# Strengthening IPC for Effective Epidemic Preparedness

**FOCAL PERSONS IPC TRAINING**

## Topic: Sterilization & Decontamination

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# DECONTAMINATION& STERILIZATION IN HEALTHCARE SETTING

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# DEFINITION OF TERMS

**DECONTAMINATION**

According to OSHA, “the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal”

**Disinfections** implies the removal of some types of pathogenic organisms excluding the spores. It is associated with a partial reduction in the total No of organisms present. It is less effective compared with sterilization

**Sterilization**

implies complete removal of all organisms including vegetative bacteria, spores, viruses, fungi and protozoa. Concept of sterilization is an absolute one in that an item is either sterile or not

**Decontamination area:**

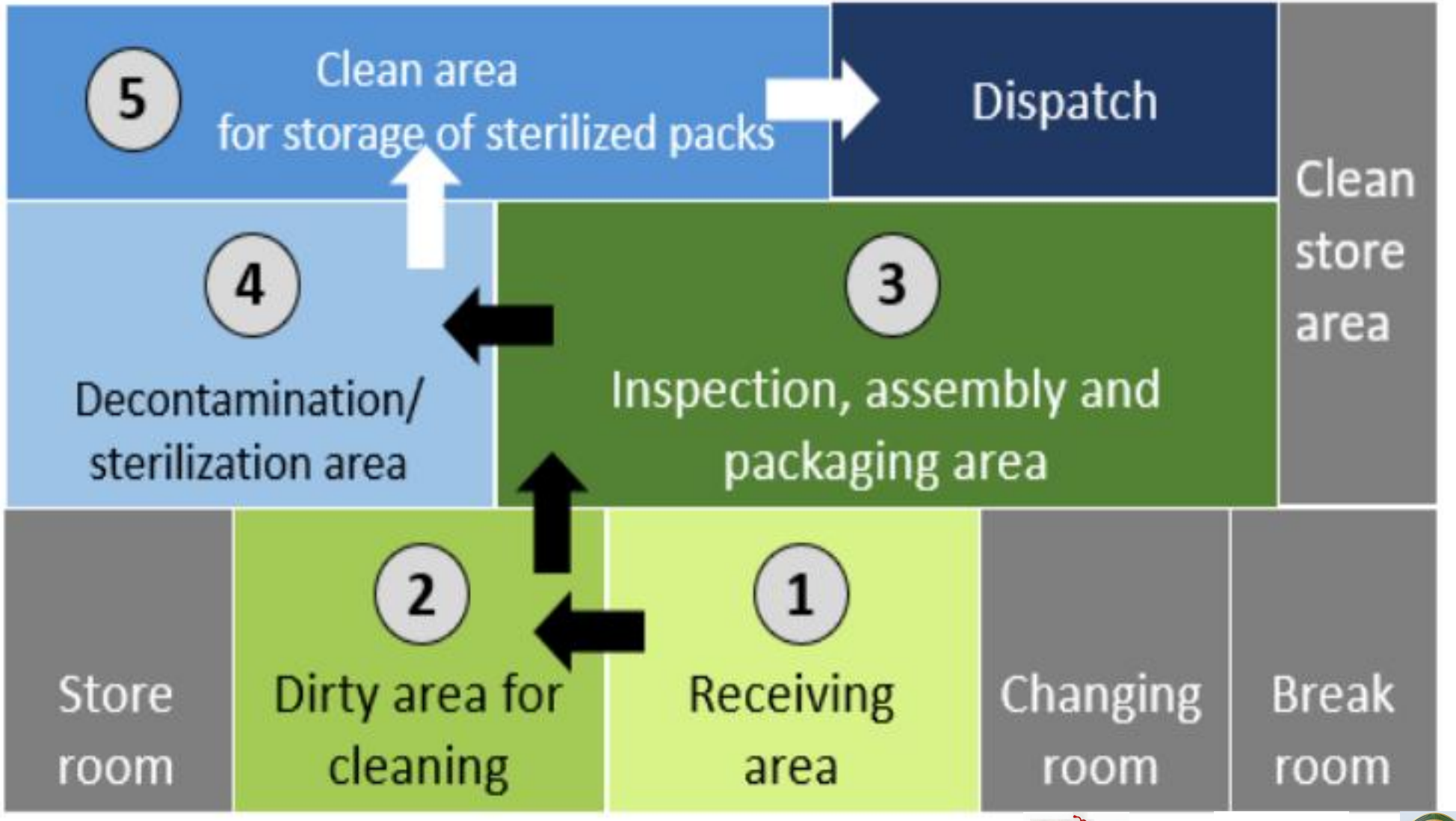
Area of a health-care facility designated for collection, retention, and cleaning of soiled and/or contaminated items

# CSSD

**Central processing or Central service department:**

The department within a health-care facility that processes, issues, and controls professional supplies and equipment, both sterile and nonsterile, for some or all patient-care areas of the facility

# CSSD


5
Clean area
for storage of sterilized packs
Dispatch
Clean
store
area
4
Decontamination/
sterilization area
3
Inspection, assembly and
packaging area
Store
room
2
Dirty area for
cleaning
1
Receiving
area
Changing
room
Break
room

# ANTISEPSIS

- Antiseptic: A substance applied to the skin/living tissue that prevents/arrests the growth/action of micro-organism either by inhibiting their activity or by destroying them
- Substance that prevents or arrests the growth or action of microorganisms by inhibiting their activity or by destroying them. The term is used especially for preparations applied topically to living tissue
- Antisepsis: A process involving the destruction or inhibition of mico-organisms in living tissue thereby limiting or preventing the harmful effects of infection
- Antiseptic in common use includes: Alcohol, Iodophor, Chlorhexidine, hexachlorophene

# DISINFECTIONS

- implies the removal of some types of pathogenic organisms excluding the spores. It is associated with a partial reduction in the total No of organisms present. It is less effective compared with sterilization.
- Thermal or chemical destruction of pathogenic and other types of microorganisms. Disinfection is less lethal than sterilization because it destroys most recognized pathogenic microorganisms but not necessarily all microbial forms (e.g., bacterial spores).

# DISINFECTIONS

- **Disinfectant:** usually a chemical agent (but sometimes a physical agent) that destroys disease-causing pathogens or other harmful microorganisms but might not kill bacterial spores.
- **Disinfectant:** It refers to substances applied to inanimate objects. EPA groups disinfectants by product label claims of “limited,” “general,” or “hospital” disinfection.
- Many disinfectants are used alone or in combinations (e.g., hydrogen peroxide and peracetic acid) in the health-care setting.
- Earliest work by Spaulding (1968) outline approaches to disinfection of medical and surgical devices.
- -Classified disinfectants into 3 categories based on their level of germicidal action,
- -Also classified items to be disinfected into 3 categories based on their degree of contact with patient and risk of infection.

# DISINFECTIONS

**Low-level disinfectant:**

- Agent that destroys all vegetative bacteria (except tubercle bacilli), lipid viruses, some nonlipid viruses, and some fungi, but not bacterial spores.

**Intermediate-level disinfectant:**

- Agent that destroys all vegetative bacteria, including tubercle bacilli, lipid and some nonlipid viruses, and fungi, but not bacterial spores.

**High-level disinfectant:**

- Agent capable of killing bacterial spores when used in sufficient concentration under suitable conditions. It therefore is expected to kill all other microorganisms**.**

# METHODS OF DISINFECTION

- Chemicals Agents
- Physical agents
- Ultraviolet radiation
- Pasteurization
- Other germicides
- Metals as microbicides
- Flushing- and washer-disinfectors

# TYNDALLIZATION (FRACTIONAL STERILIZATION)

- Heating to 80 – 100$^{o}$C for 30 mins on 3 successive days
- -Resistant spores germinate and are killed on the 2$^{nd}$ & 3$^{rd}$ day
- -Useful for heat sensitive materials -bacteriological media, solutions of chemicals & biological materials
- -Time consuming & not reliably sporicidal

# STERILIZATION

- Validated process used to render a product free of all forms of viable microorganisms.
- Sterilization implies complete removal of all organisms including vegetative bacteria, spores, viruses, fungi and protozoa.
- Concept of sterilization is an absolute one in that an item is either sterile or not

# TYPES/ METHODS OF STERILIZATION

- Steam sterilization
- Heat sterilization
- Flash sterilization
- Ethylene Oxide “Gas” Sterilization
- Hydrogen Peroxide Gas Plasma
- Other sterilizing methods are :Ionizing Radiation, Dry-Heat Sterilizers, Liquid Chemicals, Performic Acid, Filtration, Microwave, Glass Bead “Sterilizer”, Vaporized Hydrogen Peroxide (VHP®), Ozone, Formaldehyde Steam, Gaseous Chlorine Dioxide, Vaporized Peracetic Acid and Infrared Radiation

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