

Part B - Health Facility Briefing and Planning

440 MEDICAL IMAGING - GENERAL

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INTRODUCTION

Description

440 .2.00	The Medical Imaging Unit is a discrete unit of the hospital which provides for General X-ray diagnostic investigations. Depending on the level of service the unit may also provide for diagnostic screening (fluoroscopy), ultrasound, mammography, computed tomography (CT) or interventional radiographic procedures.
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PLANNING

Planning Models

440 .3.00	The layout of a Medical Imaging Unit should be developed in compliance with manufacturer's recommendations, because area requirements may vary from machine to machine. Since technology changes frequently and from manufacturer to manufacturer, rooms should be sized larger to allow upgrading of equipment in the future.
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Functional Areas

440 .4.00	The Medical Imaging Unit may consist of the following Functional Areas depending on the Operational Policy and service demand: <ul style="list-style-type: none">- Reception and Waiting Areas- X-ray and screening rooms with access to patient change areas and toilets- Support areas including preparation areas, storage, disposal and utility rooms- Film processing areas - both daylight and darkroom areas as required- Film storage areas- Viewing and reporting areas- Administrative and Office areas- Staff Amenities areas including Staff Room, Staff change rooms and toilets
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and access to Meeting Rooms

440 .5.00 CLEAN UTILITY / PREPARATION AREAS

The Clean Utility / Preparation Room shall provide for preparation and mixing of contrast media, storage of medications and sterile supplies. The Clean Utility / Preparation Room, if conveniently located, may serve any number of rooms. The Clean Utility / Preparation Room shall comply with requirements identified in Standard Components - Clean Utility. When pre-prepared media is used, additional storage shall be provided for the media.

440 .6.00 DIAGNOSTIC X-RAY AREAS

Diagnostic X-ray may include Tomography and Radiography / Fluoroscopy Rooms. Rooms for Diagnostic X-ray will need to be larger than standard X-ray Rooms to accommodate additional equipment and personnel. Diagnostic X-ray Rooms will require a scrub basin, preferably located adjacent to the room.

440 .7.00 FILM PROCESSING AREAS

A Darkroom shall be provided for processing film unless the processing equipment normally used does not require a Darkroom for loading and transfer. When daylight processing is used, the Darkroom may be minimal for emergency and special uses. Film processing shall be located convenient to the Imaging Rooms and to the quality control area. The darkroom will require special attention to lighting and ventilation.

440 .8.00 FILM STORAGE

A room with cabinets or shelves to file patient film for immediate retrieval shall be provided.

440 .9.00 A room or area that provides storage for archived film shall be provided. It may be outside the Imaging Unit, but must be properly secured to protect films against loss or damage.

440 .10.00 Storage facilities for unexposed film shall include protection of film against exposure of damage and shall not be warmer than the air of adjacent occupied spaces.

440 .11.00 OFF-SITE SERVICES

In smaller hospitals that cannot justify a full Medical Imaging Unit, access to off-site services is an important consideration in the planning phase, in particular, the selection of the site.

Functional Relationships

440 .12.00 The location of the Medical Imaging Unit, if provided, is variable. Consideration must be given to its proximity to Accident and Emergency, and to the Operating Unit where dedicated in-theatre X-ray is not provided. The requirement for an Outpatient X-ray Service may also dictate where in the facility it is located. In most instances, a compromise between travelling distance for inpatients (minor role) and convenience for outpatients (major role) will be made.

DESIGN

Infection Control

- 440 .13.00 Hand-washing facilities shall be provided for each Imaging Room, located outside the entry to the room.

Space Standards and Components

- 440 .14.00 Rooms shall be sized to suit the design requirements of the equipment to be used, to provide a safe working environment and to allow the effective movement of staff and patients.
- 440 .15.00 Ceiling heights shall suit the equipment, but shall not be less than 3000 mm for ceiling tube mount installations.
- 440 .16.00 Special consideration should also be given to the width and height of doorways to ensure delivery and removal of equipment is not impeded or prevented, and that patient trolley and bed movement is not hampered.

Standards & Codes

- 440 .17.00 Radiological facilities are to comply with relevant State legislation, regulations and statutory requirements.

Building Service Requirements

- 440 .18.00 Special attention is to be given to the following in the design of a Medical Imaging Unit:
- Structural support for equipment
 - Level floor for equipment positioning and safe patient movement
 - The impact on room space of large diameter electrical cable support tray (in floor and surface mounted)
 - Equipment ventilation
 - Radiation protection (lead shielding)
 - Procedure timing (clocks)
 - Task lighting/dimming
 - Room blackout, as required.
- 440 .19.00 Construction Standards for a Medical Imaging Unit include the following:
- Flooring shall be adequate to meet load requirements for equipment, patients, and personnel.
 - Provision for cable trays, ducts or conduits should be made in floors, walls, and ceilings as required.
 - Ceiling heights may be higher than normal.
 - Ceiling mounted equipment should have properly designed rigid support structures located above the finished ceiling.
 - A lay-in type ceiling should be considered for ease of installation, service, and remodelling.

440 .20.00 RADIATION PROTECTION

Most Medical Imaging requires radiation protection. Plans and specifications will require assessment for radiation protection by a certified physicist or other qualified expert as required by the Australian Radiation and Nuclear Safety Agency. The radiation protection assessment will specify the type, location and amount of radiation protection required according to the final equipment selections and layout. Radiation protection requirements shall be incorporated into the final specifications and the building plans.

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COMPONENTS OF THE UNIT

Introduction

- 440 .21.00 The Medical Imaging - General 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

- 440 .22.00 Provide the Standard Components as identified in the Schedule of Accommodation.

Non-Standard Components

- 440 .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.

- 440 .24.00 MAMMOGRAPHY ROOM

DESCRIPTION AND FUNCTION

The Mammography Room provides specialised equipment for Mammography examinations.

A Mammography Room, if provided, should be a minimum of 12 m2.

- 440 .25.00 LOCATION AND RELATIONSHIPS

The Mammography Room should be located with ready access to patient change facilities either within the room or in close proximity and waiting areas.

- 440 .26.00 CONSIDERATIONS

The Mammography Room requires a staff handwashing basin within the room. Visual and acoustic privacy is required.

- 440 .27.00 ULTRASOUND ROOM

DESCRIPTION AND FUNCTION

The Ultrasound Room provides specialised equipment for ultrasound imaging. The Ultrasound Room, where provided, shall be a minimum of 12 m2.

- 440 .28.00 LOCATION AND RELATIONSHIPS

The Ultrasound Room should be located with access to patient toilet facilities from within the room and from the corridor. The Ultrasound Room requires ready access to patient change facilities and Waiting areas.

- 440 .29.00 CONSIDERATIONS

The Ultrasound Room requires the following fittings and fixtures:

- Patient examination/ procedure table or couch, patient privacy screens
- Desk and chair for clerical activities
- Staff hand-washing basin
- Storage cupboards.

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APPENDICES

Med Imag.-Gen Generic Schedule of Accommodation

440 .30.00 Schedule of Accommodation for a Medical Imaging Unit at Levels 2 to 6:

ROOM / SPACE	Standard Component	Level 2 Qty x m2	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 optional	1 x 3 optional	
BAY - HANDWASHING	yes	1 x 1	1 x 1	2 x 1	4 x 1	6 x 1	
BAY - LINEN TROLLEY	yes			1 x 2	2 x 2	2 x 2	
BAY - MOBILE EQUIPMENT	yes			1 x 4	2 x 4	2 x 4	
BAY - RESUS TROLLEY	yes			1 x 2	1 x 2	1 x 2	
CHANGE CUBICLE - PATIENT	yes		2 x 2	8 x 2	10 x 2	10 x 2	
CLEANER'S ROOM	yes			1 x 4	1 x 4	1 x 4	
CLEAN UTILITY	yes			1 x 12	1 x 12	1 x 12	
COMPUTER PROCESSING AREA					1 x 50 optional	1 x 50 optional	
DARK ROOM				1 x 8	1 x 10	1 x 10	
DIRTY UTILITY	yes			1 x 10	1 x 10	1 x 10	
FILM PROCESSING		1 x 9	1 x 9	1 x 20	1 x 40	1 x 40	For Daylight processing
FILM STORAGE				1 x 25	1 x 60	1 x 60	
FLUOROSCOPY IMAGING ROOM			1 x 40 optional	1 x 40	2 x 40	2 x 40	
FLUOROSCOPY PREPARATION / STORE					1 x 10	1 x 10	For preparation of imaging media
FLUOROSCOPY VIEWING					1 x 10	1 x 10	
GENERAL X-RAY ROOM		1 x 38	1 x 38	2 x 38	4 x 38	4 x 38	
MAMMOGRAPHY ROOM				1 x 12	1 x 20	1 x 20	
PATIENT BAY	yes			2 x 9	4 x 9	6 x 9	For Holding
RECEPTION	yes		1 x 6	1 x 10	2 x 10	2 x 10	
REPORTING ROOM		1 x 6	1 x 10	1 x 10	2 x 35	2 x 35	
STORE - GENERAL	yes			1 x 10	2 x 10	2 x 10	Including Barium preparation supplies
TOILET - DISABLED	yes			1 x 5	1 x 5	1 x 5	
TOILET - PATIENT	yes		1 x 4	3 x 4	4 x 4	4 x 4	
ULTRASOUND ROOM				1 x 12	2 x 12	2 x 12	

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CIRCULATION %		35	35	35	35	35	

440.31.00 STAFF AND SUPPORT AREAS

Note: Offices & Support Areas are dependent on the Operational Policy:

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
LIBRARY					1 x 40 optional	1 x 40 optional	
OFFICE - SINGLE PERSON 12 M2	yes				1 x 12 optional	1 x 12 optional	Director
OFFICE - SINGLE PERSON 9 M2	yes			1 x 9 optional	1 x 9 optional	1 x 9 optional	Radiologist
OFFICE - SINGLE PERSON 9 M2	yes			1 x 9 optional	2 x 9 optional	2 x 9 optional	Radiographer, Quality Assurance Radiographer
OFFICE - SINGLE PERSON 9 M2	yes				1 x 9 optional	1 x 9 optional	Nursing personnel
OFFICE - 4 PERSON SHARED	yes				1 x 20 optional	1 x 20 optional	Transcription
OFFICE - WORKSTATION	yes				6 x 6 optional	6 x 6 optional	Information Technology, General Clerical
OFFICE - WORKSTATION	yes				1 x 6 optional	1 x 6 optional	Secretary to Director
OFFICE - WORKSTATION	yes				4 x 6 optional	6 x 6 optional	Registrars

440.32.00 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
DISPOSAL ROOM	yes			1 x 8	1 x 8	1 x 8	May be combined with Dirty Utility
MEETING ROOM - MEDIUM	yes				1 x 20	1 x 20	
MEETING ROOM - LARGE	yes				2 x 30	2 x 30	
PROPERTY BAY - STAFF	yes			1 x 6	2 x 6	2 x 6	
STAFF ROOM	yes			1 x 15	1 x 30	1 x 30	Area dependent on staffing establishment
TOILET - STAFF	yes			1 x 2	2 x 2	2 x 2	
WAITING	yes			1 x 20	1 x 45	1 x 45	

References and Further Reading

- 440.33.00
- American Institute of Architects, Guidelines for Design & Construction of Hospital & Healthcare Facilities, 1997.
 - Health Department Western Australia, Private Hospital Guidelines, 1998.
 - NSW Health, Design Standard 15, Health Building Guidelines - Medical Imaging Unit, 1992.

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FUNCTIONAL RELATIONSHIPS DIAGRAM - MEDICAL IMAGING (GENERAL)

