CSSD

CSSD : Central Sterilization & Supply Department قسم التعقيم والإمداد المركزى

TSSU :Theatre Sterilization & Supply Unit قسم التعقيم والإمداد للعمليات

CSSD & TSSU may be present in one hospital

Why CSSD ?

Centralizing the activities of receipt ,cleaning ,disinfection ,sterilization ,storage &distribution of material

- For infection control

For hygienic circular flow

For safety of patients, staff, visitors…

For successful surgery procedures

For risk free functionality

- For cost & energy saving (economic)
- For simplicity of work (uniform source)
- For less human mistakes (efficient)
- For decrease burden on nursing staff

Designing a CSSD

Designing a CSSD is not straight forward; it is a complicated process with no "one size fits all" solution

Planning principles :

- ▣ An Independent department
- ▣ A controlled area
- ▣ Segregation of clean and dirty areas
- ▣ O.T. Design should be integrated with CSSD
- ▣ unidirectional flow of material from dirty to clean to sterile(one way movement) & never in the opposite direction.
- ▣ Receiving counter (window) should be away from issue counter(window).
- ▣ Leave ample space for up-grading and future technology.

Design Factors

- **Location**
- **Size**
- **Spaces : -Zones , Areas , barriers - Support Rooms**
- **Flow :- Air**
  -Material
  -Staff
  -Transport
- **Finishes**

Location of CSSD

- As close as possible to O.R. (**80%** of CSSD load is for O.R)
- Easily accessible through elevators to O.R, I.C.U and Nursing Units .
- Preferable to be adjacent to the laundry
- Separate building is possible in case of a network of hospitals or medical city

O.R & CSSD :

-in different floors : 2 separate elevators for sterile & dirty items .

-Same floor : sterile items can be transferred via closed sealed trolley (tightly closed) وسائل نقل محكمه الغلق

- **Recommendation:** CSSD may be planned in the:
  lower floor right under the O.R.
  (where vertical movement will be the quickest possible way for material flow)
  with elevators
  that connect dirty & sterile zones with its counterpart corridor in O.R.

CSSD size

How much space is required for the CSSD?

Every case is unique, so it's hard to say. There is no international standard for planning size of CSSD. Historically it's been related to number of beds, but nowadays as trends are moving towards day surgery you need to consider overall activity.

Average 6 - 10 square feet per bed is recommended as an area for the CSSD.

200 bed hospital :200x6-10 =1200-2000 F^2 = 360-600 m^2

Calculate the area(size) according to:

- Number of beds
- O.Rs : -Number of O.Rs.
  -No. & Type of Surgical procedures
  -Operating hours
- Available Inventory
- Storage available in the theatres & other depts
- CSSD : - Method of cleaning i.e. manual/automated.
  - Number & capacity of washer disinfectors & sterilizers
- Future expansion of the hospital

Area Distribution :

Clean Area : ± 30-40% of CSSD area

Sterile Area : ± 20-25% of CSSD area

Dirty Area : ± 20-30% of CSSD area

Other facilities : 20% of CSSD area

Spaces in CSSD

zones :

- **DIRTY ZONE**
- **CLEAN ZONE**
- **STERILE ZONE**

CSSD areas

Dirty Zone

- Collection(Receiving) area: (منطقة التجميع و الإستلام)

- Lavation area: (منطقة الغسيل اليدوى) Manual cleaning

- Sorting area: (منطقة الفرز)

- Washing/Disinfection area (منطقة غسيل وتطهير)

Double door washer disinfector + Hatch

- Trolley wash area(منطقة غسيل وتطهير التروليات) Trolley Bay

Clean Zone

-Packing & sealing area(التعبئه والتغليف)

- Wrapping of textile area (± Textile store)

- Sterilization area : Double door sterilizers + Hatch +Interlock

-Supervisor Office

STERILE ZONE

-Unloading area منطقة التفريغ

- Storage area منطقة التخزين

- **Distribution(Issue area)**

Barriers : 1-cleaning barrier

2-sterilization barrier

-Physical barriers should separate dirty area, from clean area , from sterile area to prevent cross contamination

- **First(cleaning) barrier includes :**

-washer-disinfectors (Double Door)

-Hatch

-Second(sterilization) barrier includes :

- sterilizers (Double Door)

- Pass through Filters: with air locks

-± Hatch

Pass Through Filter : is used to interlock the connection from one zone to another.

The two Doors can not open at the same time.

Support Rooms :

-Supervisor Room

-Changing rooms(male & female) + shower + W.C.

-Storage rooms

-Staff Rest rooms

-Kitchenette (pantry)

-Computer Control Room (for distribution)

- ± Plant room for steam generator ???????

Flow

1-Air flow

Zone	Pressure
Sterile	++
Clean	+
Dirty	-
Others	Neutral
Trolley Wash	- -

Air must flow from sterile to dirty area

- (++ Ve) air pressure : in sterile zone using HEPA filtered air flow (+25 Pascal)

- (+ Ve) air pressure : in clean zone (10 Pa)

- (- Ve) air pressure : in dirty zone (-2 Pa), Exhausted out using filtration system

- (- -Ve) air pressure : in trolley wash area

2-Material flow

- Soiled goods : -Surgical instruments: from dirty corridors in O.R. to Dirty zone

- Textiles: from laundry to Clean zone

- Material flow from one zone to another : must be via pass through equipment to avoid contamination

-Material flow should be from dirty zone to sterile zone

3-Staff flow

Clean to Dirty NEVER both simultaneously

- Changing rooms (male & female): lockers & showers

-Supervisor room: glass wall, enable the supervisor to control and monitor all zones -
-Hand washing sinks

- No direct contact between staff in zones during work.

- No visitors inside CSSD.

4- Trolley (Transport) flow

1-Discharge at dirty zone
2 - Trolley wash area
- Clean trolley hold area (Trolley Bay)
4 - Charging from delivery area
5 - Trolley circulated inside hospital
- Avoid trolley movement inside CSSD
- Sealed

Finishes of CSSD

Material of construction & interior finish is of prime importance to control spread of infection.
Hygienic material with good thermal &noise isolation (noise do not exceed 60 dBA).
Use absorbent materials
- finishes should be suitable for frequent cleaning and tolerant to surface-cleaning agents.

FLOORING

Ceramic or porcelain or epoxy coat

Floor should be : -smooth ناعمه
-impermeable غير مسربه
-nonslip مانع للإنزلاق
-Anti corrosion مقاوم للتآكل
-Easy to clean & to disinfect سهل الغسيل والتطهير

-no dirty pockets
-This construction ensures a watertight, hygienic surface, which will withstand daily cleaning.
-Carpet or similar soft flooring should be avoided

WALLS

- Ceramic or Porceline or Epoxy coat or a sprayed paint (antibacterial & anti fungi paint)الحوائط: سيراميك او بورسيلين او الدهانات المقاومه للبكتريا والفطريات

-surfaces should be :- smooth

- free from crevices شق that hide or harbour soil

No skirting الوزارت

Ceiling

Metal ceiling tiles بلاطات أسقف معدنيه

-anti bacterial مقاومه للبكتريا

-anti rust غير قابله للصدأ

-easy to clean سهله التنظيف

-sealed

Or Suspended Ceiling اسقف معلقه

ceiling height : at least 2.8m

Windows

- In the wash room and clean zones :

-non-opening

- sealed

- double glazing, 4mm

- Not in storage areas.

-Good access, internally and externally, to facilitate cleaning.

Doors

- Automatic doors make it easier for collection and distribution trolleys to pass unimpeded

-self closing doors

Electromechanical works

1 -Electrical

2- Sanitary

3- HVAC

4-Medical Gases

5- Specialties

1-Electrical

Electrical works:

- **Lighting Yes**
- **Power Supply : -General P.S Yes**
  -Emergency P.S :
  -Generator Yes
  - UPS (Uninterrupted Power Supply)
- **Transformers**
- **Earthing System**

Light Current works : أعمال التيار الخفيف

Fire Alarm Yes
Nurse Call No
Computer Network yes
Telephone yes
T.V No
Sound System Yes
Clock System Yes
Intercom Yes

Lightening

- Adequate lighting
-Natural daylight if possible using windows
-Light fittings and controls :should be carefully selected to avoid ledges or crevices where dust can collect.

Power supply :Electricity 3 phase كهرباء 3 فاز

2- Sanitary:

Water Supply &Drainage(plumbing) :
- Water supply (Hot & Cold) مصدر ماء بارد وساخن
-Drainage network مصدر صرف (يتحمل الحراره)

- **-Exposed drains should be avoided specially in the clean zones.**
  -Air Condition Drainage
  -Fire Fighting.
  -Steam (Boiler) **مصدر للبخار**

3-Ventilation: HVAC:(heating , ventilation& air condition)

- Good aireation/ventilation fans **تهويه جيده / مجموعة شفاطات**
Or Central air condition **او تكييف مركزي**

Air changes : 6 - 10 per hour

Humidity 45 ±5 per cent

Different air pressures: to prevent air from neighboring areas entering the clean area .

Air flow pattern that carries contaminated air away from the clean area

- comfortable environment for the staff with controlled temperature, humidity and ventilation

- Air Fans should not be used in the processing zones

4- Medical Gases:

-Medical Gases Networks: Compressed Air **هواء مضغوط**

5-Specific works:

-Elevators :Ideally to have 2 elevators (one clean, the other dirty) to connect to O.R.

-Waste disposal