Sterilization Methods

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Types of Antimicrobial Agents

Antiseptics

- **Use:** On skin and mucous membranes (external use only).
- **Examples:** Alcohols, Iodine solution, Silver nitrate..
- **Key Point:** Safe for living tissues.

Disinfectants

- **Use:** On inanimate objects (floors, tables, instruments).
- **Examples:** Bleach (Hypochlorite), Formaldehyde, Phenolic compounds, Quaternary ammonium compounds.
- **Key Point:** Too harsh for skin; not safe for living tissues.

Chemical Sterilants & Disinfectants

Bleach (Hypochlorite)

- **Kills:** Many organisms quickly.
- **Limitation:** Does **not** kill all spores.
- **For Sterilization:** Requires **20 minutes** of contact time.
- **Warning:** Highly **corrosive** to metals, including stainless steel instruments

Ozone

- **Use:** Industrial sterilization of water and air; surface disinfection.
- **Benefit:** Powerful oxidizer that can destroy organic matter.
- **Drawback:** Toxic, unstable gas. Not practical for routine clinical use.

Mechanical Method: Filtration

Principle:

Physically removing microbes from a liquid or gas by passing it through a filter with very tiny pores.

Best For:

- Solutions that would be **damaged by heat**.

Examples:

- Antibiotics, Injectable drugs, Vitamins, Amino acids.

Uses:

- Small portable units for water purification.
- Large industrial units for beverages.

Visual:

- The solution is poured in.
- The filter paper traps bacteria and particles.
- The sterile filtrate is collected.

Key Applications of Sterilization

In Pharmaceutical Industry:

- Sterilizing glassware and equipment.
- Preparing injectable, eye drops, and irrigating solutions.

In Hospital Practice:

- Preparing sterile gauzes and dressings.
- Sterilizing all Operation Theater (OT) items: instruments, gloves, masks, gowns, etc.
- Sterilizing laboratory glassware.


Any Questions?