

# STERILITATION

Department of Microbiology

# DEFINITION

- STERILISATION:
- Sterilisation is a process by which all living micro organisms including viable spores, are either destroyed or removed from article , body surfaces
- DISINFECTION:
- A process that destroys or removes most if not all pathogenic organisms but not bacterial spores
- ASEPSIS:
- A process where chemical agents called antiseptics are applied on to the body surfaces , which kills or inhibit the micro organisms present on the skin
- DECONTAMINATION:
- The reduction of pathogenic population to a level at which items are considered as safe to handle without protective attire

# FACTORS INFLUENCING EFFICACY OF STERILISATION/DISINFECTION

- ORGANISM LOAD
- NATURE OF ORGANISMS
- CONCENTRATION
- NATURE OF STERILANT
- DURATION OF EXPOSURE
- TEMPERATURE
- LOCAL ENVIRONMENT: pH , Organic matter ,Biofilm etc

# PHYSICAL AGENTS

- **Drying**

- **Heat:**

*Dry heat* : Flaming , Incineration and Hot air oven

*Moist heat:* Temp <100 degree C - Pasteurization , water bath and inspissation

Temp @ 100 degree C – Boiling , steaming and tyndallization

Temp > 100 degree C – Autoclave

- **Filtration:**

*Ionizing radiation* : gamma rays and cosmic rays

*Non ionising radiation:* Ultraviolet [UV] and infrared rays

# CHEMICAL METHODS

- **Alcohols** : Ethyl alcohol, isopropyl alcohol
- **Aldehyde** : Formaldehyde , glutaraldehyde , Ortho –phthalaldehyde
- **Phenolic compounds** : Cresols , lysol, chlorhexidine , chloroxylenol and hexachlorophene
- **Biguanide**: Chlorhexidine gluconate
- **Halogens**: Chlorine ,iodine ,iodophores
- **Oxidising agents**: Hydrogen peroxide , peracetic acid
- **Heavy metal salts**: Mercuric chloride , copper salts
- **Surface active agents** : Quaternary ammonium compounds and soaps
- **Dyes** : Aniline dyes and acridine dyes
- **Gas sterilisation** : Formaldehyde, Ethylene oxide, Betapropiolatone and Plasma sterilisation

# TESTING OF DISINFECTANTS

- **Phenol coefficient [Rideal Walker ] Test**
- **Chick Martin Test**
- **Capacity [Kelsey-Sykes] Test**
- **In-use [Kelsey- Maurer ] Test**