

# CSSD SERVICES

CENTRAL STERILE SERVICE DEPARTMENT

# DEFINITION

**It is a Service,  
with in the hospital,  
catering for the sterile supplies  
to all departments ,  
both to specialized units,  
general wards and OPDs.**



# THE CENTRAL STERILIZATION & SUPPLY DEPARTMENT (CSSD)

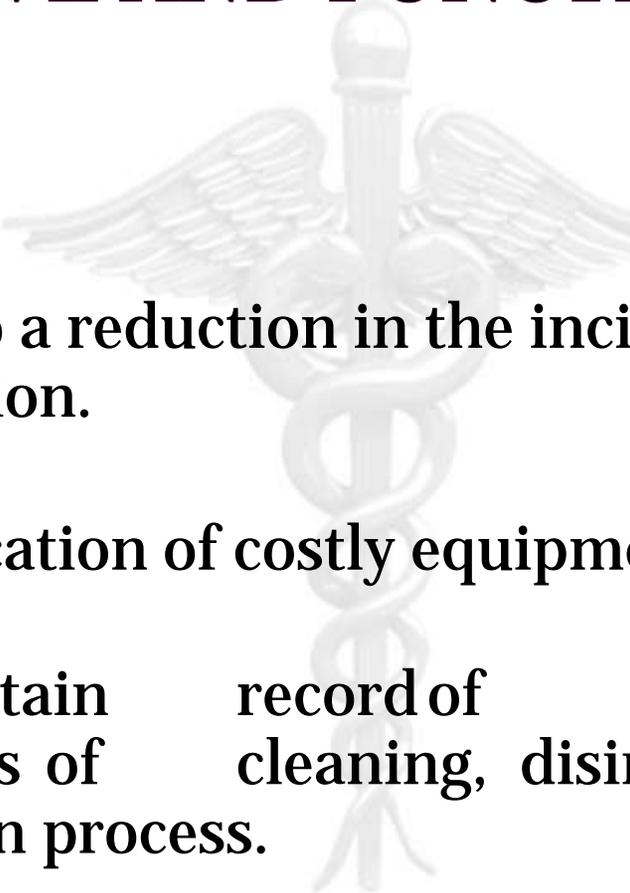
## ▪ **Mission of CSSD**

- ❑ Timely delivery of sterile goods
- ❑ Quality
- ❑ Efficiency (line process)

## ▪ **Activities of the CSSD**

- ❑ Cleaning
- ❑ Disinfection of semi- / non critical items
- ❑ Sterilization of critical items (high risk for infection)
- ❑ Supply of sterile materials

# OBJECTIVE AND FUNCTIONS

- 
- a. Contributing to a reduction in the incidence of hospital infection.
  - b. To avoid duplication of costly equipment.
  - c. To maintain record of effectiveness of cleaning, disinfection and sterilization process.

# FUNCTIONS AND ACTIVITY



# **FUNCTIONS OF CSSD**

- **Receiving and sorting soiled materials used in the hospital.**
- **Determining whether the item should be reused or discarded.**
- **Carry out the process of decontamination or disinfection prior to sterilization.**
- **Carry out specialized cleaning of equipments and supplies.**
- **Inspecting and testing instruments, equipments and linen.**
- **Assembling treatments trays, instrument sets, linen packs, etc.**
- **Packing all materials for sterilization.**
- **Sterilizing.**
- **Labeling and dating materials.**
- **Storing and controlling inventory.**
- **Issuing and distributing.**

# DESIGNING OF A CSSD

- Size and location of CSSD varies
- 7 to 10 square feet per bed is recommended
- It should be located as close as possible to Operation theatres,
- Accidents and Emergency department and wards
- The CSSD layout should be designed for a unidirectional flow

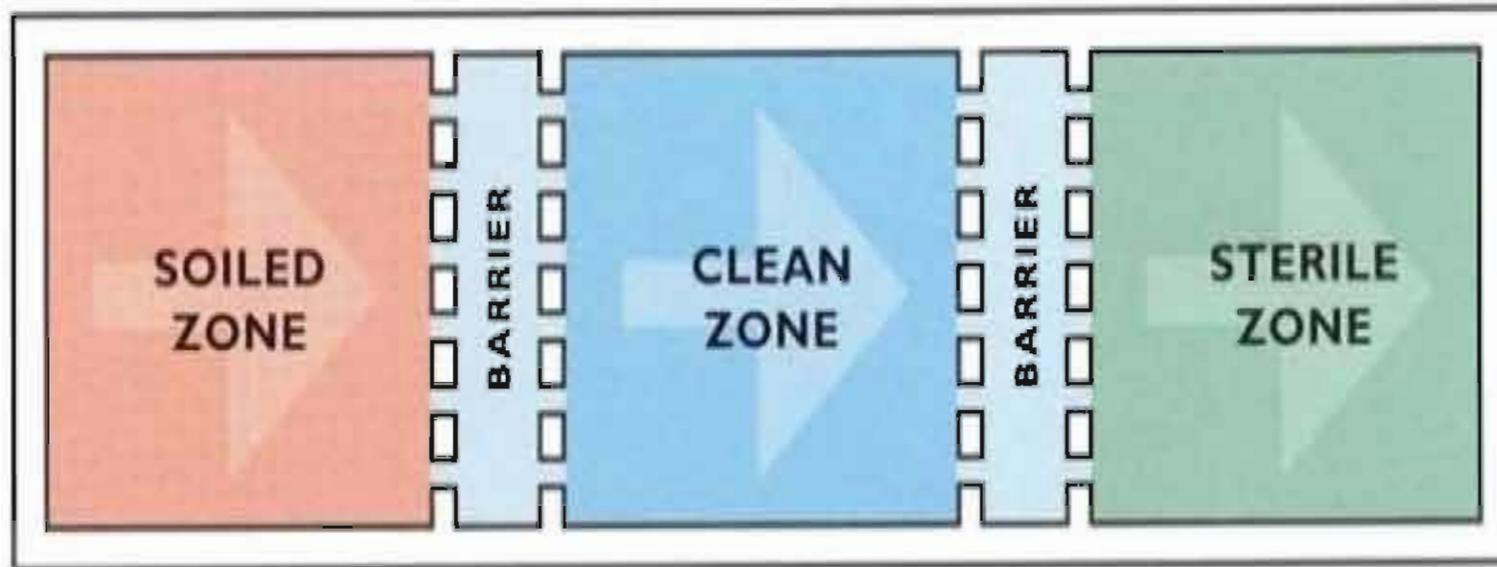


**CSSD should have four zones for a smooth work flow:**

- a. The unclean and washing area**
- b. The assembly and packing area**
- c. The sterilization area**
- d. The sterile area**

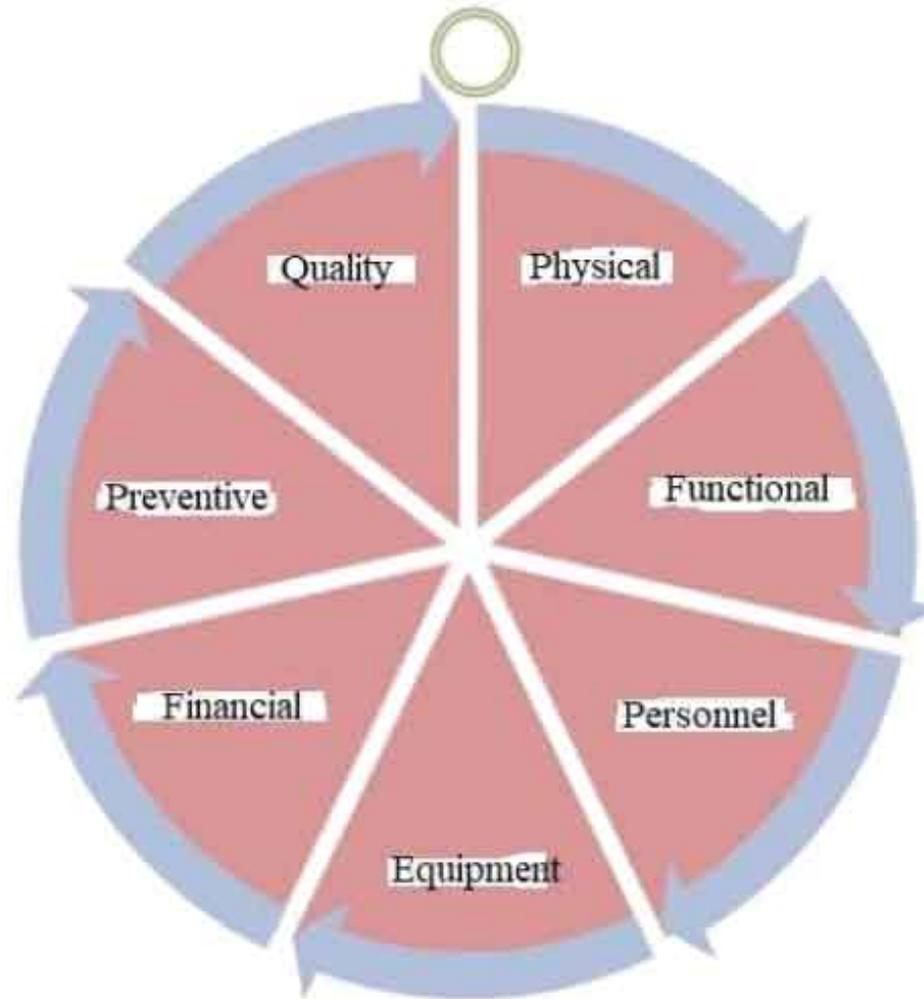


## GENERAL CSSD DESIGN CONCEPT



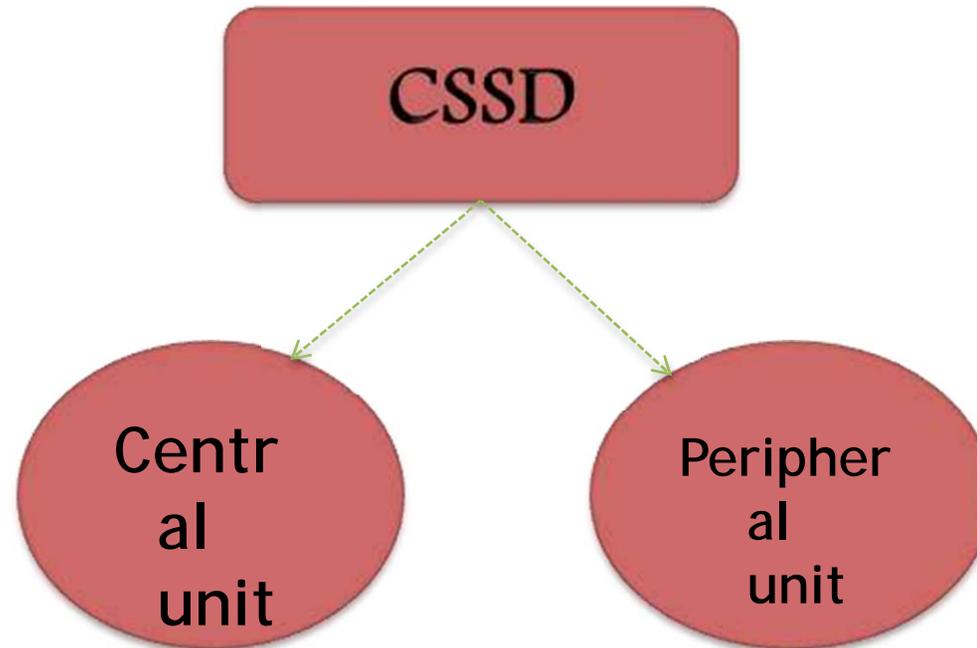
- Physical separation between soiled, clean and sterile zone
- The risk of cross-infection spread by staff is minimized

# PLANNING OF CSSD DEPT



# PLANNING OF CSSD DEPT

The CSSD can broadly be classified into two parts



-Responsible for receiving dirty  
Utilities cleaning, processing,  
Sterilization, storage and supply

- Mainly responsible for  
distribution  
to various areas of hospital.  
- TSSU (Theater Sterile Supply  
Unit)

## PLANNING OF CSSD

- The materials/items from contaminated and sterile areas should not get mixed.
- There should be physical barrier between clean and dirty areas.
- The floor should be smooth, non skid & robust.
- Relative humidity should be maintained at  $45 \pm 5$  %



- The clean area should be maintained at positive pressures.
- The minimum ventilation rate should be 6-10 air changes / hour.
- The work area should be made of marble / granite / stainless steel.
- The sterilization must be planned for autoclaving by steam as well as by gas.



# LOCATION

- The CSSD should be close to the casualty, Operation Theatre and wards which are the largest consumer of the sterilized material.
- In multistoried buildings,
- CSSD may be planned in the lower floor right under the Operation Theatre,
- where vertical movement will be the quickest possible movement of the material.



# EQUIPMENT IN CSSD

- Cleaning and decontamination devices
- Hot air Oven for drying & heat sterilization
- Glove processing unit for surgical gloves
- Instrument sharper e.g.. Needle sharper
- Testing apparatus for emergency sterilization
- Others :- trolleys, work surface, telephones
- Maintenance and repair of equipments
- Material : chemicals for washing and cleaning

# EQUIPMENT IN CSSD

- Steam Boiler
- Hot air ovens for drying instruments
- Autoclaves using dry heat, moist heat.
- Ethylene oxide sterilizers.
- Testing material to check effectiveness of sterilization.
- Sealing machine
- Ultrasonic Washer

# STERILIZATION

- It is a process of freeing an article from all living organisms including bacteria, fungal spores and viruses.
- A material is pronounced sterile if it achieves 99.99% kill of bacterial spores.

# TYPES OF STERILIZATION

- Dry Heat
- Steam High Pressure-Autoclaves operated by Gas, K.oil or Electricity (Flash, Pulse)
- Ethylene Oxide Sterilization.
- Chemical Sterilization.
- Radiation Sterilization.
- Infra Red Radiation – Syringes
- Ultra Violet Radiation – Decontamination of Air
- Ionizing Radiation / Gamma Radiation

# CHEMICAL STERILIZATION

## **CIDEX**

- A Glutaraldehyde derivative is most effective as it destroys spores too.
- It is **high level disinfectant**. It kills spores within 12 hrs and viruses within 10min.
- Widely used because of their excellent biocidal properties, activity in the presence of organic matter,
- non corrosiveness and noncoagulation of proteinaceous material

## **Hydrogen peroxide**

- It is an effective bacteriocidal, fungicidal, viricidal and sporicidal.
  - It is commercially available as 3% solution but can be used upto 25% concentration.
  - It is non corrosive and not inactivated by organic matter but irritant to skin and eyes
- Glutaraldehyde derivative is most effective as it destroys spores too.

## STEAM STERILATION

- The equipments are first cleaned & the packaged in muslin, linen or paper
- which are easily penetrated by steam & then placed on shelf in the chamber.
- Water → Saturated → Wet vapor → Dry saturated Vapor → Super Heated Vapor / Steam
- - Steam with  $<0.95$  Dryness Factor is not useful for Sterilization.
- - Superheated Steam acts like Dry Hot Air only . ( Strength Of Steam is its Latent Heat)
- **Total time Required**
  - Autoclave - 45 to 50 min
  - ETO(Ethylene Oxide) sterilizer - 11 to 12 hours

# STERILIZATION INDICATORS

## ***Chemical Indicators:***

- These are more practical means & detect problems immediately.
- The CDC & all major U.S organizations standards & guidelines advocate that a chemical indicator be attached to every package that goes through a sterilization cycle & within each package to be sterilized in what is expected to be the most difficult-to-sterilize location.

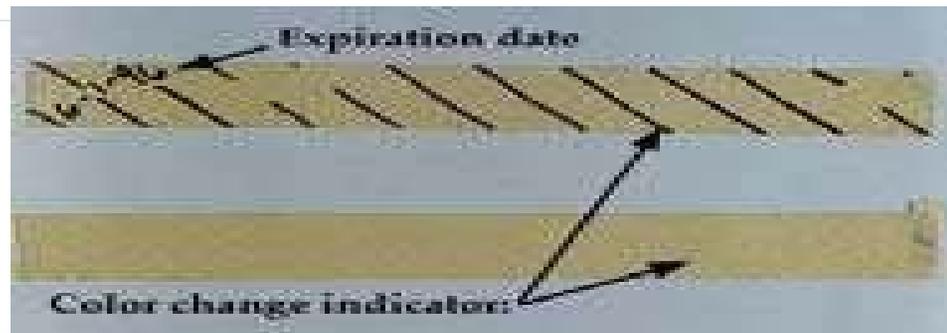
**These are divided into 6 classes, higher the class, more sensitive the indicator**

Class 1-

These are Internal & External Process Indicator

These inform that item has been exposed to sterilization process.

E.g. External Process Indicator – Autoclave Tape.



# STERILIZATION INDICATORS

## Class 2

- ❑ E.g. Bowie-Dick test for vacuum steam sterilizer.
- ❑ They only assess Vacuum Pump efficiency & detect the presence of air leaks &/or gases in steam.



## Class 3

- ❑ E.g. Temperature Tube.
- ❑ Contains chemicals that melt & sometimes change color when the appropriate temperature is attained.

## Class 4

- ❑ Respond to one or more sterilization parameters.
- ❑ Contains Ink that changes color when exposed to the correct combination of sterilization parameters.

# STERILIZATION INDICATORS

## Class 5

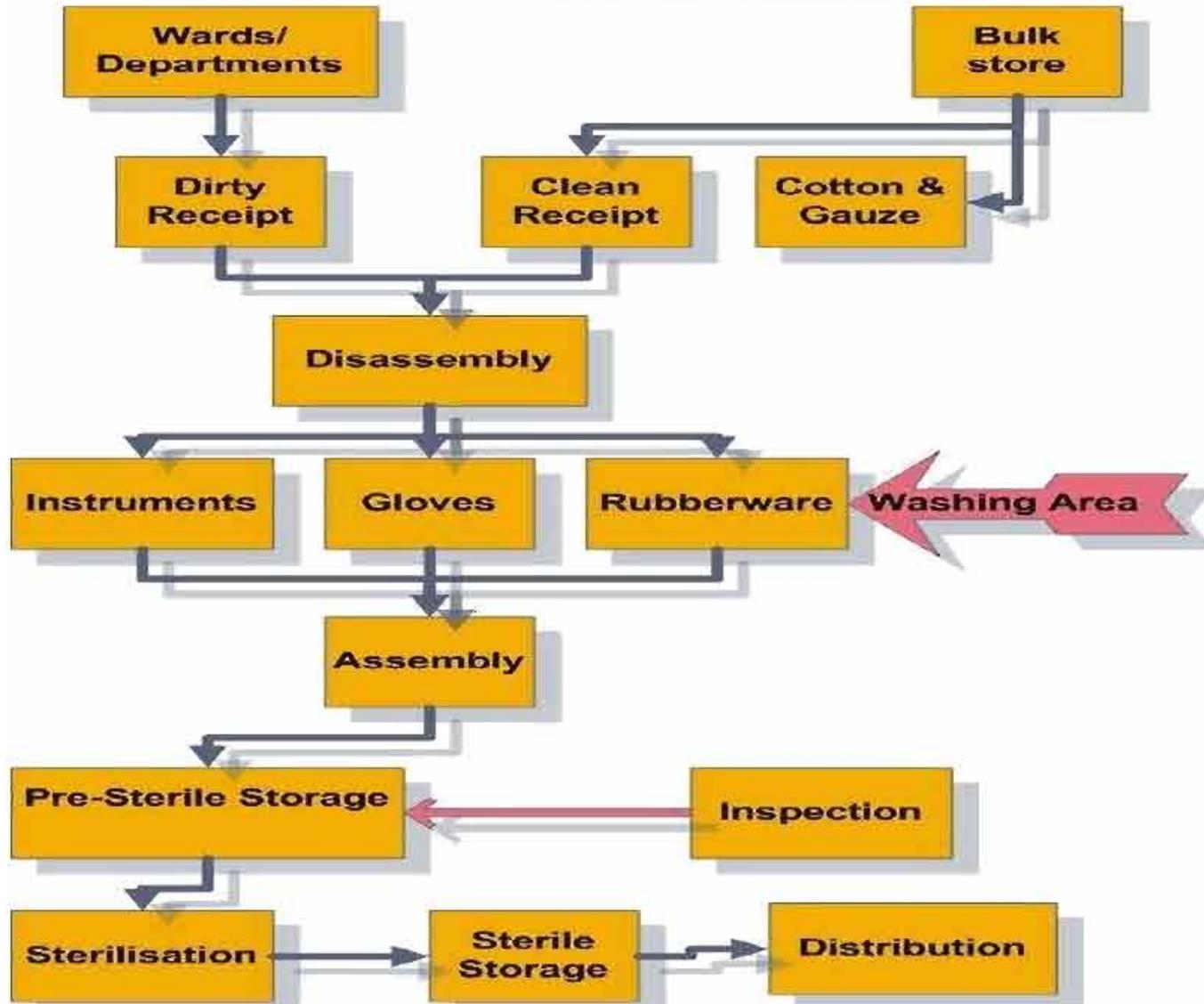
- ❑ Known as Integrating Indicators or Integrators
- ❑ Respond to all parameters of sterilization over a specified range of temperatures.

## Class 6

- ❑ These are emulating indicators.
- ❑ These are designed to react to all critical parameters over a specified range of sterilization cycles for which the stated values are based on the settings of the selected sterilization cycles



# FLOW PROCESS





## WORK FLOW OF CSSD

# **WORK FLOW**

- **MAJOR ACTIVITIES IN A CSSD:**
- ❖ **RECEIVING THE USED ITEMS FROM USER DEPARTMENTS**
- ❖ **CLEANING**
- ❖ **PACKING**
- ❖ **STERILIZING**
- ❖ **STORING (TEMPORARY)**
- ❖ **DISTRIBUTING TO USER DEPARTMENTS**



# FLOOR SPACE

Serial	Beds available	Floor space required for CSSD
1	75-99	10 sq feet per bed
2	100-149	9 sq feet per bed
3	150-199	8.5 sq feet per bed
4	200-249	8 sq feet per bed
5	250-299	7.5 sq feet per bed
6	300 or More	7 sq feet per bed

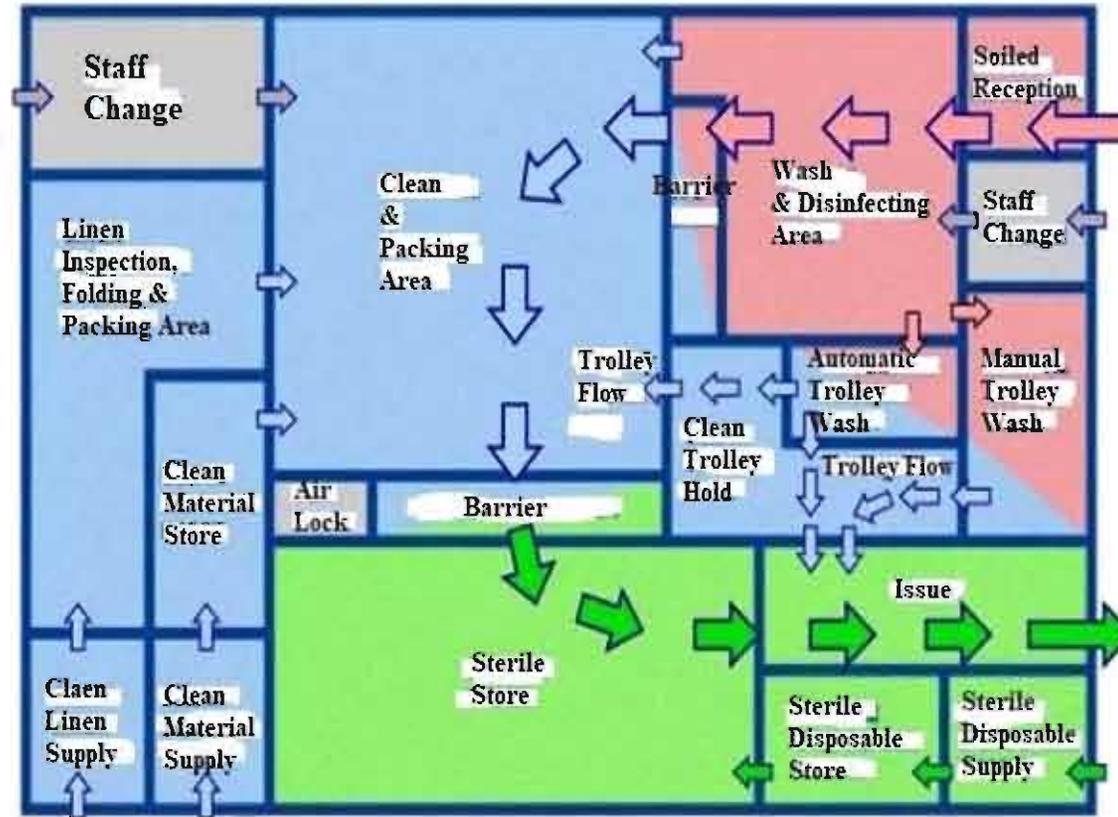


# LAYOUT OF CSSD

- Red - denotes contaminated zone
- Blue - denotes clean zone
- Green - denotes sterile zone

- By creating an U-shape workflow you often can solve the CSSD design

Goods flow



# LAY OUT DESIGNING PRINCIPLE

- There is no back tracking of sterile goods.
- One way movement from receiving counter to issue counter.
- Sterile area should be prior to sterile storage and issue.
- The receiving counter must be away from the issue counter.
- Separate receiving and issuing counter

**There should minimum six basic division in CSSD**



## Physical Facility and Equipment Availability at CSSD

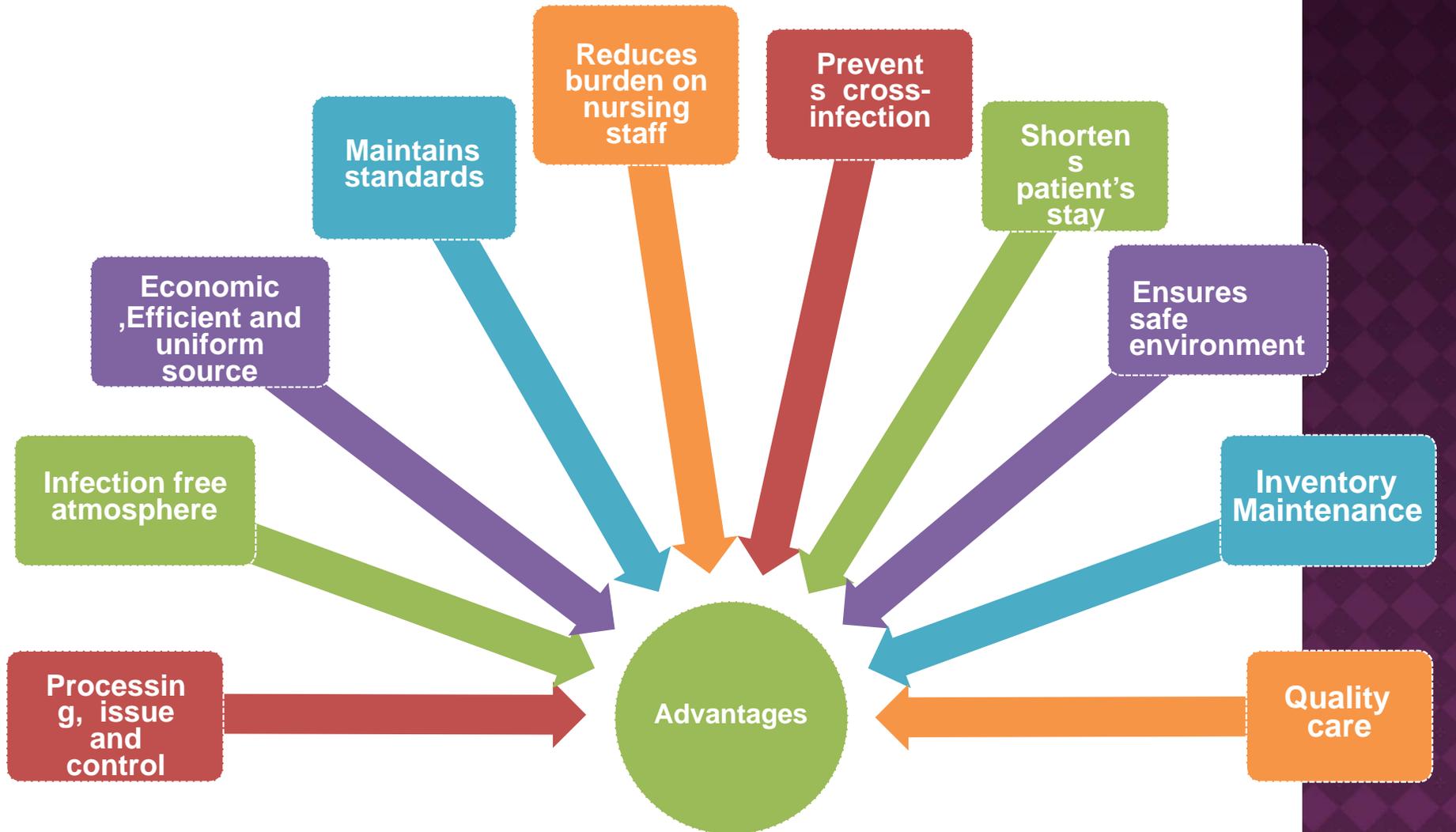
Ser	Rooms in the CSSD	Nature of the work	Provision of the Space (%)
1.	Wash Rooms	Dirty	10
2.	Work Room (Packing Room)	Clean	26
3.	Syringe & Needle Processing	Clean	9
4.	Unsterile Pack Store	Clean	4
5.	Bulk Store	Clean	11
6.	Sterile Store	Sterile	16
7.	Miscellaneous (a)Gloves room (b)Office room (c)Rest room	Clean	19
8.	Autoclaves	Clean	5

## STORAGE

- After sterilization the sterilized items are
- kept in different racks as per labeling.
- Supplied as per the demand of different area.
- To ensure continuous availability of sterile supply five times of daily requirement should be available in storage.



# ADVANTAGES



## ADVANTAGES

1. Bacteriological safe sterilization.
2. Less expensive.
3. Elimination of unsound practices & establishment of standard procedures.
4. Assurance of adequate supply of sterile products immediately and constantly available for sometime as well as emergency use.
5. Conservation of trained staff.
6. Better quality control
7. Better good of material flow
8. Prolonged life by proper care of equipment

Thank you!

