



CNE on Infection Control Practices in the Operating Theatre

Introduction

The Operating Theatre (OT) is a specialized hospital area where surgical procedures are performed in a strictly controlled sterile environment. Infection control in the OT is essential to prevent surgical site infections (SSI) and ensure patient safety.

Nurses play a crucial role in maintaining aseptic techniques, environmental cleanliness, and safe surgical practices.

Learning Objectives

After completing this session, nurses should be able to:

1. Understand the importance of infection control in the operating theatre
2. Identify the layout and sterile zones of the OT
3. Apply WHO infection control guidelines
4. Understand cleaning, disinfection, sterilization, and waste management
5. Practice safe infection prevention measures in surgical settings

What is an Operating Theatre?

An Operating Theatre (OT) is a specially designed hospital room where surgical operations are carried out under strict aseptic conditions to minimize infection risk.

Key features include:

- Sterile surgical environment
- Specialized equipment
- Trained surgical team including surgeons, nurses, and anesthetists

Layout of Operating Theatre

Operating theatres are divided into four zones according to cleanliness level.

1. Protective Zone (Outer Zone)

- Non-restricted area
- Staff changing rooms
- Reception and waiting area

2. Clean Zone

- Semi-restricted area
- Staff must wear surgical attire
- Includes sterile supply rooms and scrub areas

3. Sterile Zone

- Fully restricted sterile area
- Surgical procedures are performed here

4. Disposal Zone

- Area for contaminated materials and waste disposal

WHO Guidelines for Infection Control

Important infection control practices include:

- Hand hygiene
- Surgical attire
- Environmental control
- Aseptic techniques
- Cleaning and disinfection
- Waste management
- Staff education and training
- Monitoring and surveillance

Hand Hygiene

Proper surgical hand preparation is essential before any operation.

Recommended antiseptic solutions include:

- Chlorhexidine Gluconate 4%
- Povidone iodine surgical scrub

Hands should be scrubbed for 2–5 minutes before surgery.

Surgical Attire

All OT staff must wear appropriate protective clothing:

- Scrub suit
- Surgical cap
- Mask
- Sterile gloves
- Dedicated OT shoes

Jewelry should be removed to reduce contamination risk.

Environmental Control

To maintain a sterile environment:

- Maintain positive air pressure in the operating room

- Limit unnecessary personnel movement
- Keep doors closed during surgery
- Perform regular cleaning and disinfection of surfaces and equipment

Aseptic Techniques

Aseptic technique involves maintaining a sterile surgical field by:

- Using sterile instruments and drapes
- Avoiding contact with non-sterile surfaces
- Minimizing unnecessary movement

Important rule:

“When in doubt, throw it out.”

Cleaning of Operating Theatre

Daily Cleaning

- Before and after surgical procedures

Inter-case Cleaning

- Between surgical cases

Terminal Cleaning

- Deep cleaning after the last operation of the day

Waste Management

Proper waste disposal is essential to prevent infection spread.

Waste Segregation Categories

- General waste
- Infectious waste
- Highly infectious waste
- Sharps
- Anatomical waste

Color-coded containers should be used according to WHO standards.

Disinfection

Disinfection is the process of reducing or eliminating microorganisms on non-living surfaces.

Types of Disinfection

1. Low-level

Used for non-critical items such as BP cuffs and monitors.

2. Intermediate-level

Used for equipment contacting mucous membranes.

3. High-level

Used for surgical instruments and endoscopic devices.

Sterilization

Sterilization eliminates all microorganisms including bacterial spores.

Common sterilization methods include:

- Autoclave (steam sterilization)
- Hot air oven
- Ethylene oxide gas sterilization

Autoclaving typically uses 121–134°C high-pressure steam to achieve sterilization.

Fumigation of Operating Theatre

Fumigation is used to disinfect the OT environment.

Two common methods include:

1. Formaldehyde Fumigation

- Traditional method
- Effective but toxic

2. Hydrogen Peroxide Fumigation

- Modern and safer method
- Faster and less toxic

Fumigation is usually performed periodically to ensure microbial control.

Monitoring and Surveillance

Hospitals must monitor:

- Surgical site infection (SSI) rates

- Environmental contamination
- Sterilization processes
- Compliance with infection control protocols

Key Message for Nurses

Effective infection control in the operating theatre requires:

- Strict adherence to aseptic technique
- Proper hand hygiene
- Appropriate sterilization and disinfection
- Safe waste management
- Continuous training and monitoring

Nurses are essential in maintaining a safe surgical environment.

Conclusion

Infection control in the operating theatre is vital for preventing surgical site infections and ensuring patient safety. Nurses play a central role in implementing infection control protocols, maintaining sterile environments, and supporting safe surgical practices.

Continuous nursing education is essential to maintain high standards of infection prevention and patient care.