Asepsis In a Hospital Include:

1. Hand washing, 2) Utilizing gloves, gown and mask as indicated 3) cleaning equipment, 4) Proper Handling of linens is the ways to prevent the spread of germs.

### Types of Asepsis

The two types of aseptic techniques that the nurse practices are medical and surgical asepsis.

**Medical asepsis:** It is a clean technique which includes procedure used to reduce the microorganisms prevent their spread. Eg. Changing patient's bed linen daily, hand washing.

**Surgical asepsis:** It is a sterile technique which includes procedures used to eliminate the microorganism. Sterile technique is used where sterile instruments are used. Eg . In operation theatre.

**Medical asepsis:** Medical asepsis is commonly referred as clean technique. The goal is to reduce the number of pathogens or prevent the transmission of pathogens from one person to another. Techniques used should be appropriate to interrupt the spread of the known pathogen.

## HAND WASHING AND SCRUBBING TECHNIQUE

## 4.2 Hand Washing

### Definition

A technique of cleaning hands developed to prevent transmission of microorganisms

Hand washing is a vigorous, prior to rubbing together of all surfaces of hands lathered in soap, followed by rinsing under a stream of water. The purpose is to remove soil and transient organisms from the hands to reduce to microbial counts over time.

| | |
|---|---|
| Purposes | 1) Cleanliness, 2) Aesthetic, 3) Remove soil and transient organism, 4) Reduce the total microbial counts – over time 5 to prevent cross infection |
| Indication | 1. At the end of each task<br>2. Before going into clean areas (or) handling clean articles<br>3. Before surgical procedure, delivery<br>4. Before serving or eating food<br>5. At any time when necessary |

**Situation for hand washing:** GARNER and FAVERS recommend that nurses wash hands in the following situations.

1. Before contact with clients who are susceptible to infection.

   **Ex:** New born infants, clients with leukaemia clients who are HIV positive.
2. After caring for an infected client.
3. After touching organic material.
4. Before performing invasive procedure such as administration of injections, catheterization and suctioning.
5. Before and after handling dressing (or) touching open wounds.
6. After handling contaminated equipment.
7. Between contacts with client in high risk units.
8. After removal of sterile and non-sterile gloves.

## Steps of effective hand washing

**Step 1:** Wash Palms and fingers.
**Step 2:** Wash back of hands.
**Step 3:** Wash fingers and knuckles.
**Step 4:** Wash thumbs.
**Step 5:** Wash finger tip.
**Step 6:** interlocking of hands.
**Step 7:** Wash wrists.

## Guidelines for maintaining hand washing

1. Cut nail shorts to prevent accumulation of dirt.
2. Remove jewellery to ensure through cleaning.
3. Remove the wrist watch and push long uniform sleeves above wrists.
4. Respect the surface of the hands and fingers for breaks (or) cuts in skin and cuticles.

## Medical Hand Washing:

### *Equipment:*

1. Warm water
2. Antimicrobial soap/Regular soap
3. Clean towel

### *Procedure:*

1. Remove wrist watch and push long uniform sleeves above wrists.
2. Avoid wearing rings.

3. Be sure finger nails are short and field.
4. Stand in front of skin, keeping hands and uniform away from sinks surface. (it hands touch sink during hand washing repeat it).
5. Open tap and wet elbow hand (hold hands below level).
6. Avoid splashing water against uniforms.
7. Regulate flow of water so that temperature is warm.
8. Wet hands and lower arms thoroughly under running water. Keep hands and forearms lower than elbows during washing.
9. Apply 1 ml of regular or 3 ml or antiseptic liquid soaps to hands lathering thoroughly.
10. Wash hands using plenty of lather and friction for at least 10 to 15 seconds.
11. Interlock fingers and rub palms and back of hands with circular motion atleast 5 times each.
12. Areas under nails are often soiled clean them with nails of other hand (or) clean stick.
13. Rinse hands and wrist thoroughly keeping hands down and elbow up.
14. Dry hands thoroughly from fingers to wrist and forearms with towel.
15. Discard towel in soiled bin.
16. Turn off water.

## Surgical hand washing /scrubs:

Aseptic technique is designed to eliminate all micro organisms, including spores and pathogens, from and object and to protect an area from microorganism.

| | |
|---|---|
| ARTICLES; | 1. Soap/antiseptic detergent |
| | 2. Running warm water – to rinse soap and thorough hand wash |
| | 3. Nail brush in antiseptic lotion |
| | 4. Mask and cap |

### *Principles:*

1. A sterile object remains sterile when touched only by another sterile object.
2. Only sterile object may be on a sterile field.
3. An object hold below a person' s waist is contaminated.
4. A sterile object becomes contaminated by prolonged exposure to air.
5. When a sterile surface come in contact with a wet it contaminated the surface of sterile object.

### *Steps to procedure:*

1. Ensure that nails are short.
2. Respect hands for abrasions and cuts.
3. After medical hand wash, wear cap and mask.
4. Turn on water.
5. Wet hands and arms under running take warm water and lather with soap to 5cm above the elbows.
6. Hand should be hold above elbows use circular movements to wash palms, back of hands, wrists, forearms and interdigital spaces or 20-25 seconds.
7. Rinse hands and arms thoroughly under running water.
8. Clean under nails of both hands.

9. Scrub nails of each hand with 15 strokes using microbial agent.
10. Holding the brush perpendicular scrub palm, each side of thumb and fingers and posterior side of hand with 10 strokes each.
11. Scrub from wrist to 5cm above each elbow.
12. Entire scrub should last for 5 to 10 minutes.
13. Discard brush to soiled bin.
14. Take care not to touch the tap or sides of the sink during the procedure.
15. Use a sterile towel to dry one hand moving from fingers to elbow.
16. Repeat drying of the other hand using a different towel/use one side to dry one hand reverse side for other hand, if only one towel in available.
17. Discard towel to the solied bin.
18. One assist person to stay while surgical hand washing.

### *After care:*

- Turn off water.
- Towel should be sent to laundry for washing.
- Washed nail brush to be kept in disinfectant solution tray.
- Soap to be kept in soap box and antiseptic solution to kept in cupboard.

## WEARING OF GOWN, GLOVE AND MASK

## 4.3 Gowning

Wear clean or disposable gowns or plastic aprons during procedures to prevent the nurse's uniform likely to become soiled.

### Indication:

1. When the nurses changes the dressings of a client with extensive wounds, burns.
2. During delivery procedure and surgical procedure.
3. Client with more susceptible to infection.
4. For strict aseptic diagnostic procedures like FNAC. Lumber puncture, bone marrow biopsy etc.

### Purpose:

1. To prevent soiling of clothing during contact with the patient.
2. To protect health care personal from coming in contact with infected materials.

### Steps to procedures:-

1. Pick up a sterile gown and allow it to unsoiled keeping inside of the gown towards the body without allowing the outside of the gown to touch any area.
2. With hands at shoulder level, slip both arms into armholes simultaneously. Ask the assisting nurse to bring the gown over shoulder.
3. The assisting nurse fastens the ties at the neck. Overlap the gown at the back as much as possible and faster the waist, ties or belt.
4. Prevent the gown from becoming wet.
5. While removing the gown avoid touching soiled parts on the outside of the gown. Roll up the gown with soiled part inside and discard in the appropriate container.

## 4.4 Gloving

Gloving is defined as the putting up of a pair of sterile gloves to protect own hand from pathogenic micro organisms and to avoid contamination of a sterile areas by hand.

### Purpose:

1. To protect the nurse from the pathogenic microorganisms.
2. To safely use her hands to handle without contaminating any objects.

### Indication:

1. Contact with open wound.
2. For strict aseptic diagnostic procedures.
3. Handle with infected materials like blood, Urine, Faeces etc.
4. Nurse or health personnel with any cut injury in hands or fingers.
5. For surgical procedure and delivery procedure.

### Steps to procedure:

1. When the glove packet is collected from the autoclaved bin and places flat on the sterile towel.
2. The packet of powder is removed from the glove pack and the hands are powdered.
3. Identify right and left hand.
4. Pick up the left glove with the right hand by the inside turned down cuff.
5. Carefully push the fingers of the left hand into the glove until it reaches the cuff.
6. Pick up the right glove by putting the gloved hand under the cuff.
7. Carefully push the fingers of the right hand into the gloved hand into the glove and pull the glove cuff over the cuff of the down.
8. Now pull the cuff on the left glove completely over the glove cuff to the left hands.
9. Adjust the gloves.

## 4.5 Wearing Masks

Mask are worn to reduce the risk for transmission of organisms by the droplet contact, air borne routes and splatters of body substances.

### Purpose:

1. The mask should be worn by personal who work close to the client if the infection is transmitted by large particle aerosol.

Eg. Measles, mumps, acute respiratory diseases in children.

2. The mask should be worn by all personal entering the room if the infection is transmitted by small particle aerosols (droplet nuclei) eg. Pulmonary tuberculosis.

### Steps to procedure:

1. Find top edge of mask (usually has thin metal strip along edge).
2. Hold the mask by top two strings tie two top ties at the top of the back of the head with ties above ears.
3. Tie two lower ties snugly around the neck with the mask well under the chin.
4. Ensure that the mask covers the mouth and the nose adequately.

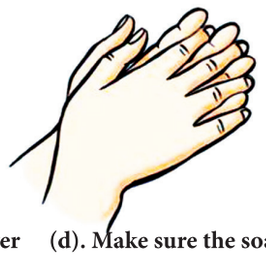
5. If glasses are worn, fit the upper edge of the mask under the glasses.
6. Avoid unnecessary talking and if possible sneezing or coughing.
7. When removing a mask with strings first untie the lower stringe of the mask
8. Discard a disposable mask in the waste container.
9. Wash the hands if they have become contaminated by accidentally touching the solid part of the mask.

## STEPS OF HAND WASHING

(a). Wet hands under running water

(b). Apply soap and rub palms together to ensure complete coverage

(c). Spread the lather over the backs of the hands



(d). Make sure the soap gets in between the fingers

(e). Grip the fingers on each hand

(f). Pay particular attention to the thumbs

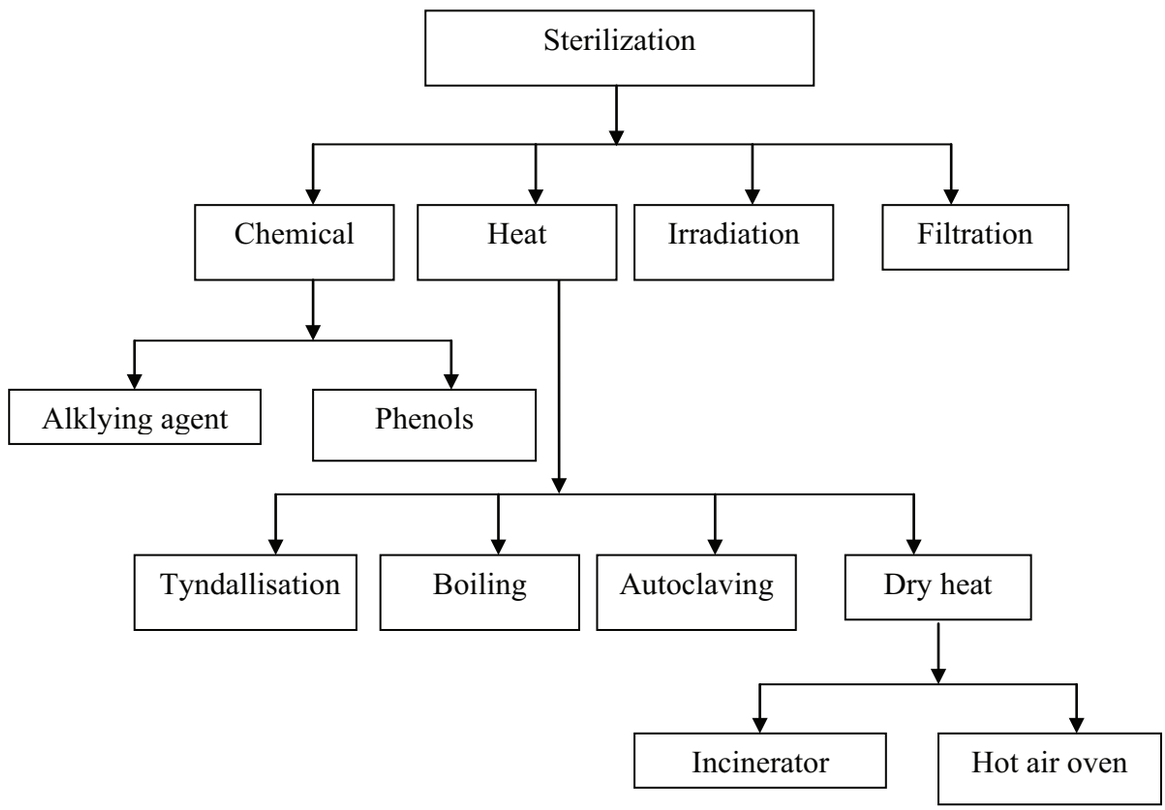
(g). Press fingertips into the palm of each hand

(h). Dry thoroughly with a clean towel

## STEPS OF SURGICAL HAND WASH

# Practical 5

# Sterilization




## 5.1 Definition

It is the practice to reduce or eliminate contaminants (such as bacteria, viruses, fungi and parasites.

## 5.2 Methods of sterilization

1. **Heat:** It is rapid and reliable method to destroy the small and heat resistant objects.
2. **Chemicals:** It is slow corrosive and used for heat – sensitive objects and for long surface.
3. **Filtration:** It requires membrane filtration apparatus and only used for liquids.
4. **Irradiation:** Ionizing irradiation is reliable but expensive and it is used to sterilize the rooms.

## 5.2.1 Heat

1. **Tyndallisation:** Rapid steaming at 100°C of culture media n each of three successive days, allowing spores to germinate and to be subsequently killed.
2. Boiling: This method is suitable for enamel metal, glass and rubber wares.

Bowl sterilizers are used for large articles.

Instrument sterilizers are used for smaller articles.

### *Points to be remember:*

- See that articles are quite clean and completely immersed in the water which also must be clean.
- Only after the water comes to the boil start timing. If more articles are added the sterilization to be must begin again
- Boil vigorously for 5 minutes boiling will not kill spores.
- Remove articles with sterile chattel or other lifting forceps on to a sterile surface.

3. Autoclaving: This is a reliable method. This is the method used for most articles.


### *Points to remember:*

- All the articles should be clean and dry before packing.
- The hole in the drums must be open with placing into the autoclave and closed immediately on taking them out.
- Bundle should be not too large and not tightly packed. Steam should be able to penetrate to the centre.
- Rubber gloves should in 5 lbs for 15 mins.
- To autoclave bottles of fluid, loosen the screw caps. Evacuate the steam slowly.

### *General instructions:*

- The articles being sterilized should with stand high temperature.
- The wrapper and the container should allow penetration of the steam into the article.
- The inner champers must not be too full nor the contents arranged too compactly.
- The temperature and pressure of the steam should be high enough to kill all the micro organisms including spores.
- The destruction of a bacteria depends upon the length of time the articles are exposed to steam under pressure. If the time is increased to the exposure the pressure is reduced.
- In operating an autoclave, it is important to remember that all the air in the inner chamber must be driven out and entirely replaced by steam.
- The articles should be left in the autoclave for a short times after the procedure is over to dry materials.

4. Dry heat:

Sterilizing of glassware including syringes is often done in a hot air oven at 160°C for one hour. Spores as well as organisms are killed. Rubber will not stand up to this heat. This method is effective for dressing towels and gowns.

Two methods are used:

1. **Incineration:** Used for disposal of dressings laboratory media and human tissues. Incinerator may cause unacceptable environmental pollution.
2. **Hot air oven:** It is used for objects which can not tolerate moisture. Mostly used for glass ware, oils and powders.

**Disinfection:** Destruction of organisms by chemical is used in the following circumstances.

1. **Environmental:** Disinfection of excreta, floors, furniture, linen and fabrics.
2. **Instruments/Equipments:** Sterilization of heat sensitive objects in contact with patient.
3. **Skin and Wounds:** Removal of pathogens.
4. **Food medication:** Preservation in prevention of spoilage.
5. **Water:** Removal of pathogens.

## 5.2.2 Chemical sterilization

It is the method used for eye instruments and other delicate instruments.

### *Points to remember:*

- Articles must be clean and free from pus, blood or oil.
- It must be completely immersed in the disinfectant.
- The disinfectant should be of a certain strength and articles must be in contact with it for a certain length of time.
- After sterilization articles must be well rinsed in sterile water before use.

### *Types of chemicals:*

A Alkylating agents:

They are capable of killing bacteria, spores and viruses. They are the acceptable chemical alternative to usual heat treatment. This include:

1. **Formaldehyde:** Used for instruments and machines sterilization.
2. **Gluteraldehyde:** Used for instrument sterilization.
3. **Ethylene oxide:** Used for rubber and plastic articles sterilization.
4. **Propiolactone:** Used for gaseous sterilization.

B Phenols:

It includes acids and semi synthetic compounds in soap solution. It is used for contaminated surfaces.

### *Advantages:*

This is the method used to sterilize the articles that are destroyed by heat.

### *Disadvantages:*

1. This disinfectants does not destroy the spores.
2. Some disinfectants are injurious to the skin and articles.

### *Important points to remember:*

- They should be used in correct strength.
- The articles should be fully submerged in it.
- They should be placed for a sufficient length of time.
- They should not be injurious to the skin and articles.
- The article should be thoroughly cleaned to remove the organic material.

### *Fumigation or gas sterilization:*

The agents that are commonly used for fumigation are formalin tablets and ethylene oxide liquids. The exposure will destroy all types of bacteria, Viruses and most of the spores. The best results can be obtained with high concentration of gas and humidity.

### *Disadvantages*

The smell of formaldehyde is irritant to the eyes, skin and mucus membrane.

## 5.2.3 Irradiation

### IV) URAVIOLET LIGHT STERILIZATION:

Ultraviolet sterilization is effective for disinfecting working surfaces.

### *Disadvantages:*

1. Bacteria in shadows are unaffected.
2. It does not penetrate.
3. Prolonged exposure to the ultraviolet rays causes conjunctiva damage and also injurious to the skin and tissues.
4. It is expensive.

## 5.3 Preparing articles for sterilization

1. The articles should be carefully arranged so that those needed first are on top.
2. They must be loosely packed for steam to penetrate.
3. Drums must the perforations opened.
4. Bundles should have a double wrapper.
5. For proper sterilization of instrument it should be free from dried blood or discharge.
6. Rubber tubing should be cleaned with cold water then with hot and soapy water. The inside must be thoroughly clean.
7. Sharp instruments, knives and needles should be dealt with separately to avoid cuts and puncture.

# Practical 6

# Public Health Procedures

Topic:- Hospital and its Environment.

Visiting place :- Any Hospital.

Practical work:- Survey.

1. Cleanliness of the ward.
2. Sanitary conditions of the ward.
3. Chlorination.

# Practical 7

# Urine Analysis

## 7.1 Test for Sugar - Benedict's test

Benedict's test is used as a simple test for reducing sugars. A reducing sugar is a carbohydrate possessing either a free aldehyde or free ketone functional group as part of its molecular structure. This includes all monosaccharides (eg. glucose, fructose, galactose) and many disaccharides, including lactose and maltose.

Benedict's test is most commonly used to test for the presence of glucose in urine. Glucose found to be present in urine is an indication of Diabetes mellitus

### Apparatus:

Benedict's solution (fresh; certainly not more than 3 months old), Dropper, Test-tube, Test-tube holder.

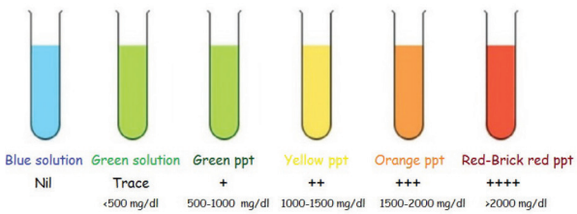
**Quality checking of the Benedict's solution:** Benedict's solution is blue in color. In order to check purity of Benedict's solution take 5 ml of Benedict's solution in test tube and heat it. If it does not change color, it means, it is pure.

### Procedure:

- Take 5 ml (one teaspoon) of Benedict's solution in the test-tube.
- Holding the test-tube with the holder, heat it over a spirit lamp till the Benedict's Solution boils without overflowing.
- Drop 8 to 10 drops of urine into the boiling Benedict's solution.
- After again boiling the mixture, let it cool down.
- While cooling, the mixture changes color.
- Observe the color change and precipitate formation and analyze the test result

### Result interpretation:

The colour of the mixture serves as a guide to the amount of sugar in the urine:




(ppt – precipitate)

| Color | Approximate glucose mg/dl | Indication |
|---|---|---|
| Blue solution | Nil | |
| Green solution | <500 mg/dl | Trace |
| Green ppt | 500-1000 mg/dl | + |
| Yellow ppt | 1000-1500 mg/dl | ++ |

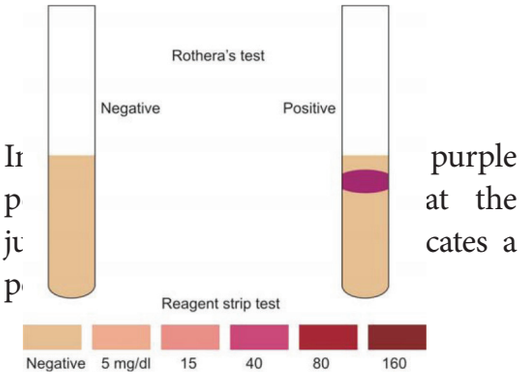
| Color | Approximate glucose mg/dl | Indication |
|---|---|---|
| Orange ppt | 1500-2000 mg/dl | +++ |
| Red to Brick red ppt | >2000 mg/dl | ++++ |

## 7.2 Test for albumin

- Fill three-fourth of a test tube with filtered urine (filtering removes pus if present).
- See the reaction of the urine is acidic. If found alkaline, add one drop of acetic acid and make it acidic.
- Heat the upper third of the urine over sprit lamp and allow it to boil.
- A cloud may appear either due to phosphate or albumin.
- Add acidic acid drop by drop in to the test tube.
- If the urine is still cloudy it indicates the presence of albumin.
- If it becomes clear it indicates the presence of phosphates.
- No albumin is presence in the normal urine.
- If the urine is highly acidic or highly alkaline, the reading will be false.

## 7.3 Test for acetone

- Take 5 ml of urine in a test tube and saturate it with ammonium sulphate.
- Add a small crystal of sodium nitroprusside and mix well.
- Slowly run along the side of the test tube liquor ammonia to form a layer.




- In purple at the junction of the two liquids indicates a positive

### Special points

- Keep reagent tablets in a cool, dry place at a temperature below 86°F(30° C).
- Do not refrigerate the reagent tablets and strips.
- Keep the container tightly closed.
- Do not use discolored or outdated tablets or strips.

## 7.4 Test for bile salts (hey's test)

- Take half of urine sample in a test tube.
- Sprinkle sulphur powder on the surface of the urine.
- If the powder sinks down to the test tube, it indicated the presence of bile salts.
- This is because, bile salts reduce the surface tension of the urine and allows the sulphur powder to sink down.

### Test for bile pigments

- Fill three-fourth of a test tube with urine.
- Add iodine drops along the sides of the test tube, so as to form the layer on the surface of the urine.
- A green color at the junction of the two liquids indicates the presence of bile pigments.
- Discard the urine and clean the test tube.

# Practical 8

# Eliminational Need

## 8.1 Offering and Removing of bed pan

Bed patients usually need to use a bedpan about once or three times a day. The ward may be closed with a screen for this purpose as a routine. However if a patient makes request for a bedpan at another time, you should meet the request with understanding and without delay.

### Method of giving a bedpan

1) Screen the bed.
2) Bring a covered bedpan to the bedside and place it on the stool. The bedpan should be clean and dry. In cold weather, warm if first with hot water pad the seat of the bedpan. If the patient is very weak and emaciated.
3) Protect the bed with a rubber sheet if necessary.
4) Place the bedpan on the bedside of the patient.
5) Place your left hand beneath the lower back to aid the patient in raising the buttocks and place the bedpan in position without force. Adjust the bedpan comfortably for the patient. Lower and leave him alone unless he is too ill or weak.
6) Get a toilet tray ready and bring it to the bedside.

Contents of the tray are

| S. No. | Items |
|---|---|
| 1. | Jug with warm water |
| 2. | Soap |
| 3. | Wash cloth and towel |
| 4. | Bowl with rag pieces or cotton |
| 5. | Long artery forceps. |
| 6. | Kidney tray and paper bag |

To Remove and empty the bed pan:-

1) Let the patient wash himself if he is able to do so. Help him pouring water over the genitals. Remove the bedpan and give the patient water and soap for hand washing.
2) If the patient is helpless use moistened rag pieces or cotton and the artery forceps and clean from front to back to prevent a infection. Turn him on his side while removing the bedpan (a second person may be needed to help).
3) Make the patient comfortable.
4) Cover the bedpan, take it to the toilet room.
5) Observe the contents.

6) Empty the content and rinse the bedpan with cold water. Then clean it with the brush kept in soap solution. The bedpan may be soaked in disinfectant for one hour or sterilised if there are facilities for dui so.

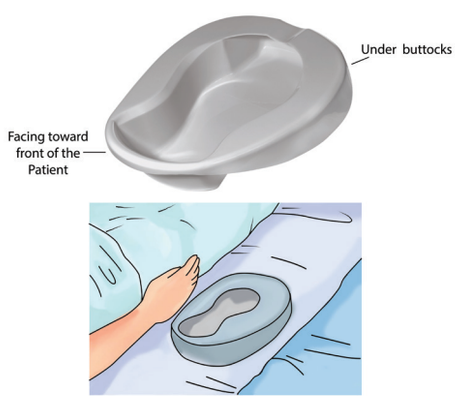
7) Remove other articles from the bedside. Clean and put them back in proper place.

8) Wash your hands well. Remove the screen and leave them until tidy, record the time and observation.

## 8.2 Offering Urinal

**Definition:-** Bed rest or immobility can interfere with micturition (act of passing urine). It does not allow the patient to have the normal position for emptying the bladder.

For a man who has not been able to reach the toilet facilities he may stand at the bedside and avoid into a plastic or metal receptacle for urine. If he is unconscious or enable to stand at bedside the assistant needs to assist him to use the urinal.




### Purpose

1. Provide a container for collection of urine
2. To measure the urine output
3. For observation of colour and consistency of urine

### Indications

1. For patient with impaired mobility due to surgery, fracture, injury
2. Elderly man (aging impaired micturition) may require urinal more frequently to avoid urinary incontinence
3. For mobile person who is able to go to bathroom, does not required the urinal

# Practical 9

# SPECIMEN COLLECTION

A specimen may be defined as a small quantity of a substance or object which shows the kind and quality of the whole (sample).

Specimen collection defined as the collection of the specimen for the purposes of diagnosis, treatment and recovery.

## Preparation of the clients

- Explain the procedure to the patient. It helps to gain the client's trust and cooperation.
- When preparing the client the nurse's explanation should be clear, straight forward and complete.
- Some test requires more detailed instruction to promote cooperation and ensure accurate specimen collections especially when the client has to modify his behavior before the test and when he will be collecting the specimen himself.
- Be sure that the client has understood clearly and correctly the information.
- Proper understanding of the procedure will help to gain informed consent.
- Provide a appropriate container and explain how to use it.
- In case of collection of urine, instruct the client to wash the genitalia with soap and water, then rinse it in water before collecting the specimen.
- Instruct the client not to contaminate the outside of the bottle.
- Instructions to use gloves and other barriers as necessary.

## Preparation of the equipment

- All specimens are collected in clean and dry containers.
- Use containers with wide mouth.
- Sterile containers are used for culture.
- Wax lined disposable cups are used for sputum and stool specimens.
- Large containers are used for 24 hours urine specimens.
- Sterile test tubes are used to collect fluids.
- Clean slides are used to collect smears.
- No antiseptic solution must be present in the specimen bottle as they may hamper the growth of micro organism and thus obscure the results.

## Collection of urine specimen

### 9.1 Method of collecting single urine specimen

Single urine specimen means the amount of urine voided at a time. Usually the morning specimens are collected. The amount of 100-120 ml of urine will be sufficient for the usual tests.

After cleaning the genital, the client passes urine into clean urinal or a clean kidney tray or directly in to specimen bottle, taking care not to spill the urine on the outside of the container.

### Method to collect Midstream specimen for culture

Ask the client to clean the genital area with soap and water then rinse in water alone. In female clients the labia are separated for cleaning and kept apart until the urine has been collected. In male client, the foreskin should be retracted and the genital area penis is cleaned before the collection of the urine.

The client begins to void in to the toilet, commode or bed pan. Than the client stops the stream of urine, the sterile container is positioned and continues to void in to the container. When enough urine has been voided, for specimen, the client stops the stream again; the container is removed and then finishes voiding in the original receptacle.

### Method of collecting 24 hours urine specimen

24 hours urine specimen means to collect all the urine voided in 24 hours. The collection of urine begins at 6AM and discard the whole urine. All the subsequent voiding should be measured and collected in the bottle which is labeled. Continue to collect till morning. Ask the client to void at 6 AM on the next day and add it to the previously collected.

### Method of collecting urine specimen from unconscious clients and children

In male babies or unconscious male clients, take a test tube, a barrel of syringe or nirodh or condom with rubber tubing and is attached to the penis. It is kept in place by adhesive tapes. In female attach a wide mouthed container or a funnel with rubber tubing to the vulva by means of a T binder. The rubber tubing is connected to a bottle and the urine is collected in the bottle.

### Method of collecting sputum specimen

Water proof disposable sputum cups or wide mouthed containers are used to collect the sputum specimen. The client should be given the container and is instructed to raise the material from the lungs and not simply expectorating the saliva or discharges from the nose or throat. The sputum should be collected before brushing the teeth and the food. Mouth can be rinsed with plain water, not any antiseptic mouth washes.

### Method of collecting stool specimen

Water proof disposable sputum cups or wide mouthed containers are provide with necessary instructions. The client passes stool in a clean bedpan. A small amount

of stool is removed with a stick or spatula and is placed in the container. Discard the stick in the waste bin.

## 9.2 Collecting stool specimen for routine examination

### DEFINITION

Collection of a small quantity of stool sample in a container for testing in the laboratory.

### PURPOSE

To test the stool for normal and presence of abnormalities.

### ARTICLES

1. A Clean specimen container.
2. A spatula for putting the specimen into the container.
3. Dry bed-pan (for helpless patients). Additional bedpan for rinsing and cleaning.
4. Laboratory requisition form.
5. Clean gloves.
6. Waste paper (for wrapping used spatula).
7. A pitcher of water (for helpless patient).
8. Tissues / towel.

### PROCEDURE

| | Nursing action | Rationale |
|---|---|---|
| 1 | Check the physician's order and 'Nursing Care Plan'. | Obtains specific instruction and information |
| 2 | Identify the patient. | Helps to perform the right procedure for the right patient. |
| 3 | Explain to patient the procedure and make clear what is expected of him/her. | Aids in proper collection of specimen. |
| 4 | Give the labeled container and spatula to the patient with instructions. ie. To defecate into clean dry bedpan. Not to contaminate specimen with urine. | |
| 5 | Done gloves | |
| 6 | For helpless patient assist patient on to the clean bedpan | |
| 7 | Leave him with instructions | |
| 8 | When done, remove and keep aside the bedpan after placing the second one for cleansing. | |

| | Nursing action | Rationale |
|---|---|---|
| 9 | Collect about 2cm of formed stool or 20 to 30ml of liquid diarrheal stool | |
| 10 | Once the specimen is collected send it to lab with the appropriate requisition forms. | |
| 11 | Wash and replace the reusable articles | |
| 12 | Dispose off the used spatula wrapped in waste paper. | Prevents contamination |
| 13 | Wash and dry hands. | Prevents cross contamination. |
| 14 | Record information in the patient's charts. | |

## Special considerations

1. Send specimen to be examined for parasites immediately, so that parasites may be observed under microscope while viable, fresh and warm.
2. Inform if bleeding hemorrhoids or hematuria is present.
3. Postpone test if woman has menstrual periods, until three days after it has ceased.
4. Consider that intake of folic acid, anticoagulant, barium, bismuth, mineral oil, vitamin C, and antibiotics may alter the results.
5. Use two bedpans for helpless patient- one for collecting specimen and another for cleaning.

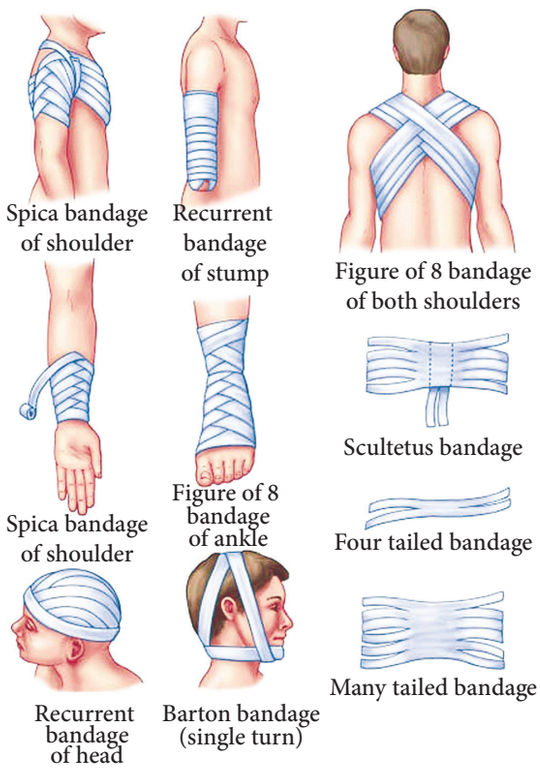
Practical **10**

# Application of Bandages

## 10.1 Introduction

A bandage is a piece of material used either to support a medical device such as a

- Dressing
- Splint
- Support or
- To restrict the movement of a part of the body




### Uses

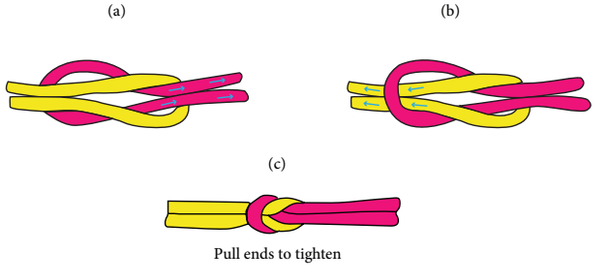
Bandages are used to:

1. Maintain direct pressure over a dressing to control bleeding.
2. Keep dressings or splints in position.
3. Support a limb or joint.
4. Prevent movement.
5. Prevent or reduce swelling.
6. Help in lifting and carrying casualties.

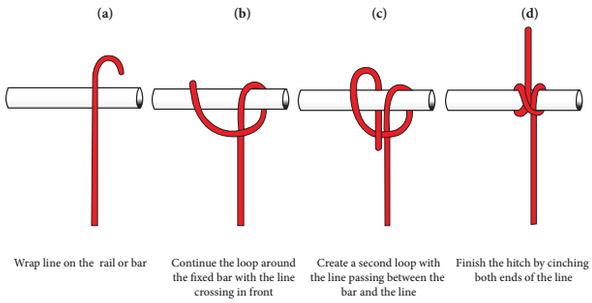
## 10.2 Types

1. Triangular bandages
2. Roller bandages

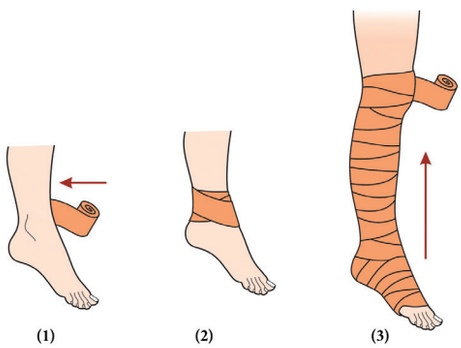
A reef knot is used to tie the ends of the bandage, because it is flat and will not slip. The rule for tying a reef knot is 'right over left then left over right'.




A clove hitch made from a narrow bandage, is placed round his wrist. The ends of the bandage are taken around the neck and tied.

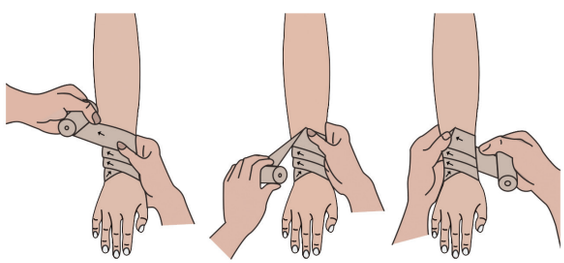



## Simple Spiral Bandage:



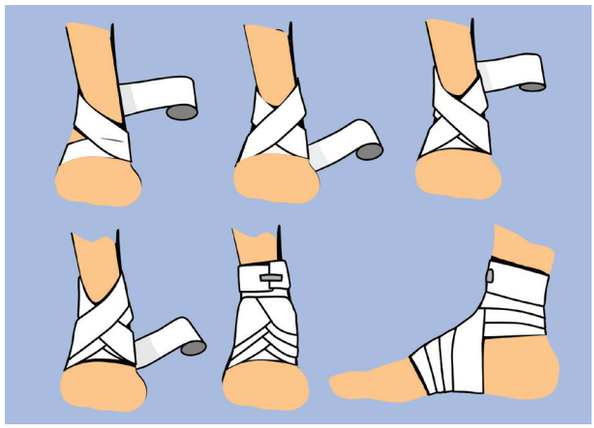

This is used on fingers or other uniform surfaces. This bandage is just round in spirals.

## Reversed Spiral Bandage:

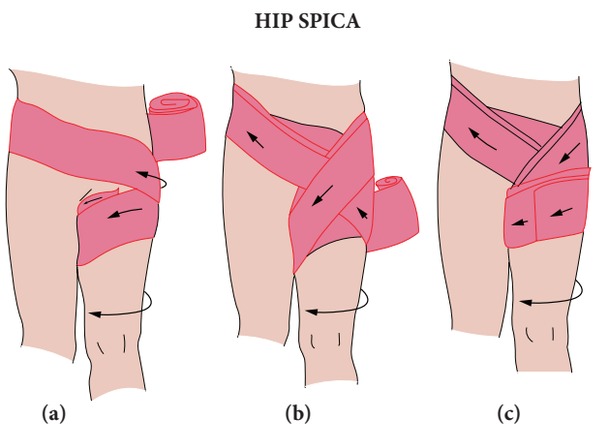


This is used on limbs where the thickness of the part varies. e.g Fore arm & Legs.

## Figure of Eight



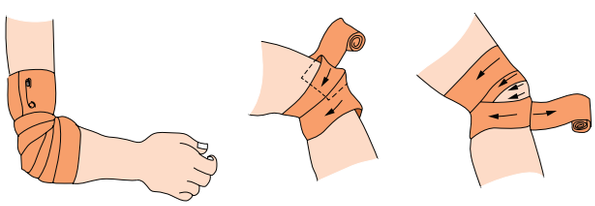
This may be used on limbs instead of the reverse spiral also for the hand and foot.




## Spica:

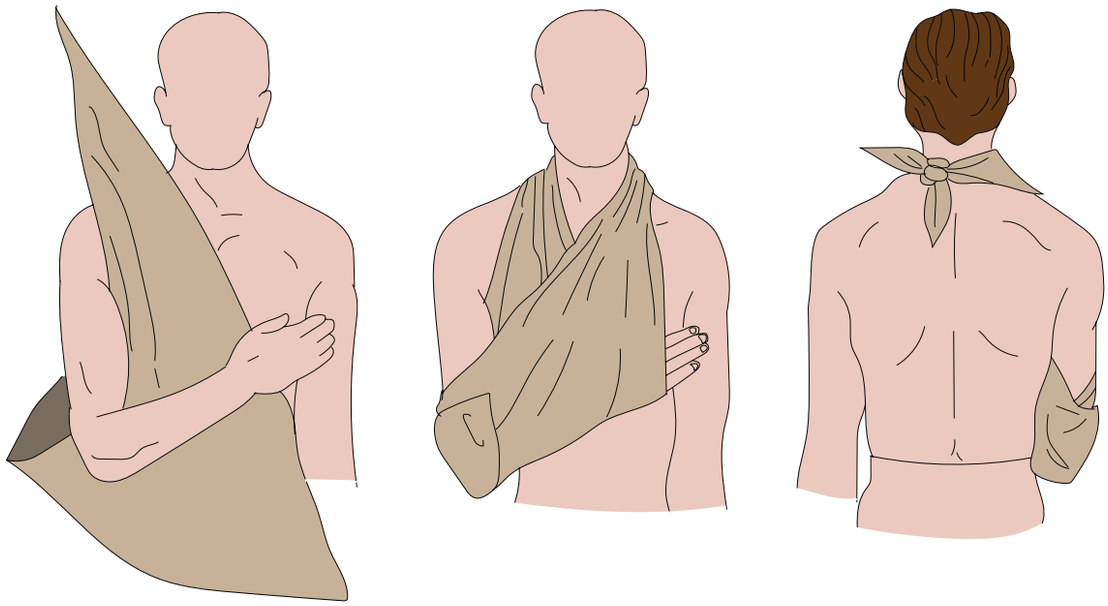
This is used for shoulder, hip and thumb. And this is a modified figure of eight.

## Divergent Spica:

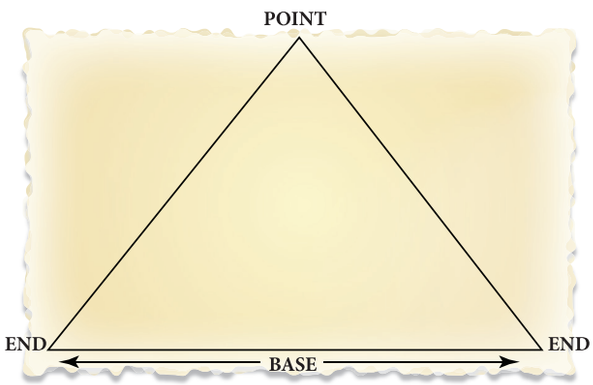


This bandage pattern encloses a flexed joint or projection. It is used for a flexed joint. e.g Elbow, knee, heel.

## Triangular Bandage:

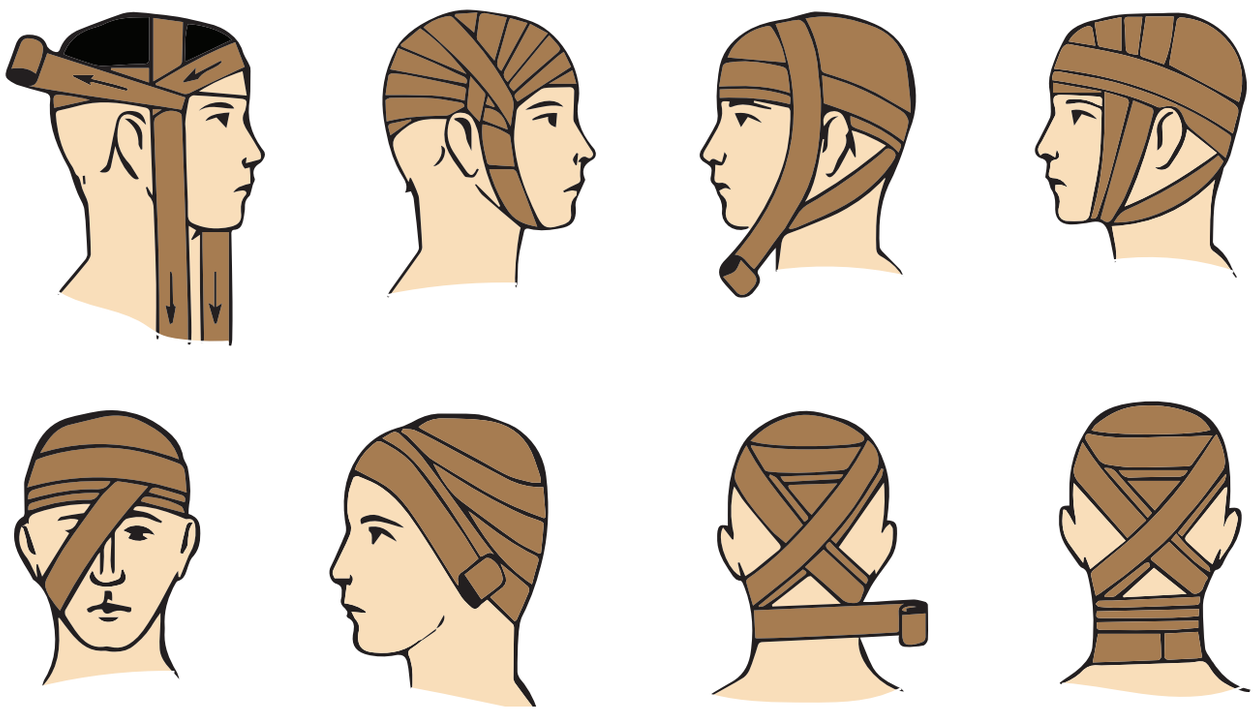


A triangular bandage is used in treating a fracture of the collar bone. It helps to keep the hand raised high up, giving relief from pain due to the fracture.




## 10.3 Special Bandages:

Capeline bandage for head.



- one end being continued round the scalp and other going order it
- scalp turn secured by horizontal turn
- capline bandage completed

### Eye and Ear Bandage


## 10.4 Patterns used in Bandaging

1. Circular turns, as used for head and trunk.
2. Simple spiral, for parts of uniform thickness, eg. Fingers wrist.
3. Reverse spiral, used on limbs where the thickness of the part varies, e.g forearm leg.
4. Figure-of-Eight

This may be used on limbs instead of the reverse spiral also for the hand and foot.

5. Spica, used for the shoulder, hip and thumb
6. Divergent Spica, for a flexed joint, e.g elbow, knee, heel
7. Recurrent to cover tips of fingers or a stump.
8. Special bandages such as the capeline for the head, eye bandage, ear and breast bandages.

## 10.5 Application of Bandage

### Preliminary Assessment

- Check the doctors order to see the specific precautions if any regarding the positioning and movement.
- Assess the patients need for application of bandage.
- Monitor vital signs.
- Assess the patients mental status.
- Assess the need for pain medication
- Assure the patient, the patient's family.
- Assess the adequacy of circulation by noting surface temperature, skin colour, and sensation of body parts to be wrapped.
- For tying the bandage a 'reef knot' must be always used.
- The knot should be made where it does not hurt the skin or cause discomfort.
- Tuck the loose ends of the bandage out of sight.
- Not in use the triangular bandages should be folded narrow. Bring the two ends to the centre and fold again. It becomes a packet which measures 16 x 9 cm handy to carry.
- Wrinkled Bandages are uncomfortable.
- Never ignore any complaints of pain experienced by the patient. This should be invested and the cause is removed immediately.

- Do not use extra turns in order to use all the bandages.
- When completed, fix the bandage with a circular turn and secure it with a safety pin or other suitable materials such as adhesive strapping.

## Preparation of the patient

- Explain the sequence of the procedure to the patient and explain how the patient can assist you.
- Place the articles needed conveniently in the bed side table.
- Bring the patient to the edge of the bed.
- Provide privacy.
- Help the patient to assume comfortable and correct position.
- Perform hand hygiene.

## Rules for Application

- Face the patient.
- When bandaging left limb, hold the head of the bandage in the right hand vice versa.
- Apply the outer side of the bandage over the pad and wind it around the injury twice so that it is firm.
- Bandage from below upwards over the limb. Also make it a roll to apply bandage from the inner side to the outer side.
- See that the bandage is neither too loose nor too tight.
- Roll bandage so that each layer covers two-thirds of the earlier layer. Fix the bandage by pinning it up or using adhesive plaster. The usual practice of tearing the final end into two long tails and tying them up is quite satisfactory.

## Articals Required

1. Correct width and number of bandages.
2. Disposable gloves (if necessary)
3. Safety pins
4. Scissors
5. Adhesive tapes
6. Rubber Sheet (if necessary)

## Procedure

- Apply bandage from distal point toward proximal boundary using variety to turns to cover various shapes of body parts.
- Unroll and very slightly stretch bandage
- Over lap turns by one half to two thirds width of bandage rolls.
- Apply additional rolls without leaving any uncovered skin surface. Secure last bandage applied.
- Remove gloves if worn and perform hand hygiene.
- Assess distal circulation when bandage application is complete and atleast twice during 8 hours period.
- observe the bandage site for 5 – P

It comes in various widths lengths and types of material. For best results, use different widths for different body areas.

For e.g

| | | |
|---|---|---|
| Fingers | — | 1 inches |
| Hand & arm | — | 2 to 2.5 inches |
| Leg | — | 3 to 3.5 inches |
| Trunk | — | 4 to 6 inches |

Five 'P'

- Pain
- Pallor
- Pulselessness
- Palpate skin for warmth
- Paralysis