

## Part B - Health Facility Briefing and Planning

### 520 OPERATING UNIT

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#### INTRODUCTION

##### Description

- 520 .2.00 The Operating Unit provides a controlled climatic environment for the operative and peri-operative care of patients undergoing diagnostic and surgical procedures under anaesthesia.

#### PLANNING

##### Planning Models

- 520 .3.00 The number of Operating Rooms and Recovery beds and the sizes of the service areas shall be based on the expected surgical workload. In the brief, the size, location, and configuration of the surgical suite and support service departments shall reflect the projected volume of patients. This may be achieved by designing either a separate Day Procedures facility or a combined Inpatient-Day Surgical Unit. The Operating Unit shall be located and arranged to prevent non-related traffic through the suite.
- 520 .4.00 An Operating Unit design with a sterile core must provide for no cross traffic of staff and supplies from the decontaminated/soiled areas to the sterile/clean areas. The use of facilities outside the Operating Room for soiled decontaminated processing and clean assembly and sterile processing will be designed to move the flow of goods and personnel without compromising universal precautions or aseptic techniques in both departments.

##### Functional Areas

- 520 .5.00 The Operating Unit consists of the following functional areas:

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- Admissions and Reception Area for receipt and admission of patients to the Unit, with general overseeing of day to day operations, control of entry and exit from the Unit and completion of general administrative tasks
- Holding areas for holding and management of patients prior to their operation or procedure
- Operating Rooms area where procedures are carried out
- Support Areas including storage and management of stock and sterile supplies, disposal of waste and sterilisation of smaller items
- Recovery Areas where patients are assisted through the process of recovering from the effects of anaesthetic
- Administrative and Staff Areas including Change Rooms, Staff Room, Offices and administrative space for clinical staff.

### 520 .6.00 DENTAL SURGERY

In addition to the normal equipment required for surgical procedures such as an operating table, anaesthetic machine and trolleys, items considered essential for dental procedures are as follows:

- One compressed dental air outlet situated close to the service panels for medical gases, suction and electrical outlets, with the provision of a regulated bottle of appropriate compressed air as emergency backup or secondary use
- Access to a minimum of six power outlets with an additional four available for emergencies
- Facilities for dental X-ray.

### 520 .7.00 LABORATORY AREAS

Depending on the Operational Policy, an area for preparation and examination of frozen sections may be provided. This may be part of the general Pathology Laboratory if immediate results are obtainable without unnecessary delay in the completion of surgery.

### 520 .8.00 STAFF AMENITIES

#### CHANGE ROOMS

Appropriate Change Rooms shall be provided for male and female personnel (nurse, doctors and technicians) working within the Operating Unit. The Change Rooms shall contain adequate lockers, showers, toilets, handbasins and space for donning surgical attire and booting. These Staff Change Rooms shall be arranged to encourage a one-way traffic pattern so that personnel entering from outside the surgical suite can change and move directly into the Operating Unit.

Alternatively, the entrance to the Change Rooms may be planned in direct view of a Staff Station at the entrance to the Operating Unit. The Change Room entrance door shall be provided with locks or electronic access devices to prevent the entry of unauthorised persons into the Operating Unit.

Toilets shall be provided at the minimum ratio of one per Operating Room but no fewer than two. Showers shall be provided at the minimum ratio of one per two Operating Rooms but no fewer than two. The above toilets and showers are to be divided equally between male and female change rooms.

#### Notes:

- It is desirable but not mandatory to increase the number of facilities for female change rooms by approximately 30%.
- In male change rooms urinals shall be avoided.
- Warm air hand dryers shall be avoided.

### Functional Areas

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#### 520 .9.00 STERILISING FACILITIES

Sterilising facilities with high-speed sterilisers or other sterilising equipment for immediate or emergency use must be grouped to several Operating Rooms for convenient, efficient use. A work space and hand-washing facility shall be included. Such facilities shall be provided at the ratio of one per four Operating Rooms.

Other facilities for processing and sterilizing reusable instruments may be located in another hospital unit such as Central Sterilising Supply Department (CSSD) or Theatre Sterile Supply Unit (CSSU).

#### 520 .10.00 STORAGE

Adequate Equipment Store room/s for equipment and supplies used in the Operating Unit shall be provided. Equipment Stores shall be provided at the minimum rate of 10 m<sup>2</sup> per Operating Room.

Notes:

- Store Rooms do not necessarily require doors.
- Store Rooms are best designed in an elongated rectangular shape to allow easy access to all items.

- 520 .11.00 Storage Bays shall be provided for equipment such as portable X-ray equipment, stretchers, fracture tables, warming devices and auxiliary lamps. Storage Bays shall be provided at the minimum rate of five m<sup>2</sup> per Operating Room and minimum dimension of 0.8 metre (one metre preferred). These areas shall be out of corridors and traffic. This can be satisfied by recessing the bay into the corridor walls or adding the minimum Storage Bay width to the corridor width.

Note: Mobile Equipment Bays are best designed as elongated rectangular shapes and combined as far as possible.

- 520 .12.00 An area for testing operating equipment also requires consideration in the planning stage of an Operating Unit to determine on-site facility needs. Part of the Operating Unit General Store may be used for this function, or a dedicated room for this purpose may be necessary.

Note: Such a dedicated room is sometimes referred to as the Biomedical Engineering Room.

- 520 .13.00 The design of the Operating Unit should allow for ease of access to the storage areas for delivery of Operating Unit consumables. Controlled access from an external corridor is highly desirable.

### Functional Relationships

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- 520 .14.00 Certain facilities may be shared with the Obstetric/Birthing Unit if the brief reflects this concept. Service areas, when shared with Delivery Rooms, shall be designed to avoid the passing of patients or staff between the Operating Room and the Delivery Room areas.

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### DESIGN

#### Finishes

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- 520 .15.00 Operating Units shall have the following finishes:
- Floors that are smooth, non-slip impervious material laid in a continuous washable material and graded where necessary to fall to floor waste
  - Floor and wall finishes which are seamless, impervious, welded and washable
  - Ceilings which are smooth and impervious
  - Intersections of walls and architraves to be rendered watertight junctions.
- 520 .16.00 In all areas where patient observation is critical such as Operating Room/s, Anaesthetic Room/s, Recovery Area/Room, Holding Area/Room, colours shall be chosen that do not alter the observer's perception of skin colour.

#### Fixtures & Fittings

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- 520 .17.00 An ice machine shall be provided to provide ice for treatments and patient use. Ice intended for human consumption shall be from self-dispensing ice makers.

#### Infection Control

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- 520 .18.00 An Isolation Room is not required in a Recovery Area/Room. Provision for the recovery of a potentially infectious patient with an airborne infection shall be determined by the infection control risk assessment.

#### Lighting

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- 520 .19.00 Operating Rooms shall have artificial lighting complying with AS 1680.1 and AS 1680.2.5.

#### Building Service Requirements

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- 520 .20.00 MEDICAL GASES
- Main storage of medical gases must be outside the facility and reticulated internally to gas outlets. Provision shall be made for additional separate storage of reserve gas cylinders necessary to complete at least one day's procedures.

### COMPONENTS OF THE UNIT

#### Introduction

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- 520 .21.00 The Operating Unit will consist of a combination of Standard Components and Non-Standard Components.
- Standard Components must comply with details in Standard Components described in these Guidelines. Refer also to Standard Components Room Data Sheets.

#### Standard Components

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- 520 .22.00 Provide the Standard Components as identified in the Schedule of Accommodation.

#### Non-Standard Components

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- 520 .23.00 Provide the Non-Standard Components as identified in this section and in the Schedule of Accommodation, according to the Operational Policy and Functional Brief.

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### 520 .24.00 ANAESTHETIC WORKROOM

#### DESCRIPTION AND FUNCTION

An Anaesthetic Workroom may be provided for cleaning, testing and storing of anaesthesia equipment. The Anaesthetic Workroom should provide space for Anaesthetic trolleys and other anaesthesia equipment.

### 520 .25.00 LOCATION AND RELATIONSHIPS

The Anaesthetic Room should be located with direct access to circulation corridors and ready access to the Operating Rooms.

### 520 .26.00 CONSIDERATIONS

The Anaesthetic Workroom shall contain workbenches, sink/s and racks for cylinders. Provisions shall be made for separate storage of clean and soiled items. The room will require sufficient power and data outlets and a medical gas panel for testing of equipment.

A clinical handwashing basin shall be provided within the room.

### 520 .27.00 BLOOD STORE

#### DESCRIPTION AND FUNCTION

There shall be adequate provisions for refrigerated blood storage. This may be a blood storage refrigerator in a dedicated room or in a shared space.

### 520 .28.00 LOCATION AND RELATIONSHIPS

The Blood Store area should be located with ready access to the Operating Rooms and may be combined with a Pathology Room.

### 520 .29.00 CONSIDERATIONS

The blood refrigerator requires essential power supply.

### 520 .30.00 SET-UP ROOM

#### DESCRIPTION AND FUNCTION

The Set-up Room is the Clean Workroom in the Operating Unit where clean or sterile materials are held and arranged prior to use in the Operating Rooms.

The main functions for which facilities shall be provided are:

- Flash sterilisation of dropped or specialised instruments:
  - where a Theatre Sterile Supply Unit (TSSU) service is available, this function may be omitted
  - alternatives to flash sterilisation shall be sought
- Storage of instruments and materials
- Holding of sterile supplies and packs
- Storage of lotions in a special purpose warming cabinet
- Preparation of dressing and instrument trolleys
- Storage of drugs including scheduled drugs
- Dry waste disposal
- Use of telephone

520 .31.00 A Set-Up Room, with direct access to the operating room may be provided. Sharing of one Set-up Room between two or more Operating Rooms is

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acceptable provided layout and size of the room facilitates such sharing. Set-up Rooms may be combined with the Sterile Stock Store with direct access to the Operating Room.

If provided, the Set-up Room should be a minimum of 20 m<sup>2</sup>.

Note: This room is not mandatory, but its provision can improve throughput in the Operating Rooms.

### 520 .32.00 LOCATION AND RELATIONSHIPS

The Set-up Room should be located so that it has direct access to Operating Rooms and Central Sterile Supply / Theatre Sterile Supply Unit.

### 520 .33.00 CONSIDERATIONS

Storage is required for sterile packs and items used in the Operating Unit. Consideration may be given to mobile, adjustable open shelving systems.

Space is required for assembled trolleys prior to delivery to the Operating Room.

A clinical handwashing basin shall be provided within the room.

The Set-up Room shall be positively pressured relative to adjoining rooms.

## APPENDICES

### Operating Unit Generic Schedule of Accommodation

520 .34.00 Schedule of Accommodation for an Operating Unit at Levels 3, 4, 5 and 6:

#### RECEPTION & OPERATING ROOM AREAS

ROOM / SPACE	Standard Component		Level 3 Qty x m <sup>2</sup>	Level 4 Qty x m <sup>2</sup>	Level 5 Qty x m <sup>2</sup>	Level 6 Qty x m <sup>2</sup>	Remarks
ANAESTHETIC INDUCTION ROOM	yes		2 x 15 optional	4 x 15 optional	8 x 15 optional	10 x 15 optional	
EXIT BAY			2 x 6 optional	4 x 6 optional	8 x 10 optional	10 x 10 optional	From Operating Rooms
OPERATING ROOM - GENERAL	yes		1 x 42	3 x 42	5 x 42	6 x 42	
OPERATING ROOM - LARGE	yes				1 x 50	2 x 50	
OPERATING ROOM - MINOR	yes		1 x 36 optional	1 x 36 optional	2 x 36 optional	2 x 36 optional	
PATIENT BAY	yes		1 x 9 optional	1 x 9 optional	8 x 9 optional	10 x 9 optional	Holding Area - may be reduced if Anaesthetic induction rooms provided
PORTERS AREA					1 x 10 optional	1 x 10 optional	
RECEPTION	yes		1 x 10	1 x 10	2 x 10	2 x 10	
SCRUB-UP / GOWNING	yes		2 x 6	4 x 6	8 x 6	10 x 6	May be co-located between Operating Rooms
CIRCULATION %			40	40	40	40	

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## Operating Unit Generic Schedule of Accommodation

### 520 .35.00 SUPPORT AREAS

ROOM / SPACE	Standard Component		Level 3 Qty x m2	Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
ANAESTHETIC WORK ROOM			1 x 10 optional	1 x 10 optional	1 x 15 optional	1 x 15 optional	
BAY - LINEN	yes		1 x 3	2 x 3	4 x 3	5 x 3	Includes allowance for Blanket/Fluid Warmer
BAY - MOBILE EQUIPMENT	yes		4 x 4	4 x 4	10 x 4	10 x 4	
BLOOD STORE			1 x 4 optional	1 x 4	1 x 4	1 x 4	
CLEANER'S ROOM	yes		1 x 4	1 x 4	2 x 4	3 x 4	
CLEAN-UP ROOM	yes		1 x 10	1 x 10	2 x 10	3 x 10	
DISPOSAL ROOM	yes		1 x 8	1 x 8	2 x 8	2 x 8	
FLASH STERILISING			1 x 6	1 x 6	2 x 5	3 x 5	
LABORATORY / FROZEN SECTION			1 x 4 optional	1 x 4 optional	1 x 12 optional	1 x 12 optional	may be co-located with Clean Workroom or Blood Store
PERFUSION ROOM					1 x 50 optional	1 x 50 optional	
SET-UP ROOM			1 x 20 optional	1 x 20 optional			
STORE - ANAESTHETIC					1 x 20	1 x 20	
STORE - EQUIPMENT MAJOR	see remarks		1 x 20	1 x 30	1 x 50	1 x 60	Refer to Standard Component - Store - Equipment
STORE - EQUIPMENT MINOR	see remarks				1 x 40 optional	1 x 50 optional	Refer to Standard Component - Store - Equipment
STORE - NON STERILE/ DEBOXING			1 x 15	1 x 20	1 x 30	1 x 30	
STORE - STERILE STOCK	yes		1 x 20	1 x 40	1 x 80	1 x 100	Area allows for 10 m2 per Operating Room

### 520 .36.00 RECOVERY AREA

ROOM / SPACE	Standard Component		Level 3 Qty x m2	Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
BAY - HANDWASHING	yes		2 x 1	3 x 1	4 x 1	5 x 1	
BAY - LINEN	yes		1 x 3	1 x 3	2 x 3	2 x 3	Includes allowance for Blanket Warmer
BAY - RESUS TROLLEY	yes		1 x 2	1 x 2	2 x 2	2 x 2	
CLEAN UTILITY	yes		1 x 12	1 x 12	1 x 12	1 x 12	
DIRTY UTILITY	yes		1 x 10	1 x 10	1 x 10	1 x 10	
PATIENT BAY	yes		3 x 9	6 x 9	12 x 9	15 x 9	Allow 2 bays per Operating Room
STAFF STATION	yes		1 x 6	1 x 6	1 x 14	1 x 14	

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### Operating Unit Generic Schedule of Accommodation

#### 520 .37.00 ADMINISTRATIVE AND STAFF AREAS

Note: Offices and Support Areas are dependent on Operational Policy and management structure:

ROOM / SPACE	Standard Component		Level 3 Qty x m2	Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
BAY - BEVERAGE	yes		1 x 3	1 x 3	2 x 3	2 x 3	Co-located with Staff Room
CHANGE ROOM - STAFF	yes		2 x 10	2 x 15	2 x 30	2 x 40	May need to be apportioned for Male & Female users
MEETING ROOM - MEDIUM	yes		1 x 12 optional	1 x 12 optional	1 x 20	1 x 20	
OFFICE - SINGLE PERSON 9 M2	yes		1 x 9	1 x 9	1 x 9	1 x 9	Unit Manager
OFFICE - SINGLE PERSON 9 M2	yes		1 x 9 optional	1 x 9 optional	2 x 9 optional	3 x 9 optional	According to staffing establishment
OFFICE - SINGLE PERSON 9 M2	yes				1 x 9 optional	1 x 9 optional	Nurse Educator/ s
OFFICE - SINGLE PERSON 9 M2	yes				1 x 9	1 x 9	Recovery Unit Manager
OFFICE - SINGLE PERSON 9 M2	yes				1 x 9 optional	1 x 9 optional	Radiographer
OFFICE - WRITE-UP BAY	yes		1 x 2 optional	2 x 2 optional	4 x 2 optional	5 x 2 optional	Dictation Area
SHOWER - STAFF	yes		2 x 2	2 x 2	4 x 2	4 x 2	
STAFF LOUNGE	see remarks		1 x 10	1 x 15	1 x 30	1 x 40	Refer to Standard Component - Staff Room; size according to staffing establishment
STORE - FILES	yes				1 x 10	1 x 10	
STORE - PHOTOCOPY/ STATIONERY	yes			1 x 8	1 x 8	1 x 8	
TOILET - STAFF	yes		2 x 2	3 x 2	4 x 2	4 x 2	

#### 520 .38.00 SHARED AREAS

ROOM / SPACE	Standard Component		Level 3 Qty x m2	Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
BIOMEDICAL ENGINEERING					1 x 25	1 x 25	
INTERVIEW ROOM	yes		1 x 9	1 x 9	1 x 9	1 x 9	
MEETING ROOM - LARGE	yes				1 x 30	1 x 30	
STORE - GENERAL	yes		1 x 9	1 x 9	1 x 9	1 x 9	
WAITING	yes				1 x 4	1 x 4	

### References and Further Reading

- 520 .39.00 - American Institute of Architects, Guidelines for Design & Construction of Hospital & Healthcare Facilities. 1997.
- Health Department Western Australia, Private Hospital Guidelines, 1998.



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- NSW Health, Design Series 19, Health Building Guidelines - Operating Suite / Day Procedures Unit, 1992.
- Queensland Government, Private Health Facilities Building Code, 2000.

### Functional Relationships Diagram/s

520 .40.00 The relationships between the various components within an Operating Unit are best described by functional relationships diagrams. The requirements for infection control and patient management result in a number of planning 'models' that have proved successful through numerous built examples and many years of practice. Most Operating Unit plans are a variation of one of these 'models'.

These have been provided in the enclosures to these Guidelines.

A plan substantially based on one of these diagrams is 'deemed to satisfy' the requirements of these Guidelines. A plan that is significantly different to these diagrams should be carefully examined against all the individual requirements of these Guidelines, especially those of Infection Control to determine if it is acceptable.

520 .41.00 The enclosed Operating Unit functional relationships diagrams also show the relationships between typical adjoining units such as CSSU and possibly Day Surgery. For separate diagrams for CSSU, please refer to enclosures attached to CSSU Sheets 1 to 6. For Operating Unit functional relationships diagrams refer to attached enclosures Sheets 1 to 3. Functional relationships diagrams CSSU Sheet 6 and Operating Unit Sheet 1 in combination create one complete surgical floor.

520 .42.00 In reviewing and using the enclosed Operating Unit flow diagrams, designers should carefully consider a number of issues:

- Each flow diagram represents a method of managing the patient access, clean/dirty flow, air pressurisation, sterilisation of dropped instruments etc.
- The diagrams are different but each addresses the issues involved in a satisfactory manner. Each option may suit a different management mode or building configuration.
- Designers are strongly cautioned against creating hybrid options by combining features of various diagrams. This may result in wrong clean/dirty flows or other unacceptable features. If in doubt, designers should seek advice from specialist Operating Room consultants and Infection Control nurses.

520 .43.00 The functional relationship diagram in enclosure Sheet 1 shows a base model. This is a linear model. It can be stretched to create the number of Operating Rooms desired. The support facilities required also grow with the number of Operating Rooms. This base model integrates fully with the CSSU simple model in CSSU Enclosure Sheet 1.

520 .44.00 Enclosure Sheet 2 shows alternatives to a typical Operating Room Module. Each module includes the configuration of:

- Operating Rooms
- Anaesthetic Induction Rooms
- Scrub Bays or Rooms
- Sterile Stock Store / Set-up Room
- Clean-up Room
- Flash Sterilising Bay

Enclosure Sheet 2 includes four alternatives that can be designed to work with

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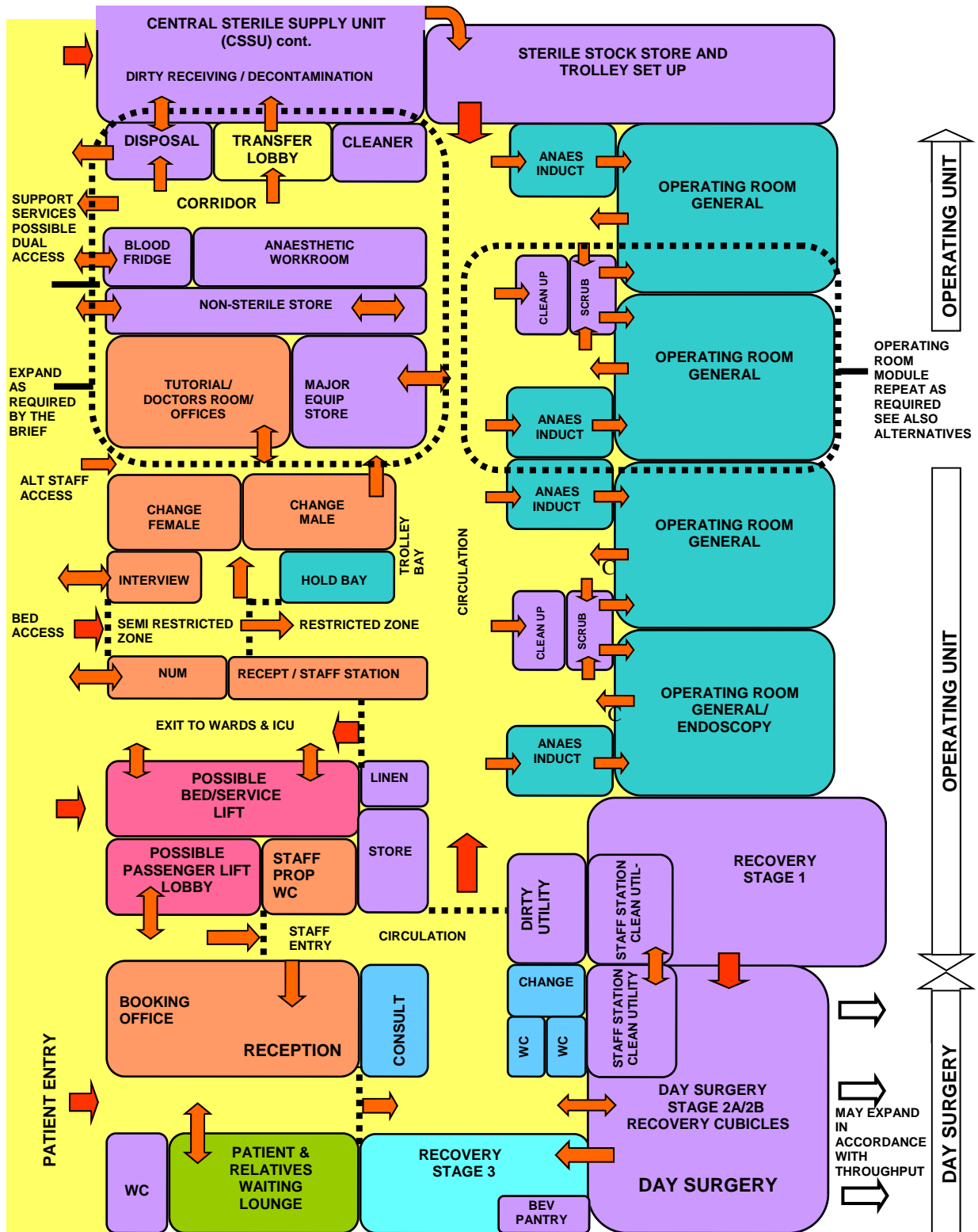
the base Operating Unit model shown in Enclosure Sheet 1.

- 520 .45.00 Enclosure Sheet 3 shows three more Operating Room Modules that represent a reversal of the flows compared with those in Enclosure Sheet 2. These modules can be designed to work with the basic features of the Operating Unit diagram shown in Sheet 1. Designers using these modules should adjust the connections to units such as Day Surgery / CSSU to suit the planning configuration.

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**FUNCTIONAL RELATIONSHIPS DIAGRAM - OPERATING UNIT** Alternative Single Corridor Model Sheet 1 of 4

NOTE 1 ONLY THE MOST IMPORTANT FUNCTIONS ARE SHOWN FOR CLARITY  
NOTE 2 CSSU MAY BE CONNECTED TO OPERATING SUITE VIA CLEAN/DIRTY HOISTS  
NOTE 3 IF STERILE STOCK IS REMOTE FROM OPERATING ROOM, A CASE CART SYSTEM SHOULD BE USED  
NOTE 4 ANAESTHETIC INDUCTION ROOM IS OPTIONAL AND MAY BE CONSIDERED A HOLDING ROOM

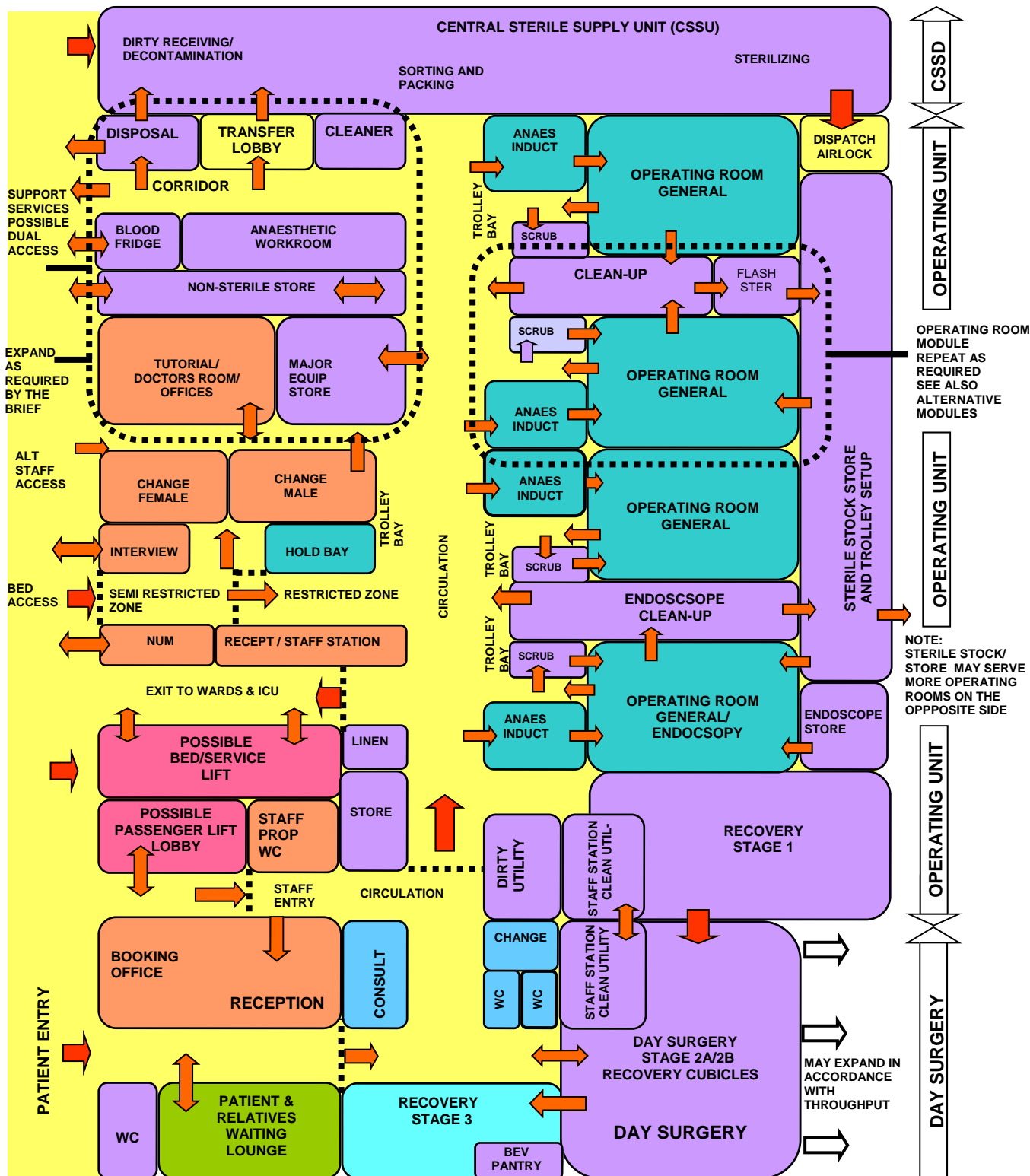


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## FUNCTIONAL RELATIONSHIPS DIAGRAM - OPERATING UNIT Dual Corridor Model

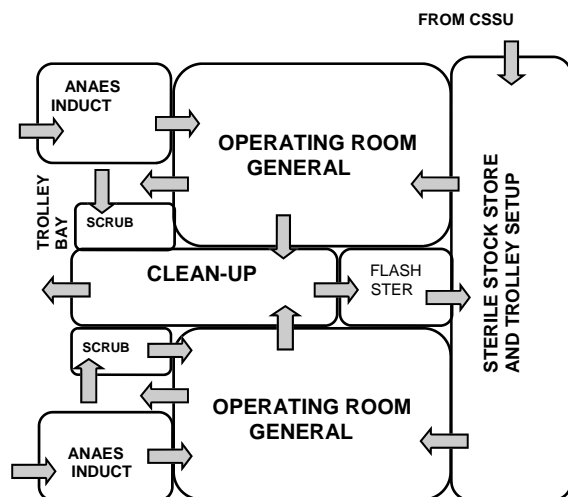
Sheet 2 of 4

- NOTE 1 ONLY THE MOST IMPORTANT FUNCTIONS ARE SHOWN FOR CLARITY  
 NOTE 2 CSSU MAY BE CONNECTED TO OPERATING SUITE VIA CLEAN/DIRTY HOISTS  
 NOTE 3 OPERATING ROOM MODULE MAY BE MIRRORED AGAINST STERILE STOCK STORE TO DOUBLE THE NUMBER OF OPERATING ROOMS  
 NOTE 4 ANAESTHETIC INDUCTION ROOM IS OPTIONAL AND MAY BE CONSIDERED A HOLDING ROOM

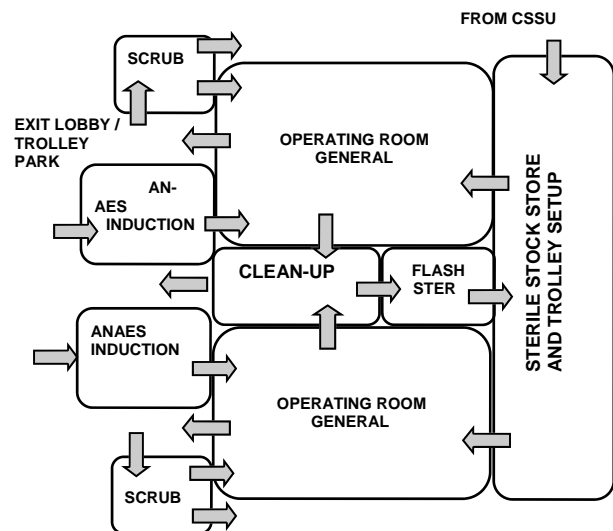


### Operating Room Modules

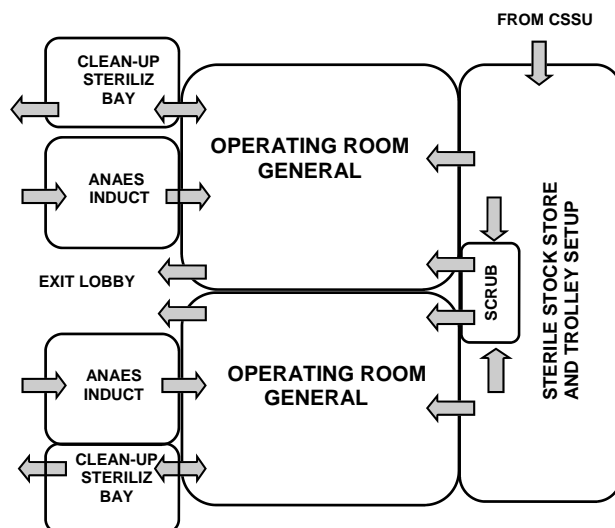
- NOTE 1 ONLY THE MOST IMPORTANT FUNCTIONS ARE SHOWN FOR CLARITY  
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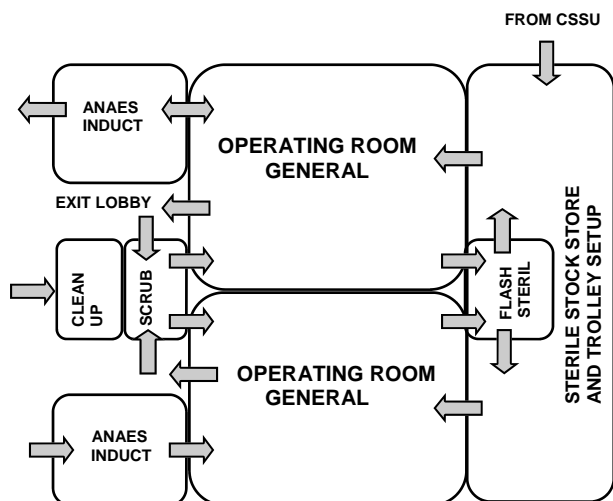
**Operating Room  
Module Type A**



**Operating Room  
Module Type B**



**Operating Room  
Module Type C**



**Operating Room  
Module Type D**

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## FUNCTIONAL RELATIONSHIPS DIAGRAM - OPERATING UNIT

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### Operating Room Modules

- NOTE 1 ONLY THE MOST IMPORTANT FUNCTIONS ARE SHOWN FOR CLARITY  
 NOTE 2 CSSU MAY BE CONNECTED TO OPERATING SUITE VIA CLEAN/DIRTY HOISTS  
 NOTE 3 OPERATING ROOM MODULE MAY BE MIRRORED AGAINST STERILE STOCK STORE TO DOUBLE THE NUMBER OF OPERATING ROOMS  
 NOTE 14 ANAESTHETIC INDUCTION ROOM IS OPTIONAL AND MAY BE CONSIDERED A HOLDING ROOM

