



## NURSING LEVEL III

### NTQF III

# LEARNING GUIDE#37

Unit of Competence : Undertake basic wound care  
Module Title : Undertaking basic wound care  
LG Code : **HLT NUR3 M07 LO3-LG35**  
TTLM Code : HLT NUA3 TTLM 0919v1

**LO3:Implement wound care strategies in conjunction with wound management team**



This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Client privacy and dignity
- Standard procedure of wound care
- Dressing
- Aseptic technique
- Disposal of hazardous waste
- Equipment processing

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, you will be able to:

- Deliverer Necessary information to the patient or relatives
- Collect All requirements for the procedure.
- maintain Client privacy and dignity throughout the process.
- Perform Dressing following the standard procedure.
- Follow aseptic technique for clean surgical wound and use clean techniques for clean wounds by application of the principles of infection prevention.
- Comfort Client .
- Dispose Hazardous waste in line with the organisation policies and procedures.
- cleane Used tools and steriliz according to the infection prevention procedure and documentation is completed.

#### **.Learning Instructions:**

Read the specific objectives of this Learning Guide.

- 1, Follow the instructions described in number 3 to 7.
- 2, Read the information written in the “Information Sheets ”. Try to understand what are being discussed.
- 3, Ask you teacher for assistance if you have hard time understanding them.
- 4, Accomplish the “Self-check ” in page 8,19,20,23,25, 26,30,36 .



5, Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check ).

5, If you earned a satisfactory evaluation proceed to “Information Sheet ”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #3.

Submit your accomplished Self-check. This will form part of your training portfolio.

6, If you earned a satisfactory evaluation proceed to “Operation Sheet ” in page 38,44. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.

Read the “Operation Sheet 3” and try to understand the procedures discussed.

7, Do the “LAP test” in page 44 (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work. But if satisfactory you can proceed to Learning Guide .



### 3.1, Client privacy and dignity

#### Implement wound care strategies in conjunction with wound management team

The major goals of the client may include a relief of symptoms , absence of infection , intact skin ;reduction in anxiety , improved self - image , and understanding of the prescribed treatment regimen . To make these goals measurable, more specific criteria must be added.

**PAIN :** Although not all disorders are painful, some disorder may require an analgesic. Care and gentleness in caring for those with a painful skin disorder.

**PRURITUS:** - Certain factors tend to make itching worse, including excessive warmth, rough fabrics emotional stress, and idleness. Itching usually is worse at night , probably because attention is not occupied and the client is more aware of the sensation , Make an effort to determine what substances or events may cause itching and, when possible ,to remove or correct them.

Severe itching is agony. Scratching leads to trauma and excoriation, often to infection. Helping the client with severe pruritus to obtain some degree of comfort and to avoid scratching is challenge. It is an even greater challenge when the client is unable to cooperate because of mental confusion or disorientation.

Measures that may reduce itching or prevent breaking of the skin by repeated scratching include :-

- . Keeping the clients nails short and clean
- . Providing light cotton bedding and clothing that allow normal evaporation of moisture from the skin ( the use of wool , synthetics, and other dense fibers is avoided )
  - Having the client wear white cotton gloves if scratching occurs during sleep
  - Avoiding the use of regular soap for bathing, hypoallergenic or glycerin soaps often can be used without causing skin irritation or itching .
  - Using tepid bath water and patting rather than rubbing the skin dry.

Note and record the result of the prescribed oral or topical agent and inform the physician if the drug fails to relieve itching.

**INFECTION:-** Some skin disorders are of themselves infectious. In some situations, infection is introduced because of scratching, poor hand washing techniques (client and nurse), or autoinoculation. Instruct the



client to wash the hands thoroughly with soap and water and to avoid touching other areas of the body after touching an infected area .

**SKIN INTEGRITY:-** Wet dressing may be used in the treatment of some skin disorder. Do not allow a wet dressing to become completely dry. If the dressing has become completely dry, the entire dressing must be completely removed and the treatment resumed.

If the dressing is dry and has stuck to the skin do not attempt to remove the dressing because this causes pain as well as trauma to the skin. Instead, first remove the outer layer of gauze, then moisten the inner layer with solution, using an Asepto syringe. After at least 20 minutes , attempt to remove the adherent dressing .If the dressing does not come loose , add additional solution allow the solution to soak in to the area , and then attempt to remove the dressing .

Open wet dressing are usually applied at intervals, for example, for 15 minutes every 2 hours. Remove and discard these dressings at the end of each treatment because the compresses dry out quickly. Adherence of dry compresses to the skin, followed by difficult removal, defeats the purpose of this type of dressing.

One problem associated with continuous closed wet dressing is the absorption of water through the skin .This may result in skin softening and, ultimately , in maceration (softening and wrinkling of the skin).It is most important that compresses used in wet dressing be removed as prescribed. If there is no written order about dressing changes , remove and reapply the compresses at least once a day and preferably every 8 hours . Inspect the skin at this time and immediately report any softening or severe wrinkling .

When tub baths are prescription make sure the bathroom is comfortably warm and add small amounts of hot water at periodic intervals to prevent the water from the becoming clod and the client chilly .When the treatment is over pat the skin dry because rubbing the skin can cause irritation and may open skin lesion. If a topical drugs is to be applied after the bath apply it immediately after the clients skin has been dried. Irritation and increased itching may result if the application of a local medication is delayed after the bath. When a bath oil additive is used, take special care in assisting the client in and out of the tub because oil leaves a slippery residue on the tub surface.

**BODY IMAGE DISTURBANCE ,ANXIETY:-** Because the skin is visible , skin lesions can result in a disturbance in body image and self -esteem .It is not difficult to understand why people who suffer severe



facial disfigurement or have pronounced skin disorder on exposed parts of the body often undergo personality changes and at times varying degrees of anxiety . They become acutely & painfully aware of the stares, the avoidance, & even the revulsion of other, & they tend to withdraw from social & business contacts. Show acceptance of clients with disfigurement or a skin disorder because they need a great deal of understanding & emotional support.

**CLIENT AND FAMILY TEACHER:-** The client must have a full understanding of the complete treatment regimen . Develop a teaching plan to include one or more of the following: Follow the directions of the physician regarding the prescribed medications Apply topical drugs exactly as prescribed prepare the skin before application precisely as directed by the physician. Take the prescribed oral drugs in the dose and at the intervals printed on the container. Do not increase or decrease the dose or intervals of topical or oral drugs . Do not use any non prescription oral or topical drugs unless their use has been approved by the physician. Keep the skin clean. Use a mild soap for cleansing the skin. Avoid using perfumes, perfumed soaps or lotions, or soaps that contain deodorants unless their use is approved by the physician. Avoid using any facial cosmetics unless that use is approved by physician.

Keep the hair short, clean and away from the face and forehead. Wash the hair at the intervals suggested by the physician . Avoid the use of dyes , rinses , sprays and other styling products unless their use is approved by the physician . Wash the hands thoroughly before as well as after applying topical medications. Keep the hands away from the affected areas. If the area must be touched, the hands must be thoroughly washed before as well as after touching the area. If an infection is present, follow the advice of the physician to prevent the spread of the infection to other individual and to other parts of the body. Soak towels and washcloths in bleach and wash in hot water separate from other laundry. Clothing also is washed in hot water separate from the laundry of other family members .Using an extra rinse cycle helps remove any soap residue . Never try to remove, squeeze , or prick a pimple , boil , or any other type of skin lesion because a serious infection can occur .

## EXPECTED OUTCOMES

- pain is controlled
- pruritus is relieved
- skin remains intact



- no evidence of infection
- anxiety is reduced
- demonstrate evidences of accepting changes in body image
- understanding of treatment regimen

**Self-Check -1**

**Say true or false**

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page

1, It is not difficult to understand why people who suffer severe facial disfigurement

2, A skin disorder do not need a great deal of understanding & emotional support.

3, *cleiant education may not include the way of using topical drugs*

4, Never try to remove, squeeze , or prick a pimple , boil , or any other type of skin lesion because a serious infection can occur

5, Wash the hands thoroughly before as well as after applying topical medications



**Note: Satisfactory rating - 3 points**

**Unsatisfactory - below 3 points**

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Answer**

1, \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4, \_\_\_\_\_

5, \_\_\_\_\_





## Dressing

### Information Sheet-3

### 3.3, Wound dressing

**Objectives:** At the end of the lesson, the learner will be able to

Define wound dressing

List the types of wound dressings

Collect necessary material

Demonstrate the different types of wound dressing technique

**Definitions:Dressing:** Any of various materials used for covering and protecting a wound

**Wound dressing** is process of covering wound or applying sterile protective covering using aseptic technique

#### Types of wound dressing

- Clean wound dressing
- Septic wound dressing
- Wound dressing with drainage tube



## **Purpose of wound dressing**

- To Keep the wound moist and therefore enhance epithelialization
- To Keep the wound clean
- To keep locally applied drugs in position
- To keep edges of the wound together by immobilization
- To relief pain and comfort the patient
- Provide physical, psychological, and aesthetic comfort
- Remove necrotic tissue
- Prevent, eliminate, or control infection
- Maintain a moist wound environment
- Protect wound from further injury
- Protect skin surrounding wound
- To protect the wound from mechanical injury.
- To protect the wound from microbial contamination.
- To absorb drainage
- To prevent hemorrhage.
- To splint or immobilize the wound site and there by facilitate healing and prevent injury
- General Precautions in wound Care/ dressing
- Wash hands thoroughly before, after and between several dressings.
- Dressing should be done after the wards have been cleaned
- Clean wounds should be dressed before wounds with drainage.
- Never do a dressing when the air is dusty from sweeping, bed making or in dust.
- Wear gloves when touching blood, body fluids, mucous membrane and handling soiled items with blood or body fluids.
- Do not talk , cough and sneeze over wound
- Wear mask and protective eye wear as necessary
- Practice strict aseptic techniques to reduce transmission of micro organism
- Soaked wound with frequent drainage should be changed frequently.
- Clean wound from the cleanest area to the less clean area



- Separate instruments should be used for each dressing.
- Keep forceps lower than the handles at all times
- Saline should be used to remove adherent dressings.
- Medicines are given and applied if necessary.
- Be economical on using gauze , sponges' applicators, adhesive or medication.
- Adhesive marks on skin can be removed with solvent such as ether alcohol or benzene.

### **Dressing clean wound**

**Objective:** At the end of the lesson, the learner will be able to

- Define dressing clean wound
- Collect the necessary equipments for clean wound dressing
- Identify the purpose of clean wound dressing
- Demonstrate clean wound dressing procedures

### **Definition:**

Clean wound dressing is aseptic technique of covering clean wound after cleaning

### **Purpose**

- To keep wound clean
- To prevent the wound from injur& contamination
- To keep in position drugs applied locally
- To keep edges of the wound together by immobilization
- To enhance wound healing
- To relief pain and comfort the patient
- To apply pressure



## Equipment:-

### Sterile dressing set

- One kidney dish
- Sterile gloves
- Cotton balls in a galipot
- Sterile gauze (4x4 inch) or – squares
- Sterile Dressing forceps (3)
- Sterile Scissor
- Sterile galipot
- Sterile fenestrated towel (drape)
- Spatula if ointment





## Clean try

- Clean glove
- Cleaning solution (Normal Saline, Sterile 0.9% sodium chloride), chlorhexidine, povidone-iodine, and hydrogen peroxide
- Adhesive tape (Plaster)
- Bath Blanket: (if needed)
- Rubber and draw sheet
- 
- 
- Bandage scissors or surgical blade
- Anti microbial Ointment: if prescribed
- Bath Blanket: (if needed) Screen
- Adhesive remover
- Protective apron: as the condition of the wound
- Waste Receiver( disposable plastic container)
- Chart

## Dressing septic wound

**Objective:** At the end of this lesson, the learner should be able to

- Define septic wound dressing
- Identify the purpose of septic wound dressings
- Collect the necessary equipments for septic wound dressing
- Demonstrate clean wound dressing procedures

**Definition: Dressing septic wound** is method of covering infected wound that generally contain purulent material (pus) draining from the wound site .

## Purposes:-

- Absorb materials being discharged from the wound.
- Apply pressure to the area.
- Apply local medication.
- Prevent pain, swelling & injury.



## Percussions

- If sterile forceps are not available use sterile gloves.
- I- Immerse used forceps, scissors and other instrument in strong antiseptic solution before cleansing and discard soiled dressing properly.
- In a big ward it is best to give priorities to clean wounds and then to septic wounds when changing dressings as this might lessen the risk of cross infection.
- Wounds should not be too tightly packed in effort to absorb discharge as this may delay healing

## Equipment

### Sterile Dressing set

- Sterile galipot
- Sterile kidney dish
- Sterile gauze
- Sterile forceps (3) Sterile test tube or slide if necessary
- Sterile cotton tipped application
- Sterile pair of gloves if needed in case of gas gangrene rabies etc



## Clean try

- Clean glove
  - Surgical glove
  - Cleaning solution (normal saline, H<sub>2</sub>O<sub>2</sub>)
  - Ordered medication
  - Plaster
  - Bandage scissors or surgical blade
  - Bucket to put in soiled dressing/water proof disposable bag
- Rubber and cotton draw sheet /Mackintosh with its cover
  - Spatula if ointment
  - Receiver with strong disinfectant to immerse used instrument
  - Probe and director if required
  - Benzene or ether
  - Bandage or adhesive tape and Bucket to put in soiled dressing





## Dressing with Drainage Tube

**Objective** At the end of this procedure session the students should be able to

- Define dressing with drainage tube
- Describe the purpose of dressing with drainage tube
- Assemble the necessary equipments for dressing with drainage tube
- Demonstrate dressing with drainage tube

## Definition

Dressing with drainage tube is the method of flushing wound with plenty of sterile fluid

## Purpose

- Aids to prevent hematoma or collection of fluid in the affected area.

## Precautions

- Safe method should be used for disposing old dressing.
- Gauze and cotton used for cleaning wound.
- Take preventive measure to avoid skin irritation and excoriation.
- If drainage tube is attached to the bottle precaution must be taken to secure the tube in place and avoid the risk of cross infection.

## Equipment

### Sterile Field Set

- Sterile kidney dish
- Sterile galipot
- Sterile scissors
- Sterile forceps(3)
- Sterile cotton balls
- Sterile gauze
- Sterile safety pins if needed



### Clean tray

- Antiseptic solution as ordered
- Cotton wool or absorbent
- Receiver
- Rubber sheet and its cover
- Adhesive tape or bandage
- Dressing scissors
  - Ointment paste or paraffin - gauze
  - Spatula if needed CD One pair

sterile gloves if available



<b>Self-Check -3</b>	Short answer
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page

- 1, Write Types of wound dressing
- 2, Writ at least six purpose of wound dressing
- 3, List Percussions for dressing of septic wound



**Note: Satisfactory rating - 3 points**

**Unsatisfactory - below 3 points**

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Answer**

1, \_\_\_\_\_

2, \_\_\_\_\_

3, \_\_\_\_\_



**Procedure for dressing clean wound**

- Check order for dressing change
  - Explain the procedure to the patient
  - Hand washing
  - Assemble the supplies at a convenient work area
  - Apply screen, close door and curtain.
  - Assist the patient to a comfortable position to expose the wound.
  - Place a rubber sheet under the patient to prevent soiling the linen.
  - Place opened, cuffed plastic bag near working area.
  - Loosen tape on dressing. Use adhesive remover if necessarily. If tape is soiled don gloves
  - Wear a protective apron when caring for a patient with a draining wound. Don non sterile gloves.
  - Gently remove and discard the old tape and soiled dressing in a plastic trash bag.
  - Roll or lift an edge of the dressing, then gently remove it while supporting the surrounding skin. When possible, remove the dressing in the direction of hair growth.
  - If the dressing sticks to the wound, moisten with sterile normal saline and then remove.
  - Sterile saline provides for easier removal of dressing. Assess amount, type and odor of draining if present
  - Remove and discard non sterile gloves.
  - Using aseptic technique open the packed sterile instruments, sterile dressings, the irrigation and cleaning solution, and the instrument set to provide a sterile field,
  - Pour cleaning solution to galipot, gauze and cotton from a drum.
  - Don sterile gloves
- Gently remove and discard the old tape and soiled dressing in a plastic trash bag. Roll or lift an edge of the dressing, then gently remove it while supporting the surrounding skin. When possible, remove the dressing in the direction of hair growth. If the dressing sticks to the wound, moisten with sterile normal saline and then remove. Sterile saline provides for easier removal of dressing. Assess amount, type and odor of draining if present



- Remove and discard the soiled gloves.
- Using aseptic technique open the packed sterile instruments, sterile dressings, the irrigation and cleaning solution, and the instrument set to provide a sterile field, Pour cleaning solution to galipot, gauze and cotton from a drum.
- Don sterile gloves.
- Apply fenestrated towel to the wound to increase the sterile field
- If sample is needed, take the sample first then clean.
- Take the second sterile forceps, and clean wound with cotton balls soaked in antiseptic solution starting from inside to the outside.
- Use one gauze square for each wipe, discard each square by dropping in to plastic bag, do not touch bag with forceps.
- Again use the second forceps to dry wound using gauze sponge and same motion by another new forceps then discard.
- Apply medication if any and dress the wound with sterile gauze with sterile another dressing forceps
- Ointment and paste must be smeared with spatula on gauze and then applied on the wound.
- Solutions or powder can be applied direct on the wound.
- Make sure that the wound is properly covered
- Fix dressing in place using adhesive tape or bandage.
- Remove fenestrated towel, rubber and draw sheet.
- Remove gloves from inside out, and discard them in plastic waste bag.
- Provide patient comfort measures.
- Clean and return equipment to proper place.
- Wash your hands
- Document the procedure



## Operation Sheet -2

## Dressing septic wound

### Procedure of dressing septic wound

- Check order for changing dressings/dressing
- Great the patient and explain procedure to the patient.
- Wash your hands
- Clean trolley or tray, assemble sterile equipment on one side & clean items on the other side and
- make sure that the sterile equipments are properly covered.
- Put on single use examination glove
- Apply screen (close door and curtain), drape, & put patient in comfortable position
- Place rubber sheet and its cover under the patient to prevent soiling the linen.
- Place a clean towel or draw sheet underneath the working area to minimize contamination.
- First remove the outer layer of the dressing.
- Remove the outer layer of dressing and dispose with glove
- Wear sterile gloves
- Use forceps to remove the inner layer of the dressing smoothly & discard forceps
- Observe wound and check if there is drainage rubber or tube.
- Take specimen for culture or slide if ordered (do not cleanse wound with antiseptic before you obtain the specimen).
- Take the sterile cleaning forceps
- Start cleaning wound from the cleanest part of the wound to the most contaminated part using - - antiseptic solution (Hydrogen per oxide 3% is commonly used for septic wound).
- Deberide dead tissue as needed
- Discard cotton ball used for cleaning after each stroke over the wound.
- Cleanse the skin around the wound to remove the plaster gum with benzene
- Use gauze for drying the skin around properly.
- Use third forceps for dressing the wound



- Dress the wound and make sure that the wound is covered completely.
- Make sure that the wound is properly covered
- Fix dressing in place with adhesive tape or bandages.
- Remove gloves from inside out, and discard them in plastic waste bag.
- Leave patient comfortable and tidy.
- Clean and return equipment to proper place.
- Wash your hands
- Document the procedure
- Send the specimen to laboratory





### Operation Sheet -3

### Dressing with Drainage Tube

#### Procedure of Dressing Drainage Tube

- Check order for dressing / changing dressingGreat the patient
- Check the order and the site of dressing drainage tube
- Explain procedure to the patient.
- Perform hand hygiene
- Clean trolley or tray, assemble sterile equipment on one side & clean items on the other side and
- make sure that the sterile equipments are properly covered.
- Put on single use examination glove
- Apply screen or close door and curtain
- Drape and position the patient according to the need and put rubber sheet and its cover under the part to be dressed.
- Remove the outer layer of the dressing.
- Use sterile forceps and remove the inner layer of the dressing (pay attention so that the drainage tube is not pulled out with the old dressing).
- Observe the wound for the type and amount of discharge.
- Clean the wound with cotton balls soaked in antiseptic solution.
- Grasp the top of drainage tube with sterile forceps. Pull it up a short distance while using gentle rotation and cut off the tip of the drain with sterile scissors (the length to be cut depends on the instruction or order).
- Place sterile safety pin through the drainage tube close to the wound using sterile gloves or sterile gauze, if it is in the abdomen to stop the drainage tube slipping down out of sight.
- Make sure the wound and the skin around are properly cleaned.
- Apply ointment or paste to the skin with spatula directly around to prevent irritation and excoriation (if the excoriation exist use paraffin gauze to prevent further complications).
- Cut the gauze towards its center to fit around rubber drainage tube so that it fits properly around the tube thus preventing discomfort.
- Use adhesive tape or bandage to secure the dressing in place.
- Record state of wound and the drainage



<b>Operation Sheet- 4</b>	<b>Aseptic technique</b>
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Aseptic technique to prevent infection

- 1) Explain procedure to the patient
- 2) Wash hands carefully
- 3) Clean trolley or tray, assemble sterile equipment on one side & clean items on the other side. Make sure it is covered.
- 4) Screen, drape, & put patient in comfortable position
- 5) Place rubber sheet & its cover under the affected side
- 6) Remove the inner layer of the dressing using the first sterile
- 7) Put on sterile glove
- 8) Take the second sterile forceps clean wound with cotton soaked in antiseptic solution, starting from the inside to outside
- 9) Again use the second forceps to clean the skin around & remove Adhesive with benzene or ether.
- 10) Apply medication if any & dress the wound & sterile gauze.

Method of application of medication:-

Ointment & paste must be smeared with spatula an gauze then applied on the wound.

Solutions or powder can be applied directly on the wound.

- 11) make sure that the wound is properly covered.
- 12) Fix dressings in place using adhesive tape or bandage .
- 13) Leave patient comfortable & tidy.
- 14) Record state of wound.
- 15) Clean & return equipment to its proper place.

**N.B:-** The above mentioned equipment can be prepared in a separate



<b>Information Sheet-5</b>	<b>Disposal of hazardous waste</b>
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### **3.5, Disposal of hazardous waste**

#### **Common Methods of Hazardous Waste Disposal**

Most people visualize tanks filled with a slimy, dangerous-looking substance when they think of hazardous waste. But this is not always the case. Hazardous waste is categorized as any type of waste that is toxic, flammable, corrosive, and reactive.

The flammable types of waste include liquids with flash points, solids that can combust spontaneously, compressed gases, and oxidizers. Corrosive substances eat into containers that are used for their storage, while reactive ones are unstable and can form toxic byproducts when mixed with water.

That said, [professional hazardous waste disposal](#), management, collection, and storage is vital for your Utah property. The disposal of your waste is the crucial element in its management to ensure that it won't have adverse effects on human and animal health, as well as the environment. Here are the most common methods used to dispose of hazardous wastes:

#### **Landfill Disposal**

This is a technique of storing toxic solid waste into the ground. These are not your ordinary landfills. Landfills designed for hazardous wastes are lined with a double layered non-porous material, such as HDPE or clay, to avert the leaching of waste into the ground. Hazardous wastes are continually dumped into this landfill and then covered to prevent rodents and insects from entering. Unfortunately, this disposal method takes a lot of space.

#### **Incineration**

This is the burning of your hazardous waste into an incombustible residue. It is generally used in areas where there is minimal space for landfills. The waste is first detoxified to reduce the release



of toxic gases into the atmosphere. Incineration is an ideal option for waste minimization and detoxification, although its operating expenses are high.

In some states, incineration of hazardous waste is used to produce steam, which drives turbines to generate electric power. This heat is recycled for use in the incinerators; therefore, reducing the cost of waste disposal and energy production. Wastes that have nitrogen, phosphorous, chlorine, polychlorinated biphenyl, carcinogenic substances, and heavy metals are burnt in incinerators with pollution control devices.

### **Dumping at Sea**

In this method, hazardous waste is deposited in the deep sea to minimize its impact on groundwater sources. In the past, waste was dumped without any prior treatment. This was based on a notion that the high volume of seawater could dilute the hazardous substances in the waste. Nowadays, however, hazardous waste is first treated using different methods before dumping it at sea to minimize threats to marine life. [This method is currently regulated](#) or even banned by environmental protection agencies around the world to preserve water resources.

### **Underground Disposal**

Underground disposal is the ideal and economical choice for radioactive waste. This includes the waste generated from lab experiments, some medical treatments, mining of radioactive ore, and the production of nuclear fuel. Underground hazardous waste disposal is only done in partially active and inactive mines, which meet particular technical and geological criteria.

Improper handling of hazardous waste will put your health at risk and might attract hefty fines from your local council. The above methods of waste disposal are the better options to get rid of the waste safely. The waste disposal company you work with can also train your employees on how to handle the waste before its collection and disposal.





<b>Self-Check -5</b>	<b>Short answer</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page

- 1, List Common Methods of Hazardous Waste Disposal?
- 2, Explain Incineration



**Note: Satisfactory rating - 3 points**

**Unsatisfactory - below 3 points**

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Answer**

1, \_\_\_\_\_

2 \_\_\_\_\_



<b>Information Sheet- 6</b>	<b>Equipment processing</b>
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### 3.6, Equipment processing

**Learning Objectives:** - At the end of the lesson, learner will be able to

- Define instrument processing
- Describe the different types of instrument processing
- Demonstrate instrumental processing

**Definition:** Instrument processing is a process of making instruments safer for handling and - making free from microorganisms.

#### **Decontamination, cleaning, drying and packing**

**Objective-** at the end of the student will be able to

- Define decontamination and cleaning.
- Collect necessary equipments for decontamination.
- Perform decontamination, cleaning, drying and packing.

#### **Definition**

**Decontamination** :is a Process that makes inanimate objects safer to be handled by staff before cleaning.

**Cleaning** :is a Process that physically removes all visible dust, soil, blood or other body fluids from inanimate objects as well as removing sufficient numbers of microorganisms.

**Purpose** : to reduce the number of microorganisms

to removes all visible dust, soil, blood or other body fluids from inanimate objects

to eliminate microorganisms from inanimate objects





## Equipment

- PPE (heavy duty glove/surgical glove, plastic apron, gown, goggle, mask)
- Plastic bucket (3)
- Water
- Chlorine solution (0.5%)
- Measuring Jug
- Timer (watch)
- Brush
- Drying cloth
- Drape
- Drum



## Sterilization

**Objectives:** At the end of this lesson, learner will be able to

- Define sterilization
- Collect necessary equipments
- Identify different methods of sterilization
- Perform sterilization using different methods.

**Definition:-** is the destruction of all microorganisms including bacterial endospores.

**Purpose:** to ensure instruments free from all microorganisms.

### Equipments

- Autoclave
- Stove
- Timer
- Water
- OGTime steam sterilizer indicator

## High level disinfection

**Objectives:** At the end of the lesson, learner will be able to

Define high level disinfection

Collect necessary equipments& types of chemical disinfectants.

Perform decontamination, cleaning, drying and packing

**Definition:** is a Process that eliminates all microorganisms **except** some bacterial endospores from inanimate objects.

### Chemical disinfection

**Definition:** This is the process of disinfecting used equipments by using chlorine/Glutaraldehyde/formaldehyde or peroxide.

**Purpose:** to eliminate microorganisms from inanimate objects.

### Equipments

-Chlorine, Glutaraldehyde, formaldehyde and peroxide.



- Container for disinfection
- Heavy duty gloves
- Sterile containers
- pick up forceps

## **Boiling**

**Definition:** Boiling in water is an effective practical way to high level disinfectant instrument and other items

### **Purpose:**

To kill all vegetative forms of bacteria, viruses (including HBV, HCV and HIV)

### **Equipment Water**

Boiler

Stove

Sterile forceps

Sterile container ( high level disinfected container)

## **Principles of Storing**

Store appropriately to protect them from dust, dirt, moisture, animals and insects.

The storage area should be located next to or connected to where sterilization occurs, in a separate enclosed area

In smaller clinics, this area may be just a room close to the Central Supplies Department or in the Operating Room



Self-Check -6

Multiple choice

**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page

1, **What does it mean** Instrument processing ?

2, Which one of the following is the correct order of instrument processing

A, Decontamination --- cleaning -- drying and packing

B, cleaning \_\_\_\_Decontamination --- -- drying and packing

C , cleaning \_\_\_\_drying \_\_\_\_\_Decontamination and packing  
drying \_\_\_\_\_ cleaning \_\_\_\_Decontamination and packing

3, \_\_\_\_\_is a Process that makes inanimate objects safer to be handled by staff before cleaning

A. Cleaning

C. Decontamination

B. Drying

D. Packing

4, \_\_\_\_\_is a Process that physically removes all visible dust, soil, blood or other body fluids

A, Decontamination

C, Cleaning

B. Drying

D. Packing

5, \_\_\_\_\_ is the destruction of all microorganisms including bacterial endospores

A. High level disinfection

C. Sterilization

B. Chemical disinfection

D. None of the above



**Note: Satisfactory rating - 3 points**

**Unsatisfactory - below 3 points**

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Answer**

1, \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4, \_\_\_\_\_

5, \_\_\_\_\_



<b>Operation Sheet -1</b>	<b>Equipment processing</b>
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### **Procedure of Equipment processing**

- Wash hands and dry them
- Prepare necessary equipment including 0.5% chlorine solution.
- Don utility gloves or leave on surgical gloves after a procedure.
- Place all instruments in 0.5% chlorine solution for 10 minutes to decontaminate immediately after completing the procedure and ensure instruments are fully immersed in the solution.
- Dispose of waste materials in leak proof container or plastic bag.
- After 10 minutes remove instruments from chlorine solution and fully immerse in water
- Clean instruments immediately or leave in water until cleaning can be done.
- If wearing surgical or examination gloves: immerse both gloved hands in 0.5% chlorine solution.
- Remove gloves by turning them inside out.
- Dispose in leak proof container or plastic bag if gloves are not to be reused
- Leave utility gloves on until cleaning is completed.
- Place instrument in container with clean water and mild non-abrasive detergent.
- Under soapy water completely disassemble instruments and open jaws of jointed items.
- Wash all instruments surfaces with a brush or cloth until visibly clean and Hold instruments under water while cleaning. Pay special attention to serrated edges.
- Wash surgical gloves inside out in soapy water.
- Rinse all equipment/gloves until no soap or detergent remains
- Dry instruments using clean dry towel or air dry.
- Remove utility gloves and air dry
- Pack the instrument with drape or drum



<b>Operation Sheet -2</b>	<b>Steam sterilization</b>
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**Procedure of steam sterilization**

- Wash hands and dry them
- Prepare necessary equipment
- Place Time steam sterilizer indicator / an indicator tape on the container on packed items
- Place instruments: gloves into steam pan
- Stuck steam pans (maximum of 3 pans) on top of pan containing water for boiling.
- Cover top of steamer pan with lid
- Bring water to a rolling boil; wait for steam to escape from between the top pan and lid
- Start timing and steam for 20 minutes
- Remove steamer pans from heat; gently shake excess water from items and place on an extra empty bottom pan
- Allow to air dry and cool
- Store in covered steamer pans
- To Use immediately – remove items with high level disinfected forceps



## Operation Sheet -3

## Dry heat sterilization

### Procedure of Heat sterilization

- Wash hands and dry them
- Prepare necessary equipment
- Place metal instruments or glass syringes in a metal container with a lid.
- Put an indicator tape on the container.
- place covered containers in oven and heat until 160°C is reached and heat for two hours
- Begin timing when 160°C is reached and heat for two hours.
- After instruments are cool; remove and store in sterile containers.
- Wash hands and dry them.





<b>Operation Sheet -4</b>	<b>Chemical sterilization</b>
<b>Procedur of chemical sterilization</b>	

- Wash hands and dry them
- Prepare necessary equipment
- Prepare fresh sterilant as per manufactures instructions
- Submerge cleaned and dried items in: 2% Glutaraldehyde (cidex) for 8 – 10 hours 80% formaldehyde solution – 24 hours
- Ensure items are completely immersed
- Remove items from chemical solution using sterile gloves, Forceps/pickups.
- Rinse thoroughly with sterile water to remove all traces of chemical sterile
- Use item immediately or store in sterile containers?
- Wash hands and dry them.



## Operation Sheet -5

## Boiling

### Procedure of Boiling Equipment

- Wash hands and dry them
  - Decontaminate and clean all instruments and other items to be high level disinfected
  - Prepare necessary equipment
  - Completely immerse cleaned instruments and other items in water
- Cover boiler with lid and bring water to a gently rolling boil
- Start timing when rolling boil begins
  - \_Continue rolling boiling for 20 minutes
  - Remove items with high-level disinfected forceps
  - Place instruments in covered high level disinfected container



<b>LAP Test</b>	<b>Practical Demonstration</b>
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1. Perform Clean wound dressing

Task2. Perform Dressing septic wound

Task3. Equipment processing

Task4. Steam sterilization

Task5. Dry heat sterilization

Task6. Chemical Sterilization



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