

Operation Theater

1. What is OT?
2. Why OT is important?
3. History of hygiene
4. Sterilization and disinfection of OT
5. Explain Structure of an Ideal OT?
4. What are the Functions of OT?

OT

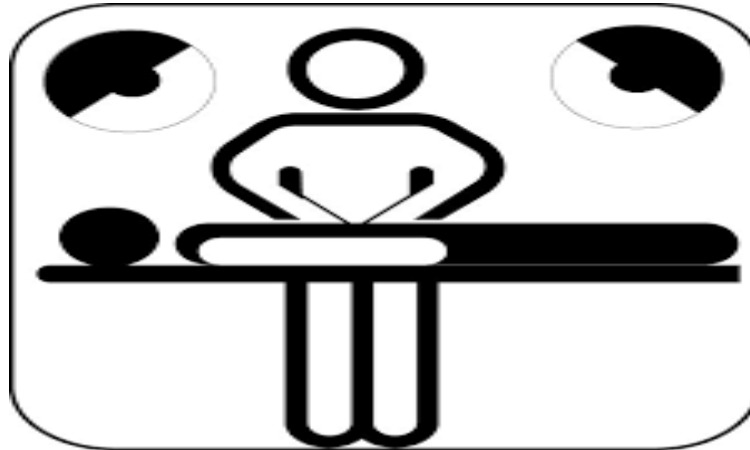
How to describe???



Is It??????



Or.....



Evolution Of OT



Modern OT: inside view



Definition of OT

- Specialized facility in hospital where invasive treatment is given under strict aseptic controlled environment by trained personnel
- Complex environment of varying degree of sterility, integrating surgical and anesthetic equipment for the safe conduct of Surgery
- An OT is that specialized facility of the hospital where life saving or life improving procedures are carried out on human body by invasive methods under strict aseptic conditions in a controlled environment by specially trained personnel to promote healing and cure with maximum safety, comfort and economy.

OPERATING ROOM

- The identification of physiological & sociological needs of the client, & the implementation of an individualized program of care in order to restore or maintain the health & welfare of the patient before, during & after surgical intervention.

PHILOSOPHY :

- To give service that aims to provide comprehensive support physically, morally, psychologically, spiritually, & socially to a patient undergoing surgery.

Support services play a large part in maximizing efficiency by providing:

- Pre-operative preparation and assessment
- Available beds
- Sterile theatre equipment
- Porterage, cleaning and maintenance staff.

Goals

Key elements to efficient use of operating theatres are:

- Effective management
- Good communication
- Well trained staff
- Appropriate facilities and equipment
- Operational layout that allows flow of patients

Fundamental purposes of the O.R. :

It is a place. . .

- 1.To correlate theory & practice.
- 2.To develop skills in assisting the surgeon in the operation.
- 3.To create a suitable sterile field for surgical procedures to prevent complications.

OPERATING ROOM PROTOCOLS



Inclusions

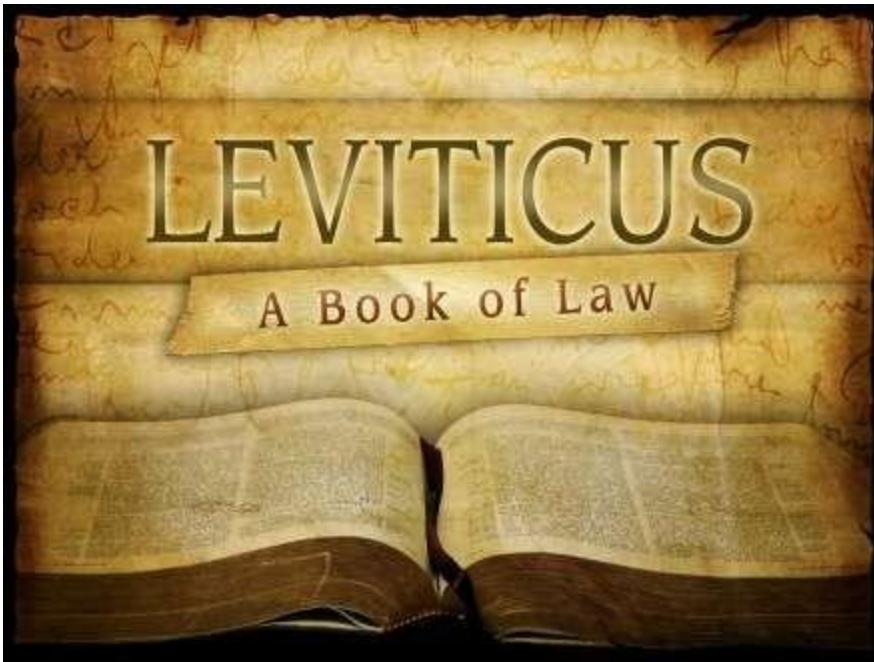
1. Introduction
2. History
3. Sterilization & asepsis
4. Principles of sterile technique
5. The hand scrub
6. Hand towel drying
7. Gloving
8. Gowning
9. Operating room decorum
10. Operating room procedures
11. Preparation of surgical site
12. Draping the patient
13. The close of operation

Introduction

- Cleanliness of the hospital environment is the best starting point to achieve the highest patient safety mandate.
- There is a need to decrease the bio-burden present in the environment in an operating room.
- A systematic method of precautions taken by operating team leads to a successful procedure.

History of Hygiene

Third book of the Hebrew bible



Book of Leviticus

Chapter 11 – 15

Code of Hygiene

Greek Era



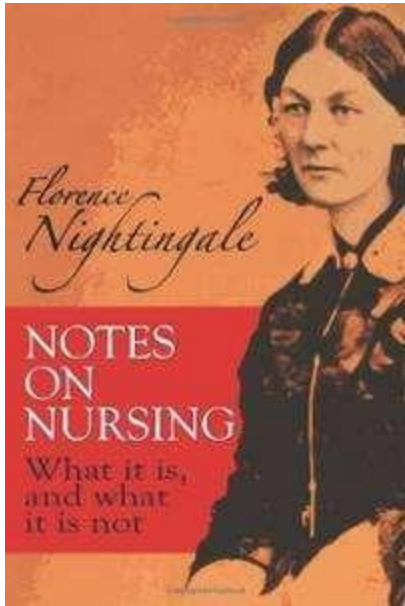
- Aristotle recommends Boiling water to armies.
- Advises the Alexander
- Recommends hygiene for healthy living

HAND WASHING



- Hungarian physician of German extraction now known as an early pioneer of antiseptic procedures. Described as the "**savior of mothers**"
- Emphasized the importance of washing hands with chlorinated water in Obstetrics to reduce maternal mortality.

Beginning of Modern Nursing



The Very First Requirement in
Hospitals that should do the sick
no harm

Florence Nightingale

(Notes on Nursing 1860)

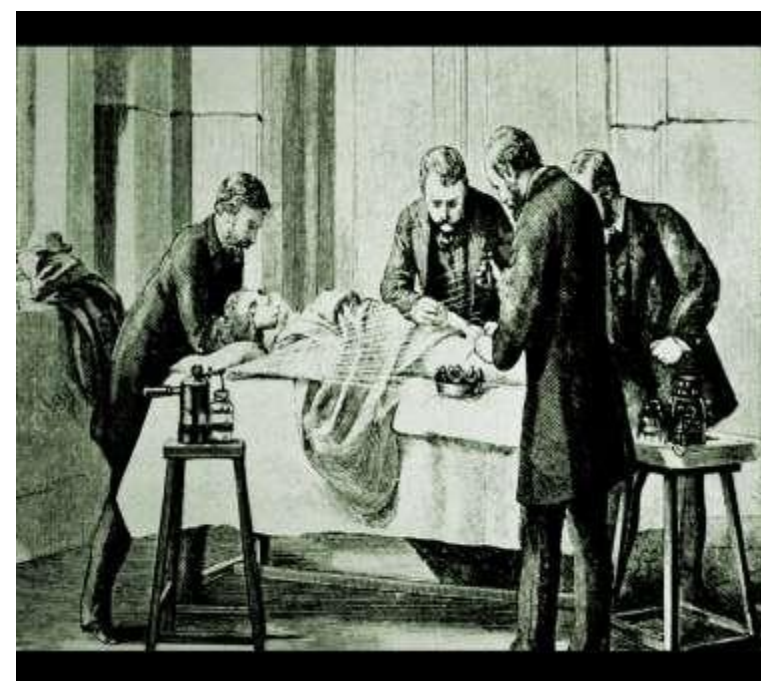




Starting of Modern Era

Dr. Joseph Lister

- 1867 – Dr. Joseph Lister first identified airborne bacteria and used Carbolic acid spray in surgical areas.
- **Phenol in Surgery** and Decontamination practices.
- Lister era 1868
- Carbolic Acid in decontamination,
- Reduction of Hospital associated infections
- Mortality reduced
- Morbidity reduced.



Beginning of Safe Operation Theatre Practices

- 1867 – Dr. Joseph Lister first identifies airborne bacteria and uses Carbolic acid spray in surgical areas.
- 1880 – Johnson and Johnson introduce antiseptic surgical dressings.

Sterilization & asepsis

STERILIZATION:

The process by which an article is made free of all living organisms either in vegetative or in spore state.

DISINFECTION:

The destruction or removal of all pathogenic organism / organisms capable of giving rise to infection.

Antiseptic & disinfectants

ANTISEPTIC :

A chemical that is applied to **living tissue**, such as mucous membrane or skin to reduce the number of organisms present, through inhibition of their activity or destruction.

DISINFECTANTS :

A chemical used on non-vital objects (non living things) to kill surface vegetative pathogenic organisms but not necessarily spore forms/ viruses.

Spaulding's classification

- Spaulding's classification provides a simplified outline of the recommended processing methods for items of patient care equipment, based on the intended use of the item.
- Depending on the intended use of an item, medical and surgical equipment may be required to undergo the following processes between uses on different patients:
 1. cleaning, followed by sterilization
 2. cleaning, followed by high, or intermediate level disinfection
 3. cleaning alone

Classification	Item use	Goal	Appropriate Process
Critical items	Items entering sterile tissue, the body cavity, the vascular system and non intact mucous membranes eg surgical instruments	Objects will be sterile (free of all microorganisms including bacterial spores)	Sterilization (or use of single use sterile product) <ul style="list-style-type: none"> • steam sterilization • low temperature methods (ethylene oxide, peracetic acid, hydrogen peroxide plasma)
Semi-critical items	Items that make contact, directly or indirectly, with intact mucous membranes or non intact skin eg endoscopes, anaesthetic equipment	Objects will be free of all microorganisms, with the exception of high numbers of bacterial spores	High level disinfection <ul style="list-style-type: none"> • thermal disinfection • chemical disinfection (glutaraldehyde, OPA) <p>*It is always preferable to sterilize semi-critical items whenever they are compatible with available sterilization processes</p>
Non-critical items	Objects that come into contact with intact skin but not mucous membranes eg crutches, BP cuffs, tabletops	Objects will be clean	Low level disinfection <ul style="list-style-type: none"> • cleaning (manual or mechanical)

Disinfection & sterilization : infection control guidelines

Principles of sterile technique

- All the materials used as a part of sterile field for an operation, must be sterile.
- Basic items – linen, instrument set, basin
- Instrument sterilization :
 - 1 night before
 - just before operation
- Once the instrument is removed from sterile wrapper :
use / discard

Principles.....

1. Linen colour :

Dyed green (reduces glare from light & fatigue and eye strain).

2. Use sterile materials only & maintain the sterility throughout the procedure.

3. Sterile area are setup just prior to use.

4. If in doubt : consider the material as unsterile.

5. Only the top surface of draped table is considered sterile.



Principles.....

6. Neither the circulator nor the scrub should intrude up on the other's area at any time.

- sterile person should touch the sterile materials & unsterile person should touch the unsterile materials.
- circulator (unsterile person) supplies for the sterile team members.

7.The **scrub** should be considered as **sterile person**.

- gown
- glove
- drapes the table 1st nearest to them
- hand positioning



Principles.....

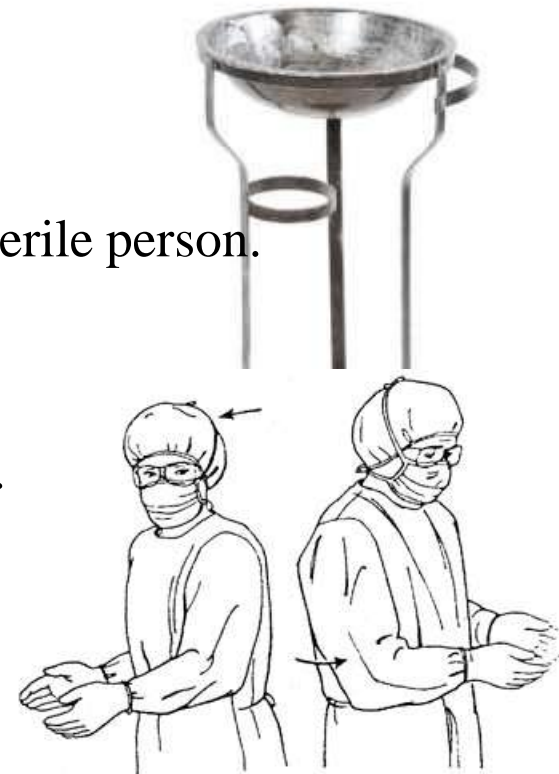
8. Sterile team members should keep their contact even with sterile area to a minimum.
9. Sterile team members should be within the sterile area & scrub nurse should allow a wide margin of safety when passing through unsterile area.

Rules :

- Sterile team members should be stand back at a safe distance from operating table , while draping.
- Pass back to back.
- Unsterile person/ area should be passed by back of sterile person.
- Face a sterile person/area when passing.
- Stay near the sterile table.
- Used items / soiled sponges are placed into the basin.

outside of basin : sterilized;

inside of basin : contaminated



Principles.....

9. Circulator :

- Unsterile team member
- Should provide wide margin of safety while passing
- Away from sterile area
- Face the sterile area while Passing, but should not touch
- Should not go within the sterile circle
- Notify the scrub person while passing behind him
- Stands at a safe distance while adjusting the light
- Grasp the table legs well below the table top to move the sterile table

Principles.....

10. Covered sterile materials

- Edge of cover that encloses the sterile content : sterile.
- Circulator should lift the cap of solution containing bottles & the caps are not replaced.



11. Sterile materials / area should be protected from moisture : contaminated

- sterile packages should be laid down in dry area.
- linen package remove from autoclave : wait to become cool & dry
- allow the paint to become dry before draping
- during procedure, any wet area should be covered with dry drape

Principles.....

12. Micro-organisms can not be removed completely, so they should be keep as minimum as possible
- skin can not be sterilized (staphylococcus)
 - skin shaving
 - head cap & mask
 - hands & arms should be properly scrubbed
 - dry the hands with sterile towel
 - as much of the operative area is cleansed as feasible
 - some area can not be rubbed vigorously
 - a sponge is used once only
 - sterile area should be separated from other by draping
 - after incision of skin, the blade / knife should be isolated from other items

Principles.....

13. Respiratory tract of patient is another source of infection.
14. Team members should not talk except when essential.
15. Bed clothes : should be removed or replaced prior to entry into OT, never the less the patient should be covered with a coversheet at all times.
16. The doors from corridors into operating room should keep close.
17. Dressing removed from a wound should be placed at once in a bag & should be discarded.
18. Drain should not be kept open.

The hand scrub

Good Hand Washing Practices Save many Lives

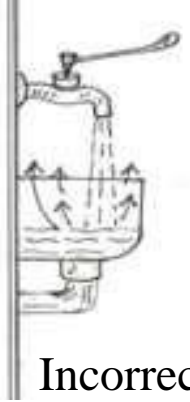
1. Alcohol with hlorhexidine.
2. Alchool without Chlorhexidine.
3. Chlorhexidine 2 %
4. Chlorhexidine 4 %
5. Povidone with Iodine 7.5 % - 10%
6. Triclosan 1 %
7. Phenolics
8. quarternary ammonium compound
9. 3 % hexachlorophane



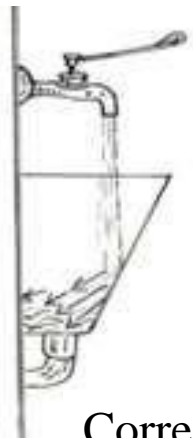
Areas of the harboring dirt
and microorganisms



- The scrub area sink should be wide enough to facilitate easy scrubbing without touching anywhere.
- It should have depth of about 3 feet which prevents splashing of rebound water onto the clean hands.
- The scrub sinks are fitted with doctors' taps, rather than ordinary taps, to facilitate its operation with the help of arms to prevent contamination of scrubbed hands during closing the tap.
- The peddle operated taps are ideal in scrub areas as it permits hand free operations. The cleaned hands are mopped with sterile towel and disinfected with antiseptic solution.



Incorrect



Correct

Design of the washing sink



Skin antiseptic
Hand towel drying
Gloving
Gowning

Gowns



Paper gown

Linen gown

made up of cotton having a thread count of 240 \ sq inch for the reusable stuff .



Plastic gown

Folding the gown for sterilization



Operating Room Decorum

- The floors and walls should be absolutely smooth and easily cleanable and should have minimum and neatly made or no joints.
- Flooring should be non porous, scratch proof, anti skid and antistatic (epoxy resin flooring) .
- The walls should also be covered with smooth material like granite with minimum joints.
- The ceilings should be painted with oil paints which give smooth finish.
- All the electrical fittings and water pipe lines in the OR must be concealed.
- The OR complex should have only one entry and all the windows should be air tight in restricted and semi-restricted area.

Operating Room Decorum

- Avoid contamination of wound.
- Although Unpreventable.
- Chances of cross infection.
- Contamination of surgical wound is mostly from – skin / mucous membrane being incised.
- Other sources : nose, throat, hand, skin of operating team members.
- Air contamination : omnipresent problem.
- All logical precaution & preparations should be done.

Stress must be laid on

1. Temperature

2. Humidity

3. Ventilation

Temperature : 24-27⁰ C

Relative Humidity : 45⁰ – 60⁰ C for adult

55⁰ – 65⁰ C for infants

VENTILATION / AIR CHANGE

- 1 change / hr : contamination reduced by 60%
- 2 change / hr : contamination reduced by 86%
- 10 change / hr : contamination reduced by 99%

Turbulent / mixing air distribution



Downward displacement piston system



Unidirectional airflow system / lamellar flow ventilation