

Part B – Health Facility Briefing & Design

145 Laboratory Unit



International Health Facility Guidelines

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145 Laboratory Unit

1 Introduction

Description

The Laboratory Unit provides facilities and equipment for the examination of body tissues and fluids, involving receipt of patient specimens, testing and issue of reports.

The Laboratory Unit may be divided into specialist disciplines including (but not limited to):

- General Pathology - involves a mixture of anatomical and clinical pathology specialties in the one Unit
- Anatomical Pathology – involves the diagnosis of disease based on the microscopic, chemical, immunologic and molecular examination of organs, tissues, and whole bodies (autopsy); Anatomical pathology is itself divided in subspecialties including Surgical Pathology, Cytopathology and Forensic Pathology
- Clinical/ Chemical Pathology involves diagnosis of disease through the laboratory analysis of blood and bodily fluids and/or tissues using the tools of Chemistry, Microbiology, Haematology and Molecular Pathology
- Haematology is concerned with diseases that affect the blood and the management of blood transfusion services
- Microbiology is concerned with diseases caused by organisms such as bacteria, viruses, fungi and parasites; clinical aspects involve control of infectious diseases and infections caused by antibiotic-resistant bacteria
- Genetics/ Clinical Cytogenetics - a branch of genetics concerned with studying the structure and function of the cell, particularly the microscopic analysis of chromosomal abnormalities; molecular genetics uses DNA technology to analyse genetic mutations
- Immunology - a broad discipline that deals with the physiological functioning of the immune system and malfunctions of the immune system such as autoimmune diseases, hypersensitivities, immune deficiency and transplant rejection

2 Functional and Planning Considerations

Operational Models

Laboratory services may be provided according to the following service delivery models and will be dependent on the size, the Role Delineation and the Operational Policy of the facility:

- On-site laboratory providing a wide range of tests and services
- On-site provision limited to Point of Care Testing (POCT) for a limited range of urgent tests
- Off-site laboratory with services provided by an external laboratory on a contracted or other basis; the external laboratory may be a separate private business unit
- Networking of hospital laboratories across an area or region with varying arrangements for specialisation between laboratories.

Hours of Operation

The Laboratory Unit will generally operate seven days per week with core services available from 8am to 6pm daily and emergency or urgent services available on a 24 hour basis.

Planning Models

Location

The Laboratory Unit may be located in a service zone within the healthcare facility with consideration to:

- travel distances and the amount of time taken to receive specimens and for staff travelling between various key departments
- Ease of access for patients attending the Unit for specimen collection.

With automated delivery methods such as pneumatic tube systems and satellite specimen collection zones within the facility, the location of the Unit becomes less critical.

Configuration

The Laboratory Unit may be planned as a series of modular laboratories, providing flexibility for change of function and equipment as necessary. Each module may be sized to accommodate a specific specialty and the equipment required, with the ability to adapt and reconfigure modules.

Functional Areas

The Laboratory Unit will consist of a number of Functional Areas according to the service plan of the unit:

- Specimen Reception including:
 - Specimen registration, data entry
 - Specimen sorting and preliminary processing prior to delivery/despatch to various specialty laboratories
- Laboratories, which may include:
 - Automated laboratories that perform a range of tests across a variety of specialties
 - Specialist laboratories such as Clinical Chemistry, Anatomical Pathology, Microbiology, Haematology, Immunology
- Blood Bank including
 - Storage of blood and blood products in refrigerators and freezers
 - Testing laboratory
- Support areas may be centralised to serve all sub specialty laboratories and may include:
 - Clean-up room/s
 - Sterilisation area
 - Storage areas for reagents, appropriate storage for flammable liquids, general supplies, refrigerated storage for slides and reagents
 - Disposal facilities for contaminated waste
- Specimen Collection area (this may be located remotely to the Laboratory Unit or in Outpatient areas):
 - Reception and Waiting area
 - Patient toilets
 - Specimen collection cubicles with a workbench, space for patient seating and hand washing facilities
- Staff Areas including:
 - Offices and workstations
 - Meeting Rooms
 - Staff Room
 - Change Rooms with Toilets, Shower and Lockers.

Specimen Reception

The Specimen Reception area is where specimens for analysis are received, sorted and held temporarily before despatch into laboratory areas. Specimens may be received through a pneumatic tube system, couriers or delivered by staff.

The area will require specimen registration facilities which may include computerised/ barcode systems, sorting benches and a holding area for specimens including refrigerated holding if required. Following registration, specimens are transported to the relevant laboratory or area for processing and reporting.

Laboratories

Laboratories will be provided according to the service plan of the facility and may be open plan or enclosed specialist laboratories. Open plan laboratories are suitable for main stream processing such as Clinical Chemistry and Haematology. Laboratories are enclosed with walls and doors where work with hazardous material is undertaken requiring containment such as Microbiology, Anatomical Pathology or Virology/ Serology. These laboratories require special air-conditioning and exhaust arrangements from open plan areas.

The specimen work flow proceeds in an orderly path from Specimen Reception, to Sorting and initial processing, and then to specific laboratories for testing, analysis and reporting. Results may be automated and matched to the patient's electronic medical record, or printed and delivered to the various units by courier or automated delivery system.

Laboratory planning will need to include the following:

- Laboratory workbenches with space for equipment such as microscopes, chemical analysers, incubator/s and centrifuge/s
- Access to vacuum, gas and electrical services at the workbench
- Sinks with hot and cold water; may be used for the disposal of non-toxic fluids
- Hand basin with paper towel and soap fittings for staff hand-washing
- Emergency shower and eye flushing devices, with drainage to a separate holding area

Note: The size of the laboratory needs to be appropriate to the function and provide a safe working environment.

Blood Bank

In general blood and blood products are produced in a dedicated facility by a separate service provider, delivered to health institutions as needed and stored in the Blood Bank area. The Blood Bank area should be located in close proximity to Haematology for convenient processing. Blood and blood products must be stored in a secure, strictly controlled environment according to local and international standards. The area will contain temperature controlled refrigerators and freezers under the supervision of laboratory staff.

Support Areas

Support areas may be located centrally to serve all laboratories and avoid duplication of support rooms. Support areas will include:

- Cleaner's room
- Clean-up room/s for washing glassware, re-usable equipment and utensils used in processing and analysing specimens
- Sterilisation area for sterilising dishes and glassware
- Storage areas for reagents, flammable liquids, general and consumable supplies, refrigerated storage for slides and reagents
- Disposal facilities for contaminated waste that may include cytotoxic waste and radioactive waste if radioactive reagents are used
- Emergency shower and eyewash station, located with ready access to all processing areas.

Specimen Collection

Specimen Collection is an area where patient specimens are taken for laboratory testing, generally for outpatients; inpatient specimens are typically collected at the bedside. The area should be located with ready access to Outpatient areas. Specimens may be transported to the Laboratory unit for processing by a mechanical transport system such as a Pneumatic Tube system or by internal hospital courier. There will typically be a large volume of specimens for processing.

Staff Areas

Offices or workstations will be required for routine clerical/ administrative procedures, located in the staff accessed areas. Offices for the Manager/ Supervisors should be located in a staff accessible area away from the operational areas within the Unit; visitors to offices should not transit through laboratory areas. The provision of offices will depend upon the size of the Unit. An area for storage of stationery and files should be provided.

Access to a Meeting Room will be required for staff meetings and training purposes, which may be shared with an adjacent Unit.

A staff room will be required for staff meals and refreshments, and also provide for staff on duty after-hours.

Change areas for staff will include toilets, showers, handbasins and lockers. All technical staff working in this Unit must wear personal protective clothing and equipment, including laboratory coats, and eye protection in specimen processing areas.

Functional Relationships

External

The Laboratory Unit will have a close relationship with the following units for urgent tests and results unless point of care testing devices are installed within critical units or a rapid transport system is in place:

- Emergency Unit
- Intensive Care Unit/ Coronary Care Unit
- Operating Unit and Day Surgery/ Procedures Units
- Birthing Unit and Neonatal Nurseries
- Inpatient Units
- Outpatient Units
- Oncology Units including Radiotherapy and Chemotherapy
- Day Patient Units such as Renal Dialysis Unit and medical day chairs.

The key external functional relationships are demonstrated in the diagram below including:

- Access from Outpatients and Day Patient units to Specimen Collection through a public corridor
- Specimen Collection area may be located adjacent to Laboratories or in a remote location
- Indirect relationships between Laboratory Unit all Inpatient and Critical Care areas through public corridors; specimen transit may be automated
- Access through a staff/ service corridor for Supplies and Housekeeping including waste

Internal

Internally, the Laboratory unit will be arranged in zones with a clear flow of processing from Specimen Reception to the various Laboratories required for specific specimen testing. Support areas will be ideally located with ready access from all laboratory areas. Staff areas may be located in a discreet staff accessible zone, away from processing areas.

The preferred internal relationships are demonstrated in the diagram below and include:

- Specimen Reception at the Entry
- Controlled access at entry points to staff and Laboratory areas
- A specimen work flow from Specimen Reception, to Sorting/ Initial Processing, then to Laboratories
- Support areas located centrally to Laboratories at the point of use, and also at the perimeter for supplies and shared areas
- Staff areas including Offices and Meeting Room located in a staff zone accessible without traversing laboratory areas.
- Staff Change Areas located closer to the entry to the Unit for staff to put on protective attire on entry and remove on exit.

Functional Relationship Diagram

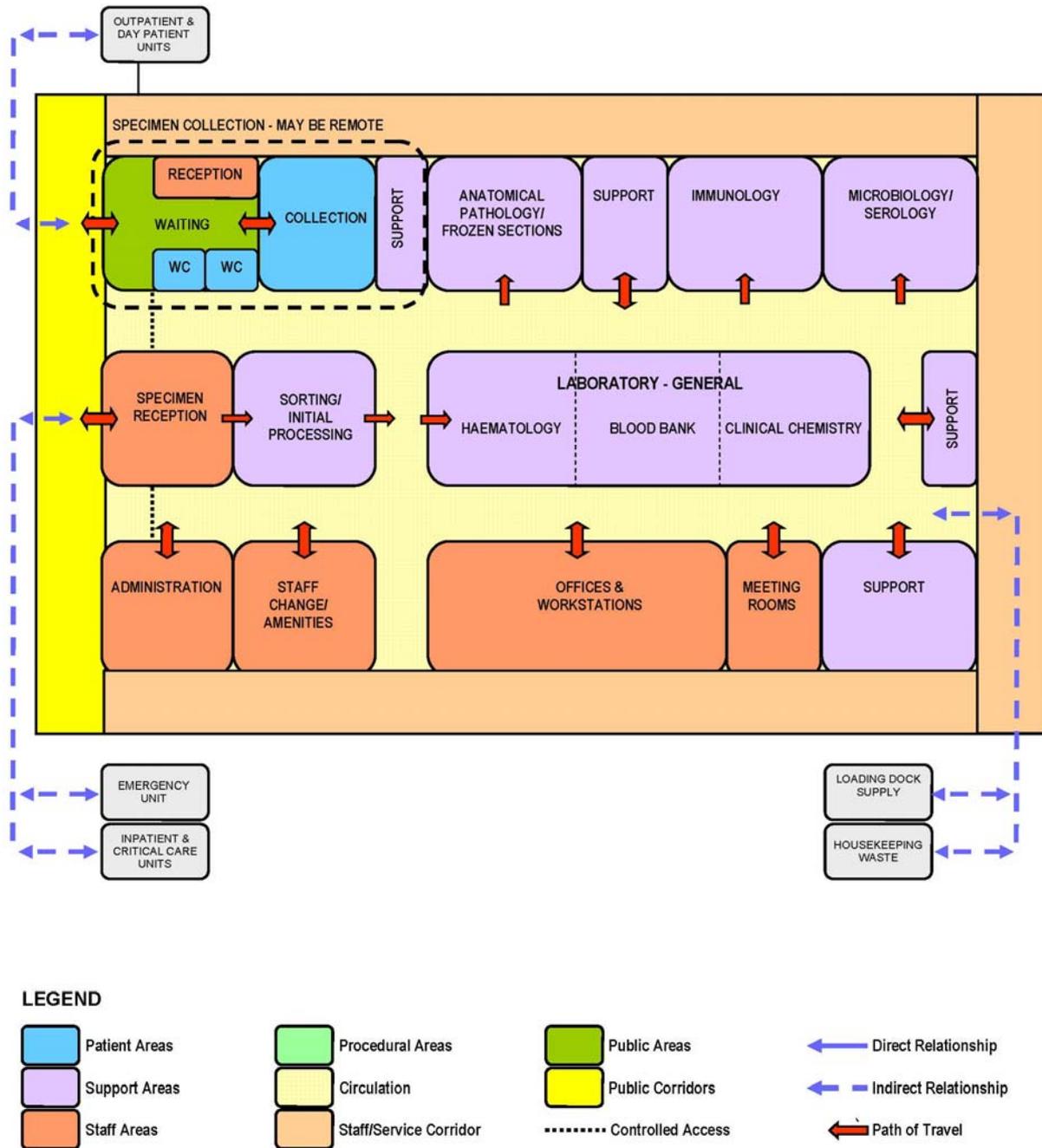


Figure 1 Functional Relationship Diagram:

3 Design

Environmental Considerations

Acoustics

Provide acoustic treatment for noise generating processing equipment including automated specimen analysers, washer/ decontaminators, sterilisers, refrigerators and freezers.

Consideration should be given to acoustic privacy in Offices, Staff Rooms and Meeting Rooms.

Acoustic provisions may include floor coverings, wall treatments, window coverings and ceilings selected for acoustic properties in addition to cleaning and maintenance attributes.

Natural Light/ Lighting

Natural lighting aids visual inspection and has positive morale on staff and is important in some laboratories and staff areas within the Unit. Where natural lighting is not possible, glazed panels should be considered. Automated specimen processing areas may be provided with glazed walls for open visibility.

Internal and task lighting must be sufficient for safe operation of equipment, use of computer screens and provide good visibility for digital displays on equipment.

Privacy

Visual and acoustic privacy must be considered where confidential conversations are likely to take place in offices and meeting rooms.

Specimen collection areas must provide privacy for patients in collection cubicles with screen curtains.

Interior Décor

The décor and design of the unit should create a pleasant, professional atmosphere without appearing institutional or industrial.

Space Standards and Components

Accessibility

Reception, Offices, Meeting rooms, Waiting areas and Specimen Collection areas should be designed to provide access for people in wheelchairs that may include staff or visitors.

Refer to Part C in these Guidelines - Access, Mobility, OH&S and local Accessibility Guidelines for further information.

Doors

Doors to enclosed Laboratories must be adequately sized to accommodate equipment located in the laboratory such as fume hoods and automated processing analysers.

Also refer to Part C – Access, Mobility, OH&S of these Guidelines.

Ergonomics/ OH&S

Consideration should be given to ergonomic functionality in the Unit. Laboratory benches, sinks and processing workstations should be provided at suitable working heights. Adjustable height work stations are recommended.

The following occupational health and safety issues should be addressed during planning and design for staff safety and welfare:

- Chemical agents used in analysers and cleaning/ decontamination processes and flammable liquids that involve specific chemical handling requirements (Refer to local regulations)
- Electrical and fire hazards related to equipment in use

- Biological hazards of contaminated material undergoing processing, which requires stringent infection control management.

Refer to Part C – Access, Mobility, OH&S of these Guidelines for more information.

Size of the Unit

The size of the Laboratory Unit will be dependent on the operational model adopted and the service to be provided by the Unit as determined by the Service Plan and Operational Policies of the Unit.

Schedules of Accommodation have been provided for typical hospital based units for Role Delineation levels 4 to 6 facilities.

Safety & Security

Safety provisions in the Laboratory Unit will include:

- Access control to prevent unauthorised entry to laboratory areas
- Security for staff working in the unit after hours particularly if the unit is located in an isolated position within the facility
- Emergency shower with eye-flushing device accessible from laboratory and specimen reception areas
- Safe storage and use for chemicals and reagents including flammable liquids
- Storage, handling and disposal for radioactive and cytotoxic materials including reagents and patient specimens, depending on the service provided
- Suitable non-slip floor finishes where water and chemicals are in use
- Equipment safety to prevent spills and accidents.

Finishes

Finishes should be selected with consideration to the following:

- Infection control and ease of cleaning
- Fire safety
- Durability
- Acoustic properties.

Floors should be water and chemical resistant, sealed and coved at the edges. Work surfaces should be smooth, impervious to moisture and chemical resistant.

Refer to Part C of these Guidelines and Standard Components for more information on wall protection, floor finishes and ceiling finishes.

Fixtures, Fittings & Equipment

Equipment, furniture and fittings shall be designed and constructed to be safe, robust and meet the needs of a range of users. All furniture, fittings and equipment selections for the Unit should be made with consideration to ergonomic and Occupational Health and Safety (OH& S) aspects.

Equipment such as analysers, incubators, centrifuges, refrigerators, freezers, cool rooms and specialised laboratory equipment will require services and installation according to manufacturers' specifications, in particular:

- Space requirements may vary according to equipment selected
- Structural assessment may be required for large equipment items such as automated laboratory analysers
- Space requirements for maintenance of equipment must be considered.

Window Treatments

Window treatment should be installed to external windows to control sunlight and glare to working areas of the Unit.

Building Service Requirements

Communications

Unit design should address the following Information Technology/ Communications issues:

- Telephones and video-conferencing capacity for meeting rooms
- Electronic Medical Records and inclusion of laboratory result reporting
- Data and communication outlets, wireless networks, servers and communication room requirements.

Heating, Ventilation and Air conditioning

The Laboratory Unit shall have appropriate air conditioning that allows control of temperature and humidity for the proper handling of specimens and equipment functioning.

Some laboratories will require special air-conditioning such as negative pressure or positive pressure. Anatomical Pathology and Microbiology laboratories will require negative pressure air-conditioning and exhaust to minimise odours and prevent aerosol contamination of adjacent areas.

Offices, open plan workstation areas, Meeting Rooms and Staff Rooms should be air-conditioned for the benefit of staff and visitors to the Unit. The local or country specific mechanical requirements should be consulted.

Shielding and Radiation Safety

If radioactive reagents and materials are used they should be stored and disposal of in appropriately shielded containers and room. No special provisions will normally be required for waste specimens from most patients receiving low level isotope diagnostic material.

Pneumatic Tube Systems

The Laboratory Unit may include a pneumatic tube station, connecting key clinical units with the main support units as determined by the facility Operational Policy. If provided the station should be located in the Specimen Reception under direct staff supervision.

Infection Control

Infection Control measures applicable to the Laboratory Unit will involve proper handling of specimens to prevent contamination of staff. Standard precautions apply to the Laboratory Unit areas and personal protective equipment including protective clothing, gloves, masks, and eye protection will be available close to all processing areas.

It is recommended that in addition to hand basins, medicated hand gel dispensers be located strategically at Specimen Reception and in staff circulation areas.

Hand Basins

Hand hygiene is an essential element of infection control and handbasins will be required in:

- Specimen Collection areas
- Each laboratory or automated processing area
- Clean-up rooms.

For further information refer to Part D – Infection Control in these Guidelines.

4 Components of the Unit

Standard Components

The Laboratory will contain Standard Components to comply with details in the Standard Components described in these Guidelines. Refer to Standard Components Room Data Sheets and Room Layout Sheets.

Non-Standard Components

Non Standard rooms are identified in the Schedules of Accommodation as NS and are described below.

Laboratory - High volume analyser

The High volume Laboratory analyser is an automated analyser, consisting of multiple modules, depending on the required function that may process hundreds of specimens per hour. The analyser may be located in a large open plan area within the Laboratory Unit; the space required will be determined by the equipment selected. The Processor should be located with convenient access to Specimen Reception for efficient sample processing.

The equipment is automated and will require a temperature controlled environment along with services and data connections according to manufacturer's specifications. Access for installation and servicing should be available.

Laboratory - Physical Containment, high risk

The Physical Containment Laboratory will be a fully enclosed, strongly negatively pressured, HEPA filtered laboratory with entry via a dedicated airlock. The Airlock is moderately negative pressured with air flow towards the Laboratory. Doors between the Airlock and Laboratory are interlocking - only one can be open at one time. The Physical Containment laboratory is used for handling infective organisms such as HIV viruses, viral hepatitis and other infective agents and genetically modified organisms. Work inside the Laboratory will be undertaken in a biological safety cabinet. Physical containment Laboratories are classified according to risk of the agents used in them from lowest biosafety level 1 to highest biosafety level 4. These laboratories must be constructed to standards and are certified by an appropriate authority.

Requirements include:

- Air pressurisation to be monitored with a display and alarmed
- Walls, floors and ceiling finishes that are smooth, impervious to water chemical resistant and easily cleaned
- A hand basin and PPE within the laboratory
- Eye wash equipment within the laboratory
- All fittings within the laboratory must be able to be decontaminated and fumigated
- An autoclave
- A fail-safe communication system within the laboratory.

Pneumatic Tube Station

The Pneumatic Tube Station should be located at the Specimen Reception under the direct supervision of staff for urgent arrivals. The location should not be accessible by external staff or visitors.

Requirements include:

- The bay should not impede access within reception areas
- Racks should be provided for pneumatic tube canisters
- Wall protection should be installed to prevent wall damage from canisters.

Sorting / Processing

The Sorting area within the Laboratory includes labelling of specimens, sorting by specialty and laboratories, initial scanning or copying of requests.

Processing will include temporary holding in refrigeration, holding and packaging specimens for transfer to laboratories.

The Sorting/ Processing area will be located adjacent to the Specimen Reception and with easy access to the laboratories

The area will require:

- Workstations for data entry
- Holding areas for specimens awaiting transit to specialist internal laboratories or remote laboratories
- Scanning equipment
- Refrigerators and freezers in close proximity
- Incubator for microbiology samples
- Hand basin and sink within the initial processing area
- Clinical waste disposal
- Extraction for odours and fumes may be required.

5 Schedule of Accommodation

Laboratory Unit located within a health facility

ROOM/ SPACE	Standard Component Room Codes								RDL 4 Qty x m ²	RDL 5/6 Qty x m ²	Remarks
Entry/ Reception											
Specimen Reception/ Registration	sprec-i similar								1 x 12	1 x 20	Receiving, data entry for tracking
Pneumatic Tube Station	NS								1 x 1	1 x 1	
Sorting / Processing	NS								1 x 10	1 x 15	Preliminary processing, Includes dispatch area
Laboratory - General											
Laboratory - General	pthlb-mod-i similar								1 x 50		Clinical Chemistry, Haematology, Blood bank processing combined; RDL 5/6 separate labs
Haematology											
Specimen Reception	sprec-i similar									1 x 15	Receiving, sorting & preliminary processing
Laboratory - High volume analyser	NS									1 x 80	
Laboratory - Manual Testing	pthlb-mod-									1 x 25	
Lab Workstations - Microscopy	pthlb-mod-i similar									1 x 30	
Store - General	stgn-10-i									1 x 10	
Clinical Chemistry											
Specimen Reception	sprec-i similar									1 x 15	
Laboratory - High Volume Analyser	NS									1 x 50	
Lab Workstations - Chemistry	pthlb-mod-i similar									1 x 25	May include manual processing stations
Bay - Storage	bs-2-i									1 x 2	Equipment that needs to be located in the zone
Microbiology/ Serology											
Specimen Reception, sorting, set-up	sprec-i similar								1 x 10	1 x 30	Receiving, sorting & preliminary processing
Laboratory - Blood Culture	pthlb-mod-								1 x 15	1 x 15	Enclosed , Negative Pressure
Laboratory - Physical Containment	NS									1 x 25	Negative Pressure, includes biological safety cabinet/s; to comply with standards
Anteroom - Physical Containment Laboratory	anrm-i									1 x 6	For air pressurisation, PPE
Cool Room/ Refrigerator/s	corm-i									2 x 6	Separate clean and dirty cool storage
Laboratory - Incubators	pthlb-mod- similar									1 x 15	
Lab Workstations - Microscopy, Specimen reading	pthlb-mod-i similar									1 x 40	Enclosed, negative pressure
Laboratory - Mycology, Microscopy	pthlb-mod-i similar								1 x 15	1 x 25	Enclosed, negative pressure

ROOM/ SPACE	Standard Component Room Codes								RDL 4 Qty x m ²	RDL 5/6 Qty x m ²	Remarks
Anatomical Pathology											
Specimen Reception	sprec-i similar									1 x 15	Receiving, sorting & preliminary processing
Laboratory - Cytology	pthlb-mod- similar									1 x 20	
Laboratory - Immuno-histochemistry (IHC)	pthlb-mod- similar									1 x 15	
Lab Workstations - Blocking & Embedding	pthlb-mod- similar									1 x 15	
Lab Workstations - Chemical Prep & Staining	pthlb-mod- similar									2 x 20	
Lab Workstations - Microscopy	pthlb-mod- similar									1 x 40	
Laboratory - Cutting room	pthlb-mod- similar									1 x 40	
Laboratory - Tissue processing	pthlb-mod- similar									1 x 15	
Laboratory - Cryostat	pthlb-mod- similar							1 x 10		1 x 15	Frozen sections
Store - Samples, Slides & Specimens	stgn-20-i similar									1 x 20	
Bay - Storage	bs-2-i									1 x 2	Equipment that needs to be located in the zone
Clinical Immunology											
Specimen Reception	sprec-i similar							Shared		1 x 15	RDL 4 shared with main Specimen Reception
Laboratory - Antibody	pthlb-mod- similar									1 x 25	
Laboratory - Proteins, Allergy	pthlb-mod- similar							1 x 25		1 x 25	
Bay - Refrigerators - Freezers	bmeq-4-i similar									1 x 6	temperature monitored, alarmed
Blood Bank											
Specimen Reception	sprec-i similar							Shared		1 x 4	RDL 4 shared with main Specimen Reception
Laboratory - Processing Area	pthlb-mod- similar									1 x 25	RDL 4 processing done in Lab-General
Blood Products Cool Room/ Refrigerators	corm-i similar							1 x 2		1 x 6	
Blood Products Freezer/s	corm-i similar							1 x 1		1 x 6	
After-hours Blood Store	ahbbf-i							1 x 3		1 x 3	
Bay - Storage	bs-2-i									1 x 2	Equipment that needs to be located in the zone
Specimen Collection											
Reception	recl-12-i recl-15-i							1 x 12		1 x 15	
Waiting	wait-10-i wait-25-i							2 x 10		2 x 25	Separate Male/ Female waiting
Specimen Collection Cubicles	specc-i							2 x 9		4 x 9	
Toilet - Patient	wcpt-i							2 x 4		2 x 4	Separate Male/ Female
Toilet - Accessible	wcac-i							1 x 6		1 x 6	Optional

ROOM/ SPACE	Standard Component Room Codes								RDL 4 Qty x m ²	RDL 5/6 Qty x m ²	Remarks
Bay - Pneumatic Tube Station	NS								1 x 1	1 x 4	Optional, locate at Reception
Bay - Mobile Equipment	bmeq								1 x 4	2 x 4	Phlebotomy trolleys
Dirty Utility	dtur-s-i dtur-12-i								1 x 8	1 x 12	
Store - General	stgn-								1 x 6	1 x 12	Consumables, sterile stock
Support Areas											Shared between Laboratories
Bay - Emergency Shower and Eyewash	bese-1-i								1 x 1	5 x 1	Locate in each separate laboratory
Cleaner's Room	clrm-5-i								1 x 5	2 x 5	
Clean-up Room	clup-7-i clup-12-i								1 x 7	1 x 12	
Cool Room/s	corm-i similar								1 x 6	2 x 10	
Disposal Room	disp-5-i disp-10-i								1 x 5	1 x 10	
Freezers area	NS								1 x 3	1 x 10	
Sterilising Room	NS								1 x 7	1 x 12	adjacent to Clean-up
Store - Bulk	stbk-40-i similar								1 x 20	1 x 60	
Store - Chemical	stcm-i similar								1 x 4	1 x 9	
Store - General	stgn-8-i stgn-16-i								1 x 8	1 x 16	general supplies & consumables
Store - Photocopy/ Stationery	stps-8-i stps-10-i								1 x 8	1 x 10	optional
Store - Files	stfs-8-i stfs-10-i								1 x 8	1 x 10	optional
Offices & Staff Areas											
Meeting Room - Medium/ Large	meet-l-15-i meet-l-25-i								1 x 15	2 x 25	
Office - Single Person, 12m2	off-s12-i								1 x 12	1 x 12	Head of Department
Office - Single Person, 9m2	off-s9-i									4 x 9	Pathologists, include microscope station
Office, 2 Person Shared	off-2p-i									2 x 12	Clerical support
Office, 2 Person Shared	off-2p-i									6 x 12	Lab Managers & Supervisors, senior technician
Office - Workstation/s	off-ws-i								3 x 5.5	10 x 5.5	Technical staff for each specialty
Staff Room	srn-25-i								Shared		1 x 25
Property Bay - Staff	prop-2-i								2 x 2		Lockers, separate M/F areas
Change Room - Staff, (M/F)	chst-20-i									2 x 20	Includes Toilet, Shower and Lockers
Shower - Staff	shst-3-i								2 x 3		Separate M/F
Toilet - Staff	wcst-i								2 x 3	2 x 3	Separate M/F
Sub Total									390.5	1465.0	
Circulation %									25	25	
Area Total									488.1	1831.3	

Note 1: Offices to be provided according to the number of approved full time positions within the Unit

Also note the following:

- Areas noted in Schedules of Accommodation take precedence over all other areas noted in the FPU.
- Rooms indicated in the schedule reflect the typical arrangement according to the Role Delineation.
- Exact requirements for room quantities and sizes will reflect Key Planning Units identified in the Service Plan and the Operational Policies of the Unit.
- Room sizes indicated should be viewed as a minimum requirement; variations are acceptable to reflect the needs of individual Unit.
- Office areas are to be provided according to the Unit role delineation and number of endorsed full time positions in the unit.
- Staff and support rooms may be shared between Functional Planning Units dependent on location and accessibility to each unit and may provide scope to reduce duplication of facilities.

6 Future Trends

Laboratory practise is rapidly changing with advances in technology affecting the service delivery. Future trends include the following:

- As software capabilities continue to develop, clinical chemistry analysers will be able to offer increased testing speed and degree of automation
- Automation is progressing towards Total Laboratory Automation
- Software is becoming more sophisticated in linking analysers to laboratory information systems, ordering and reporting are becoming more automated
- Continued improvements to sample turnaround and throughput speed
- Analysers with specimen storage and retrieval capabilities
- Increase used of genetic testing and biopsy testing
- Increased use and accuracy of point of care devices.

All of the above may have a direct influence on the type of service to be offered and the amount of space required in future laboratories.

7 Further Reading

- Australasian Health Facility Guidelines, Part B Health Facility Briefing and Planning, 0550 - Pathology Unit, Revision 6, 2016 refer to <https://healthfacilityguidelines.com.au/health-planning-units>
- Building Type Basics for Research Laboratories, Daniel Watch. New York, NY: John Wiley & Sons, Inc., 2001.
- CDC (Center for Disease Control) US. Guidelines for Environmental Infection Control in Health-Care Facilities, US, refer to website <http://www.cdc.gov/hicpac/pubs.html>
- CRC Handbook of Laboratory Safety, 5th Edition, A. K. Furr. Boca Raton, FL: CRC Press, 2000 refer to <https://www.crcpress.com/CRC-Handbook-of-Laboratory-Safety-5th-Edition/Furr/p/book/9780849325236>
- ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories, 2005, refer to <https://www.iso.org/standard/39883.html>
- Laboratory Design Guide, 3rd Edition; Brian Griffin, Architectural Press, Elsevier UK, 2005
- The Clinical Biochemist Reviews, Clinical Chemistry Laboratory Automation in the 21st Century, David A Armbruster, David R Overcash and Jaime Reyes, 2014 Aug; 35(3): 143–153, refer to <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4204236/>
- The Facility Guidelines Institute (US), Guidelines for Design and Construction of Hospitals and Outpatient Facilities, 2014. Refer to website www.fgiguideelines.org



The International Health Facility Guidelines recommends the use of HFBS “Health Facility Briefing System” to edit all room data sheet information for your project.

HFBS provides edit access to all iHFG standard rooms, and departments, and more than 100 custom report templates.

HFBS Health Facility Briefing System



Briefing Module

The Health Facility Briefing System (HFBS) has numerous modules available via annual subscription. It suits healthcare Architects, Medical Planners, Equipment Planners Project Managers and Health Authorities.

Use the HFBS Briefing Module to quickly drag in health facility departments or pre-configured room templates from the iHFG standard, edit the room features such as finishes, furniture, fittings, fixtures, medical equipment, engineering services. The system can print or download as PDF more than 100 custom reports including room data sheets, schedules, and more...

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