500 NUCLEAR MEDICINE UNIT

INDEX

INTRODUCTION

Description

500 .2.00 The Nuclear Medicine Unit provides facilities for the administration of radiopharmaceutical agents to patients and patient imaging for diagnostic purposes. The Nuclear medicine Unit may be provided within the Medical Imaging Unit or as a freestanding Unit.

PLANNING

Functional Areas

500 .3.00 The Nuclear Medicine Unit requires facilities for the following:
- Gamma camera equipment
- Patient holding
- Exercise equipment including treadmill and/or bicycle
- Radiopharmaceutical handling and storage.

500 .4.00 Nuclear medicine may include Positron Emission Tomography (P.E.T.), which is not common to most facilities.

500 .5.00 FILM STORAGE

Film storage with cabinets or shelves to file patient film for immediate retrieval shall be provided.

500 .6.00 Storage for archived film which is properly secured to protect film against loss or damage, should be provided.

Functional Relationships

500 .7.00 The Nuclear Medicine Unit should be located with ready access to the Medical

Imaging Unit, PET Unit if provided, Emergency Unit, Operating Unit and Critical Care areas. It requires easy access for ambulant patients and beds/ stretchers.

DESIGN

Building Service Requirements

500 .8.00 AIR CONDITIONING

Special attention is required for cooling and ventilation of Gamma Camera Rooms as the equipment is sensitive to excessive ambient heat. Additional cooling and ventilation will be required.

500 .9.00 CONSTRUCTION

Construction Standards for a Nuclear Medicine Unit include the following:
- Flooring shall be adequate to meet load requirements for equipment, patients, and personnel.
- Floors and walls should be constructed of materials that are easily decontaminated in case of radioactive spills.
- Walls should contain necessary support systems for either built-in or mobile oxygen and vacuum, and vents for radioactive gases.
- Provision for cable trays, ducts or conduits should be made in floors, walls, and ceilings as required.
- Ceiling height should be a minimum of 3 metres.
- 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.

500 .10.00 RADIATION PROTECTION

Plans and specifications will require assessment for radiation protection by a certified physicist or other qualified expert, as required by the appropriate state authorities. 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.

COMPONENTS OF THE UNIT

Introduction

500 .11.00 The Nuclear Medicine Unit will contain a combination of Standard Components and Non-Standard Components, according to the Level of Service.

Standard Components must comply with details in the Standard Components described in these Guidelines. Refer also to Standard Components Room Data Sheets.

Standard Components

500 .12.00 Provide the Standard Components as identified in the Generic Schedules of Accommodation.

Non-Standard Components

500 .13.00 Provide the Non-Standard Components as identified in this section and in the Schedule of Accommodation, according to the Operational Policy and Functional Brief.

500 .14.00 COMPUTER EQUIPMENT ROOM

DESCRIPTION AND FUNCTION

Provision shall be made for computer equipment, preferably in a separate room with access terminals available within the imaging Rooms.
The Computer Equipment Room shall be a minimum of six m2.

500 .15.00 LOCATION AND RELATIONSHIPS

The Computer Room shall be located adjacent to the Gamma Camera Imaging Rooms and Control Room and may be co-located for multiple imaging rooms.

500 .16.00 CONSIDERATIONS

The Computer Equipment Room will require adequate ventilation/ air conditioning for the computer equipment.

500 .17.00 CONTROL ROOM

DESCRIPTION AND FUNCTION

Space should be provided for the gamma camera computer control and display terminals.
The Control Room or area should be a minimum of six m2.

500 .18.00 LOCATION AND FUNCTION

The Control Room shall be located with direct access to the Gamma Camera Imaging Room and adjacent to the Computer Equipment Room.

500 .19.00 CONSIDERATIONS

A viewing window may be required, depending on the location of the Control Room. The Control Room will require:
- Workbench
- Gamma Camera Computer screens
- Computer, Printer and telephones for staff use.

500 .20.00 DARKROOM

DESCRIPTION AND FUNCTION

A Darkroom on-site may be required for film processing. The Darkroom shall be a minimum of six m2.

500 .21.00 LOCATION AND RELATIONSHIPS

The Darkroom should be located with ready access to Daylight processing areas, imaging rooms and reporting areas.

500 .22.00 CONSIDERATIONS

The Darkroom should contain protective storage facilities for unexposed film to protect the film against exposure or damage. Room requirements will include:
- Sink and bench
- Safe light

- Film processing equipment
- Floor waste
- Light proof door seals and grilles.

500 .23.00 GAMMA CAMERA ROOM

DESCRIPTION AND FUNCTION

The Gamma Camera Rooms will need to accommodate the imaging equipment and permit entry and exit of patient trolleys.
The room size will be determined by the equipment model and supplier. A minimum room size of 25 m2 is recommended.

500 .24.00 LOCATION AND RELATIONSHIPS

The Gamma Camera Rooms should be located with direct access to the Control room and ready access to the Equipment Room, patient waiting areas, preparation and utility areas.

500 .25.00 CONSIDERATIONS

The Gamma Camera equipment has specialised requirements and installation will be according to manufacturer's recommendations. Room requirements will include:
- Adequate ventilation and air conditioning for equipment functioning.
- Radiation protection requirements will need to be assessed by a Radiation Consultant.

500 .26.00 HOT LABORATORY

DESCRIPTION AND FUNCTION

If radiopharmaceutical preparation is performed on-site, a Hot Laboratory adequate to house a radiopharmacy shall be provided with appropriate shielding.
The Hot Laboratory shall be a minimum of six m2.

500 .27.00 LOCATION AND LATIONSHIPS

The Hot Laboratory should be located with ready access to the Gamma Camera Imaging rooms, preparation and dosing areas.

500 .28.00 CONSIDERATIONS

The Hot Laboratory room requirements are as follows:
- Adequate space for storage of radionuclides, chemicals for preparation, dose calibrators, and record-keeping.
- The floors and walls should be constructed of a material that is easily decontaminated, that has no gaps or crevices.
- Vents and traps for radioactive gases should be provided if such are used.
- Hoods for pharmaceutical preparation shall meet applicable standards, if used.
- If pre-prepared materials are used, storage and calculation areas may be considerably smaller than for on-site preparation.
- Space shall provide adequately for dose calibration, and quality assurance activities.
- The hot laboratory shielding may include the room walls and radionuclide storage areas within the room.

APPENDICES

Nuclear Medicine Generic Schedule of Accommodation

500 .29.00 Schedule of Accommodation for a Nuclear Medicine Unit at levels 4, 5 and 6:

ROOM / SPACE	Standard Component			Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
BAY - HANDWASHING	yes			4 x 1	6 x 1	6 x 1	
BAY - LINEN	yes			1 x 2	1 x 2	1 x 2	
BAY - RESUS TROLLEY	yes			1 x 2	1 x 2	1 x 2	
BONE DENSITOMETER ROOM					1 x 12	1 x 12	
CONSULT ROOM	yes			1 x 12	2 x 12	2 x 12	
CONTROL ROOM				1 x 6	2 x 6	2 x 6	
COMPUTER EQUIPMENT ROOM				1 x 6	2 x 6	2 x 6	
EXERCISE / STRESS TESTING				1 x 10	1 x 15	1 x 15	
GAMMA CAMERA ROOM/S				1 x 25	2 x 25	2 x 25	Room size will depend on equipment model and supplier
HOT LABORATORY				1 x 6	1 x 12	1 x 12	
LABORATORY - MEDICAL PHYSICS					1 x 20	1 x 20	
LABORATORY - RADIOPHARMACY					1 x 15	1 x 15	
PATIENT BAY	yes			4 x 9	8 x 9	8 x 9	Holding Bays Pre-Procedure
TOILET - PATIENT	yes			1 x 4	2 x 4	2 x 4	With Change facilities
WARM LABORATORY					1 x 20	1 x 20	
CIRCULATION %				30	30	30	

500 .30.00 STAFF AREAS
Note: Offices are dependent on the Operational Policy and management structure:

ROOM / SPACE	Standard Component			Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
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	Nursing personnel
OFFICE - SINGLE PERSON 9 M2	yes				1 x 9 optional	1 x 9 optional	Radiochemist
OFFICE - SINGLE PERSON 9 M2	yes				1 x 9 optional	1 x 9 optional	Radiopharmacist

OFFICE - SINGLE PERSON 9 M2	yes			1 x 9 optional	1 x 9 optional	1 x 9 optional	Registrar
OFFICE - SINGLE PERSON 9 M2	yes				3 x 9 optional	3 x 9 optional	Technologists
OFFICE - WORKSTATION	yes				4 x 6 optional	4 x 6 optional	Reporting
OFFICE - WORKSTATION	yes				1 x 6 optional	1 x 6 optional	Secretary

500 .31.00 SHARED AREAS

ROOM / SPACE	Standard Component			Level 4 Qty x m2	Level 5 Qty x m2	Level 6 Qty x m2	Remarks
DARK ROOM				1 x 6	1 x 6	1 x 6	
PROCESSING AREA					1 x 16	1 x 16	
RECEPTION	yes			1 x 10	1 x 10	1 x 10	
STORE - DIGITAL / VIDEO TAPES					1 x 10	1 x 10	
STORE - FILES	yes				1 x 10	1 x 10	
STORE - FILM				1 x 6	1 x 20	1 x 20	
STORE - PHOTOCOPY/ STATIONERY	yes				1 x 8	1 x 8	
WAITING	yes			1 x 9	2 x 9	2 x 9	Waiting for non-injected patients may be shared with adjacent Units

References and Further Reading

500 .32.00

- American Institute of Architects, Guidelines for Design & Construction of Hospital & Healthcare Facilities, 1997.

- NSW Health, Design Standard 15 Health Building Guidelines - Medical Imaging Unit, 1992.

FUNCTIONAL RELATIONSHIPS DIAGRAM - NUCLEAR MEDICINE