

# Australasian Health Facility Guidelines

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## Part B - Health Facility Briefing and Planning 0490 – Hospital Mortuary / Autopsy Unit

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#### **Australasian Health Facility Guidelines**

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## 01 INTRODUCTION

### 1.1 PREAMBLE

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This Health Planning Unit (HPU) has been developed by the Australasian Health Infrastructure Alliance (AHIA). This revision has been informed by an extensive consultation process that was completed in 2020.

The document is intended to be used by design teams, project managers and end users to facilitate the process of planning and design.

### 1.2 INTRODUCTION

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This HPU outlines the specific requirements for the planning and design of Hospital Mortuaries and Autopsy Units.

As this document provides guidance on all levels of facilities, some aspects may not be appropriate to all hospitals. For example, only a small number of facilities within each jurisdiction will incorporate an Autopsy Unit and the provision of viewing areas within the Mortuary will be dependent on local operational policies.

This document should be read in conjunction with the AusHFG generic requirements and Standard Components described in:

- Part A: Introduction and Instructions for Use;
- Part B: Section 80: General Requirements;
- Part B: Section 90: Standard Components, Room Data and Room Layout Sheets;
- Part C: Design for Access, Mobility, Safety and Security; and
- Part D: Infection Prevention and Control.

The National Pathology Accreditation Advisory Council (NPAAC) publication 'Requirements for the Facilities and Operation of Mortuaries' (Third Edition 2013) has been extensively referenced in this HPU. These Standards are based on the international standard ISO 15189 Standard for Medical Laboratories. In New Zealand laboratories are accredited via International Accreditation New Zealand (IANZ) using ISO 15189 as their basis.

### 1.3 POLICY FRAMEWORK

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The policies and guidelines below provide a wide range of information on Hospital Mortuary / Autopsy Units and project staff are encouraged to familiarise themselves with this information. Service requirements for health jurisdictions may be further influenced by local policies and procedures.

Relevant policies and guidelines include:

- Australian Health Ministers' Advisory Council (AHMAC), 2002, The National Code of Ethical Autopsy Practice;
- National Pathology Accreditation Advisory Council (NPAAC), 2013, Requirements for the Facilities and Operation of Mortuaries (Third Edition 2013);
- National Pathology Accreditation Advisory Council (NPAAC), 2018, Requirements for the Retention of Laboratory Records and Diagnostic Material (Seventh Edition 2018); and
- WHO Regional Office for the Eastern Mediterranean, 1999, Ethical Practice in Laboratory Medicine and Forensic Pathology.

## 1.4 DESCRIPTION

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### DESCRIPTION OF HEALTH PLANNING UNIT (HPU)

The following definitions for mortuary and autopsy facilities are provided by the National Pathology Accreditation Advisory Council (2013).

**Mortuary:** A facility, one or more rooms or a building, which is used for the storage of bodies, including refrigerated body storage, and may include body viewing area, body preparation room and an Autopsy Unit.

**Autopsy Unit:** A facility, attached to a Mortuary, which is used to investigate the cause of death. It comprises an autopsy room, change room and observation area.

The Hospital Mortuary / Autopsy Unit fulfils three main functions which, as far as possible, should be kept physically separate. These functions are:

- the temporary storage of bodies;
- the viewing and/or identification of a body if included within the Unit; and
- investigation into the cause of death (autopsy) if an Autopsy Unit is included.

These functions must be able to be carried out simultaneously in safety and privacy.

The NPAAC (2013) describes three levels of Mortuary / Autopsy Units:

1. A level 1 facility is a mortuary without an autopsy unit. Examinations performed in this facility will be limited to external examination and/or other investigations such as post-mortem imaging and percutaneous needle sampling.
2. A level 2 facility is a mortuary with an autopsy suite without the infrastructure or personnel expertise to perform high risk or specialised autopsies. High risk autopsies are those known to or suspected to pose significant infectious, chemical, biological or radiation hazards;
3. A level 3 facility is an autopsy suite with the infrastructure and personnel expertise to perform high risk or specialised autopsies.

This HPU addresses the planning and design requirements for level 1 and 2 hospital-based facilities. For small rural health services, including Multipurpose Services (MPS), refer to HPU 350 Multipurpose Service Unit.

## 02 PLANNING

### 2.1 OPERATIONAL MODELS

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#### 2.1.1 Overarching Operational Model

Respect for the deceased and their relatives is an essential component of a Hospital Mortuary / Autopsy service. This will include recognition and respect for cultural and religious customs and practices.

#### 2.1.2 Body Holding

##### Operational Model

There are two options for refrigerated body holding including:

- a walk-in cool room for individual trolleys with or without racking; and
- a bank of refrigerated cabinets.

High volume facilities are more likely to provide a walk in cool room. Where only a few bodies are expected to be stored, a bank of cabinets may be the most viable option. Whichever option is selected, consideration should be given to the:

- security of bodies;
- whole-of-life implications of the two options including capital and operating costs;
- flexibility for expansion in a disaster situation;
- isolation and bariatric needs;
- the implications for body holding should the system fail; and
- expected length of retention of bodies to determine if freezing capacity is required.

##### Capacity Requirements

The number of body storage spaces must be justified in the Services Plan. The gross death rate for the health facility, the case mix of patients, population projections (in age groups) and autopsy rates for the next five to ten years, as well as the level of involvement in coronial autopsies will need to be considered when planning this Unit. As a general rule, space for four bodies per 100 beds is workable, excluding isolation storage.

Freezer storage is commonly provided for facilities that will need to hold bodies for longer periods of time. Smaller facilities may request to transfer a body to a larger facility if they cannot meet the requirements for longer term storage.

It will need to be determined whether the Unit will be used to accept and hold bodies pronounced 'dead on arrival' (DOA) at the hospital. It is not intended that funeral directors use hospital facilities to prepare a body for interment. However, in remote rural areas where there is no local funeral director and there is an agreement between the funeral director and health service, the occasional use of hospital facilities may be approved where it would save the provider from a lengthy trip, i.e. exceeding two hours, where the body could deteriorate due to increased temperatures.

##### Temperature Monitoring

NPAAC recommends that the refrigerated body storage area is maintained at a temperature between 2 to 6°C. Bodies must only be held in a body storage facility for a period of time determined by local jurisdictional legislation or the facility's policies. If long term storage is required, the body should be maintained at approximately -20°C.

The operating temperature of all body storage and freezing facilities must be monitored and connected to the Building Management System (BMS) to ensure the appropriate body storage temperature is maintained.

### 2.1.3 Viewing and Identification of Bodies

The provision of body viewing areas within the Mortuary Unit will depend on local jurisdictional policies. Some facilities are moving towards operational models whereby the viewing function occurs on the clinical unit.

Where viewing facilities are provided, it is essential that careful consideration is given to the provision of a separate access point for families, appropriate support areas and cultural considerations.

### 2.1.4 Autopsies

#### Coronial and Non-Coronial Autopsies

The function of the Autopsy Unit must be determined, i.e. will it undertake coronial and/or non-coronial / hospital autopsies.

A hospital autopsy, or non-coronial autopsy, is an examination performed with the consent of the deceased persons relatives / next-of-kin for the purpose of:

- confirming, investigating and examining the cause of death;
- providing correlation of clinical diagnosis and clinical symptoms;
- determining the effectiveness of therapy;
- studying the natural course of disease processes; and
- educating students and clinical staff.

This procedure is controlled by relevant State and Territory Acts that control post-mortem examinations, the use of human tissues for transplantation, and some aspects of deceased bodies being used for scientific, therapeutic and teaching purposes.

A coronial autopsy is an examination performed under the law and ordered by a state or territory Coroner for the purpose of:

- determining the cause, manner or mode (mechanism) and time of death;
- recovering, identifying and preserving evidentiary material;
- providing interpretation and correlation of facts and circumstances relating to the death;
- providing a factual, objective medical report for law enforcement, prosecution and defence authorities; and
- separating death due to disease from death due to external causes.

These deaths are known as 'reportable deaths' and become a 'Coroner's Case'.

#### Centralised Autopsy Models

Most jurisdictions are implementing centralised models for autopsy services whereby both coronial and non-coronial autopsies are centralised to a small number of facilities across a jurisdiction. Perinatal and paediatric autopsies are often centralised to tertiary / quaternary children's hospitals, and adult autopsies are commonly centralised to one or two facilities across the State. The key drivers for centralisation of these services include:

- efficient staffing models;
- availability of specialist staff;
- maintenance of specialist skills; and
- reduced numbers of non-coronial autopsies, partly due to improved diagnostics / medical imaging.



## Specialised Autopsy Functions

Other specialised autopsy functions may be provided at large tertiary / quaternary facilities and include:

- the demonstration of post-mortem findings in cases of clinical interest;
- high-risk autopsies, e.g. relating to bodies with or suspected to have infectious diseases or bodies exposed to chemical, biological or radiation hazards; and
- supporting specialised donor services, e.g. bone and eye banks.

### 2.1.5 Visual examinations

Selected health services may not carry out autopsies but still collect selected information for the purposes of documenting injuries and drawing blood samples etc. This examination is external and/or minimally invasive, does not involve examination of cavities and is generally undertaken in a procedure room.

The type of information collected in this examination includes photographs, images and percutaneous needle sampling. This type of examination will not require an Autopsy Unit.

## 2.2 OPERATIONAL POLICIES

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### 2.2.1 General

Operational policies have a major impact on the design requirements and capital and recurrent costs of health facilities and must be established at the earliest stage possible. Refer to Part B Section 80 of these Guidelines for a list of general operational policies that may apply.

The following clauses outline examples of policies that may be specific to a Hospital Mortuary / Autopsy Unit.

### 2.2.2 Hours of Operation

Local operational policies typically encourage bodies to be released between 8.30am and 4.00pm with exceptions, e.g. for cultural considerations and coronial cases.

The Hospital Mortuary will be accessible to authorised personnel (such as hospital staff, police and funeral directors) at all times.

### 2.2.3 Autopsy Consent

The process for obtaining agreement from next-of-kin for an autopsy to take place in non-coronial autopsies must be in accordance with current legislation and local policy requirements. Provision for storage of related documentation, e.g. special requests made by family members, will need to be considered.

### 2.2.4 Bariatric Bodies

Appropriate facilities for the storage and transport of bariatric bodies should be provided in all mortuaries. The number of bariatric spaces to be provided will depend on an analysis of the local catchment population and jurisdictional policies.

Racks provided within cool rooms are commonly provided in multiples of three and therefore, for large facilities with racks, bariatric capacity should be allocated in multiples of three. These can also be used to accommodate smaller bodies when not in use.

Other key requirements include hoists or lifters to manage the handling of bariatric bodies, suitable sized body bags, weighing scales and appropriate access to the various elements of the Unit with attention to turning circles and doorways. Ceiling-mounted lifters are recommended for optimal manual handling of bariatric bodies.

### **2.2.5 Body Reception and Release**

Bodies received into the Hospital Mortuary either from within the health service or from outside will be registered, tagged and recorded electronically, where available, in the Mortuary register.

There are variations between jurisdictions regarding how personal items are managed. Local policies generally instruct personal property to be kept on the clinical unit until collection by family or other. Where necessary, some items may be stored with the body in the body bag or located in a secure store within the Mortuary Unit.

For coronial autopsies, a safe is required for the secure storage of personal items for collection by the police.

Bodies may only be released from the Mortuary in accordance with local policies.

Funeral directors will need some means of announcing their arrival, particularly if no Mortuary staff are in attendance. They may also need access to the main hospital entrance to collect death certificates. Funeral directors should have their access to the Mortuary screened in such a way as to prevent a body transfer being seen by the public or hospital patients.

Where coronial cases are undertaken, CCTV is required for monitoring of the body from the time it arrives at the unit through to transfer from the unit.

### **2.2.6 Infants and Children**

In general, perinatal, infant and child deaths will be handled in the Hospital Mortuary in the same way as adults.

Fetuses may also be held in the body holding area of the Hospital Mortuary.

No additional or specialised body holding cabinets will be required. However, perinatal bodies stored on the same shelf or rack must be separated, e.g. through the use of tubs or body pouches.

Special requirements for infant viewing, such as a bassinet, may be available.

### **2.2.7 Infectious Bodies**

Depending on the known or suspected infectious status of the body, additional precautions may be required and should be maintained until the body is completely enclosed in a body bag of approved construction for transport.

A separate body holding room is not usually required for infectious bodies, however precautions are used according to local protocols, such as double bagging of the body or bagging in a yellow biohazard bag.

Where specialised facilities are required for high-risk autopsies, the Autopsy Unit ventilation for microbiological safety and containment should comply with Australian Standards and local requirements. These specialty autopsy services are usually centralised to one facility per jurisdiction.

Relevant protocols will need to be adhered to in relation to bodies that are suspected to have been exposed to chemical agents of concern, e.g. organophosphate poisoning. Refer to:

- Australian Government Department of Health, 2015, 'Australian Clinical Guidelines for Acute Exposures to Chemical Agents of Health Concern: A Guide for the Emergency Department Staff.'

### **2.2.8 Medical Imaging**

Medical imaging is being increasingly used to support autopsies and where appropriate enables the cause of death to be determined by external examination only.

General x-ray and photography are commonly used with CT being the contemporary standard to support coronial autopsies.

State-wide specialised facilities, including those providing coronial autopsies, may have dedicated medical imaging modalities, including fixed general x-ray, however most facilities will use mobile general x-ray and access medical imaging units outside of usual operating hours.

Babygrams and photography are routinely used in perinatal autopsies.

### **2.2.9 Instrument Cleaning and Reprocessing**

Not all reusable instruments used in the Autopsy Unit are required to be “sterile” and most instruments can be washed or disinfected within the autopsy room. Where sterility is required, reusable instruments will be sent to the Sterile Supply Unit in accordance with local protocols.

Separate items are used for some high-risk autopsies, e.g. Creutzfeldt-Jakob Disease (CJD) cases and for perinatal or paediatric autopsies with the use of disposable items where appropriate.

Reprocessing facilities, including any washer or disinfectant installed in the autopsy unit, must comply with AS/NZS 4187 Reprocessing of reusable medical devices in health services organisations (Standards Australia).

### **2.2.10 Organ Tissue and Tissue Retention and Disposal**

Residual organs and tissue following a hospital autopsy must be respectfully, and culturally appropriately, disposed of, in accordance with the wishes of the next-of-kin and/or hospital policies and relevant statutory guidelines.

The retrieval, retention and disposal of organs and tissues used for diagnosis, research or educational purposes must comply with all Australian Government, jurisdictional and local requirements governing such practices.

Residual tissues are usually retained for up to three months following issue of the autopsy report prior to being sent for cremation by a funeral director or the hospital, depending on the next-of-kin's wishes. Reports often take two to three months to be completed and therefore tissues are often stored for up to six months. For homicide cases, tissues are retained until the case is heard and therefore longer-term storage is required within the unit.

Records should be kept of organs and tissues retained for microscopic or other examination after completion of the autopsy. Sufficient storage space, with appropriate level of ventilation or extraction systems, will be required for storage of formalin-fixed tissues and whole organs.

### **2.2.11 Personal Protective Equipment (PPE)**

Before entering the Autopsy Unit all staff should change into protective clothing. Gowns, waterproof aprons and boots are minimum standards, and the use of surgical scrubs, masks, wraparound eye protection and heavy-duty gloves are also required. Facilities for cleaning and storing reusable clothing, holding personal clothing, storage of clean protective clothing and the disposal of used items will be required.

‘Specialised PPE’ is used for high risk autopsies.

For further details of PPE requirements, refer to local health jurisdiction policies and NPAAC, 2013, Requirements for the Facilities and Operation of Mortuaries.

### **2.2.12 Viewing**

As noted above the provision of body viewing areas within the Mortuary Unit will depend on local jurisdictional policies.

An appropriately skilled member of staff should be readily available throughout the viewing process to provide assistance or advice, if needed, but should not intrude into the privacy of the family unless they are responding to a request. Wherever possible, Aboriginal families should be offered the opportunity to have an Aboriginal Health Worker (or equivalent) present. For coronial cases, a social worker or counsellor will be available at all times.

Body viewing is an essential part of the mourning process. Sufficient space and amenity will be needed to accommodate the cultural and/or religious needs of family groups which in some cases may include large groups.

### **2.2.13 Environmental Services**

Clinical waste must be bagged in clearly labelled biohazard bags in accordance with local waste management policies. Waste, including used linen, will be held in the disposal room. A linen bay will be available to store clean linen. The storage and disposal of formalin and other chemicals should be in accordance with health service guidelines and relevant legislation.

Soiled, reusable autopsy clothing and other fabrics should be dealt with in accordance with health services linen policy.

Cleaning of the Hospital Mortuary / Autopsy Unit will be required and is likely to involve both Mortuary staff (technical areas) and environmental services staff (such as shared areas). Cleaning materials and equipment will be stored in a cleaner's room.

### **2.2.14 Staffing**

The staff working in or visiting the Mortuary may include:

- part-time or full-time Mortuary attendant, technicians and scientists;
- pathologist(s) and other clinicians;
- administration staff;
- porters;
- radiologists
- social workers, counsellors and pastoral care;
- students;
- environmental services staff;
- ambulance officers;
- funeral directors;
- researchers;
- relatives, for viewing and identification purposes; and
- police officers conducting coronial enquiries.

## **2.3 PLANNING MODELS**

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### **2.3.1 Location**

The Hospital Mortuary / Autopsy Unit is an important part of the health service, with particular needs for security and privacy. The adjacencies with other services need to be carefully considered during planning and design as some collocations are unsuitable.

It is desirable that the Unit:

- be located in the same building as the main health facility to ensure that there is no need for additional external traffic weather protection and the movement of bodies is discreet;
- not be located too close to any public area of the Hospital to ensure it is not visible to the general public and avoid sounds and odours travelling to clinical areas; and
- be located at ground level to allow easy and discrete access for ambulances, police and funeral director vehicles to deliver and/or remove bodies via the body reception area.

The proposed location of the Unit should also address local cultural considerations. Where possible access to outdoor space from the waiting / viewing areas is highly desirable.

## **2.4 FUNCTIONAL AREAS**

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### **2.4.1 Functional Zones**

The Hospital Mortuary / Autopsy Unit may be divided into the following functional zones:

- body reception;
- body holding;
- waiting / viewing accessible by the public (where provided); and
- autopsy unit (where provided).

### **2.4.2 Body Reception**

The body reception area provides the entry and exit point to the mortuary where bodies are signed in and out. Direct access is required in to the body holding area and out via the external access point for funeral directors' vehicles.

The area should include a hand wash basin, PPE station and a workstation for body registration and removal details. A parking space for transport trolleys and mobile hoist, if provided, will also be required. It is essential that the workstation is separate to the clinical areas.

Space for scales that are calibrated to weigh the bodies on trolleys and reflect the weight of the deceased only should be provided. These scales will be located on the floor, to ensure that trolleys can be wheeled directly onto them, with digital display at eye level. Alternatively, trolleys incorporating weighing scales may be used.

### **2.4.3 Body Holding**

The Body Holding area provides refrigerated space for the temporary storage of bodies. Consideration will need to be given to storage and handling of bariatric bodies, and for secure storage of coronial cases.

Most infectious bodies can be stored within the general cool room, assuming adoption of appropriate precautions, with the exception of bodies suspected to be infected with high risk pathogens in line with local policies.

Cabinet storage for bodies may be stacked vertically to optimise use of space. If this method is used, provision of suitable lifting equipment and consideration of equipment turning circles is required.

To assist in providing flexibility for future growth, a mixture of stacked and trolley storage may be provided. As demand increases, trolley storage areas can be converted to stacked storage areas.

Manoeuvring space will be required in front of refrigerated cabinets to insert and withdraw the trays.

External access to the refrigeration compressors is required for service or maintenance.

### **2.4.4 Waiting / Viewing**

Where viewing is provided as part of the Mortuary Unit, a discrete entrance from the main hospital to the Mortuary / Waiting area for family members, police and others is required.

The waiting area should be located to ensure that it is not visible to the public. Access to an interview room should be provided for confidential discussions with police or staff. This may be provided via a collocated unit where appropriate.

The waiting area should provide direct access into the viewing room. For large units where more than one viewing room is provided, a series of 'sub-wait' areas may be provided, collocated with each viewing room.

There should be no access to other zones of the Mortuary / Autopsy Unit for the public. To achieve this, the viewing room will have dual access from the waiting area and from the body holding or reception area. It is important that the deceased is not visible from the waiting area as some family members will choose to not view the body.

An accessible toilet should be available either within or close-by the Unit. Where possible a shared approach with other departments should be adopted.

Access to outdoor areas is desirable, also as a strategy to provide additional space to accommodate larger families.

The design of the unit should consider local cultural requirements including in relation to garden areas and art work.

#### **2.4.5 Autopsy Unit**

The optimal arrangement of the autopsy room and its relationship to the observation area will depend on the purpose of the room, i.e. whether it will be used for coronial or non-coronial autopsies.

Entry to the autopsy room/s will be via staff change rooms and an anteroom, located to prevent contaminated fluids being transmitted from dirty to clean areas within the autopsy suite. Following completion of the autopsy, staff will move from the 'clean up' area, to the boot wash area and handwashing bay, all located within the autopsy room. They will then exit the autopsy room via the anteroom, where they will remove their boots and dispose of PPE accordingly, prior to exiting the suite via the change rooms.

The autopsy table and body lifter should have provision for bariatric bodies.

Refer to the AusHFG Standard Component Mortuary - Autopsy Room for further detail.

Depending on the size of the Unit, staff areas may comprise of workstation areas, and amenities. Staff work areas will be required for use by the pathologist, mortuary staff and police for a variety of administrative tasks and for confidential telephone calls.

Facilities for staff refreshments will generally not be provided in the Unit unless it is large enough to justify its own staff room.

## **2.5 FUNCTIONAL RELATIONSHIPS**

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### **2.5.1 External**

Refer to Section 2.3.1 regarding the optimal location for Hospital Mortuary / Autopsy Units.

The volume of specimens transferred between the autopsy units and pathology unit does not usually justify the cost of installing a pneumatic tube connection.

It is desirable for the autopsy unit to be closely located to pathology, but direct access is not required.

### **2.5.2 Internal**

Key internal functional relationships include:

- direct access from the hospital corridor to the body reception area;
- direct access from the body reception area to the body holding area and external area for funeral directors' vehicles and ambulance parking bays;
- the viewing room requires direct access from the body holding area and family waiting area, whilst ensuring there is no visibility by the public into the body holding area at any time; and
- the Autopsy Unit will be accessed from the change room via an anteroom so that the transition from clean to dirty areas can be facilitated.

## 03 DESIGN

### 3.1 ACCESS

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Direct internal access is required:

- from the Hospital for authorised staff and the delivery of the body; and
- for relatives of the deceased from all relevant areas of the hospital to the mortuary waiting / viewing area. This access will be separated from other access points to the mortuary.

Direct external access is required for:

- funeral directors for vehicle parking and discrete, weather protected, facilities for the collection and delivery of bodies;
- ambulances delivering bodies “dead on arrival” if required; and
- police vehicles.

Access for people with disabilities will be required to the Waiting / Viewing Areas.

External wayfinding will require signage. The strategy should consider the sensitive nature of this service.

### 3.2 DISASTER PLANNING

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Refer to local jurisdictional policies regarding disaster management procedures.

When units are over capacity transport to other facilities is usually the first option with temporary facilities, e.g. portable cool rooms, used where required.

Consideration may be given to the use of an “open plan” cool room for body trolleys. This could provide more flexibility for additional bodies in a disaster situation.

Consideration should also be given in the design to the placement of refrigerated containers with three phase power outlets to provide surge capacity, e.g. pandemic planning or natural disasters with multiple fatalities.

For further information refer to:

- Part C: Design for Access, Mobility, Safety and Security; and
- Part B: Section 80 General Requirements.

### 3.3 INFECTION CONTROL

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#### 3.3.1 General

Autopsy practices will minimise the risk of exposure for healthcare workers. When handling the body of a deceased person, or when undertaking post mortem examinations, standard precautions will be used.

Depending on the known or suspected infectious status of the body, additional precautions may also be needed. All bodies that are removed from the Hospital Mortuary will be secured in an approved body bag that prevents leakage of body exudate or other substance.

Autopsies, presenting possible or known high-risk hazards, should only be performed in appropriate facilities. This facility is not normally provided in Autopsy Units located in hospitals.

It is essential the Unit design contributes to the control of infection by way of:

- separation of clean and dirty flows throughout the unit with clear transition zones;

- a ventilation system for the Autopsy Suite that minimises the spread of airborne pathogens and is isolated from other ventilation systems;
- impervious and easy to clean surfaces and materials;
- availability of suitable PPE and body storage bags;
- access to hand hygiene facilities;
- monitoring of all body storage facilities to ensure they are operating within normal limits;
- separation of clinical and office areas; and
- provision of suitable waste receptacles to contain waste as per local policies.

The following references are recommended:

- Part D: Infection Prevention and Control; and
- NPAAC 2013, Requirements for the Facilities and Operation of Mortuaries.

### **3.3.2 Cleaning**

Particular consideration needs to be given to the cleaning of the Autopsy Unit. This area has unique requirements and work areas and floors will be hosed down following an autopsy. In addition, procedures for disinfection and the cleaning of instruments and equipment will be needed. Refer to Section 2.2.9 for further detail.

Layout, fittings, furnishings, floor coverings and detailing can have a significant impact on the ease of cleaning and maintenance.

Luminaires will need physical cleaning and possible disinfecting to prevent the spread of microbes. The external surfaces of lighting should be smooth and free from apertures and crevices which are difficult to clean.

## **3.4 ENVIRONMENTAL CONSIDERATIONS**

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### **3.4.1 Acoustics**

There are a number of acoustic issues to be considered.

It is essential that noise generated within the Autopsy Unit is not be heard in the Waiting / Viewing areas.

An intercommunication system should be fitted between the autopsy room and observation area for communication between pathology staff and students, police or others.

Pathologists usually dictate autopsy findings in a separate room given the many “hard” surfaces in autopsy rooms can interfere with voice clarity and create an echo effect.

### **3.4.2 Interior Décor**

The environment will provide a suitable workplace for staff while providing a serene environment for the bereaved.

The use of colour and artwork should be considered within the waiting / viewing areas, incorporating culturally sensitive approaches.

The interior decor of other sections of the Unit will be determined largely by the strict regulations regarding the control of infection and the needs for cooling and ventilation.



## **3.5 SPACE STANDARDS AND COMPONENTS**

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### **3.5.1 Human Engineering**

Human engineering describes those aspects of design that permit effective, appropriate, safe and dignified use by all people, including those with disabilities. It includes occupational ergonomics, which aims to fit the work practices, furniture, fittings and equipment (FF&E) and work environment to the physical and cognitive capabilities of all persons using the building.

As the requirements of work health and safety (WHS) and antidiscrimination legislation will apply, this section needs to be read in conjunction with:

- AusHFG Part C: Design for Access, Mobility, Safety and Security; and
- NPAAC, 2013, Requirements for the Facilities and Operation of Mortuaries.

### **3.5.2 Ergonomics**

Mortuaries should be designed and built in such a way that staff, visitors and maintenance personnel are not exposed to injury. Examples include:

- the layout of rooms, such as the Autopsy Room, ensures that equipment is within easy reach;
- containers for sharps are located to facilitate their disposal at the point of generation; and
- providing equipment to reduce the risk associated with manual handling that may include a ceiling-mounted body lifter with capacity to manage bariatric bodies.

### **3.5.3 Building Elements**

Building elements include walls, floors, ceilings, doors, windows and corridors and are addressed in detail in AusHFG Part C of these Guidelines.

Doorways must be sufficiently wide and high to permit the manoeuvring of trolleys, wheelchairs and equipment without risk of damage or manual handling risks.

The following guidelines address the requirements of most of the relevant building elements:

- AusHFG Part C: Design for Access, Mobility, Safety and Security; and
- NPAAC, 2013, Requirements for the Facilities and Operation of Mortuaries.

## **3.6 SAFETY AND SECURITY**

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### **3.6.1 Safety**

Consider:

- choice of floor covering, using non-slip flooring;
- adequate drainage with appropriately filtered traps;
- protrusions or sharp edges;
- height adjustable equipment, e.g. autopsy tables and workstations;
- work areas of sufficient size to allow staff to work in an uncrowded environment; and
- fittings located well above floor level and/or are waterproof.

### **3.6.2 Manual Handling**

It is essential that the size and configuration of space and equipment in the Mortuary / Autopsy Unit allows room for manoeuvring trolleys and safe body handling. Particular consideration should be

given to the increasing proportion of bariatric cases and the need for suitable equipment to manage these bodies.

### 3.6.3 Standards and Codes

Australian Standards applicable to safety and security are:

- Standards Australia, 2010, AS/NZS 2243.3: 2010 Safety in laboratories;
- Standards Australia, 2017, AS 1940:2017 The storage and handling of flammable and combustible liquids; and
- Australian Government Department of Health, National Industrial Chemicals Notification and Assessment Scheme (NICNA), Formaldehyde Safety for Workers.

### 3.6.4 Security

Security issues specific to the Hospital Mortuary / Autopsy Unit include:

- ensuring there is controlled access to the Unit and to staff-only areas such as the Autopsy Unit and body holding area. The use of intercoms and CCTV may be required. Where coronial cases are undertaken CCTV will be required for monitoring of the body from the time it arrives at the unit through to transfer from the unit;
- a means of recording staff access to the unit. Access control may be used to control access and also for collecting this information;
- safe storage for the belongings of the deceased (depending on local operational policies);
- processes to manage specimens removed during autopsy (for toxicology, microscopy etc);
- a need for fixed and/or mobile duress alarms in interview and body viewing rooms;
- additional security requirements, should the Unit be required for coronial cases;
- lockers for staff to secure their valuables while working in the Unit; and
- access and egress, particularly as staff arrive at and leave the Unit at night and after hours.

In some jurisdictions, a dedicated and independent IT connection to off-site servers and resources may be required by Police for confidential data transfer.

### 3.6.5 Body Identification

Bodies to be stored in the Hospital Mortuary should have some form of indelible label, securely affixed, which records the full name of the deceased and at least one other identifier (date of birth, unit record number). This will enable identification of the deceased with certainty.

Secure identification information should also be fixed to the exterior of the body bag or shroud enclosing the deceased. Body receiving and despatch will be recorded.

Local operational policies will need to be adhered to regarding body identification for coronial cases.

## 3.7 FINISHES

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For detailed information relating to finishes refer to the relevant AusHFG Standard Components and AusHFG Part C.

### 3.7.1 Ceiling Finishes

All ceilings must be washable, impermeable and non-porous.

### 3.7.2 Floor Finishes

Non-slip flooring is essential for all wet areas. The floor surface should be impervious, resistant to damage from chemicals and corrosives, be easy to clean, sealed with coving at the edges to the height of benches and have adequate drainage.

Floors should have drains with appropriately filtered traps which allow for the entire unit to be hosed down when necessary, and the floor able to withstand copious amounts of water that can be drained away quickly.

Carpeting may be used in the waiting rooms.

### 3.7.3 Wall Protection

The wall surfaces in the autopsy and body holding areas should be washable and/or scrubbable. Wall protection is recommended as the area is subject to damage from trolleys.

Pressurised water sprays should not be used in the Autopsy Room because of the dangers of aerosol contamination, but as most surfaces are frequently hosed down, it is important that all surfaces are impervious to water and stains.

## 3.8 FIXTURES, FITTINGS AND EQUIPMENT

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The Room Data and Room Layout Sheets in the AusHFG contain many of the standard rooms as described in the HPU, including details relating to fittings, fixtures and equipment.

For more detailed information refer to the Room Data Sheets (RDS) and Room Layout Sheets (RLS) and AHIA AusHFG, 2018, Part C.

### 3.8.1 Equipment - General

All items of equipment will need to be itemised and larger items measured during the design phase to ensure:

- it can be suitably accommodated to provide for its operation and maintenance;
- equipment requiring services such as water and special power are understood and included in project documentation;
- doors are sized to allow passage of equipment;
- heat loads are estimated and catered for; and
- weight loads are estimated and checked structurally.

The autopsy table may be a fixed or mobile unit. Some units use the same storage trolley used in the body hold area, others use affixed air extraction table complete with drains, spray hose and air hose. This is important to understand as the mobile unit needs to slide and lock into the sinks for cutting and examination areas behind the head of the body. Power and air suspended from the ceiling, over the head end of the trolley, may be needed to operate essential equipment.

### 3.8.2 Laboratory Furniture

Where necessary, design must comply with Standards Australia, 2010, AS/NZS 2982:2010 Laboratory design and construction (SAI GLOBAL).

### 3.8.3 Safety, Showers and Eye Washes

Safety shower and eye wash equipment must be readily accessible and should be supplied with potable water. Eye wash equipment should permit a constant flow of water with hands-free taps available.

For details regarding location and other requirements also refer to Standards Australia, 2010, AS/NZS 2982:2010 Laboratory design and construction.

## **3.9 BUILDING SERVICE REQUIREMENTS**

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### **3.9.1 Air-conditioning, Heating and Ventilation**

The temperature of the Autopsy Room should be maintained to suit the activity, noting that staff will be wearing a significant amount of PPE.

The ventilation system for the Hospital Mortuary / Autopsy Unit should be designed to minimise the spread of odours and airborne pathogens by being isolated from other ventilation systems.

The air-handling system in autopsy rooms will need to be negative pressure relative to adjacent areas. Exhausts will need to be suitably filtered and discharged in a manner that will not contaminate any adjacent area or system. Refer to relevant jurisdictional engineering services guidelines for further information.

### **3.9.2 Alarms**

The operating temperatures of all cooled facilities should be continuously monitored and fitted with alarms which are activated when the temperature moves outside of predetermined ranges.

### **3.9.3 Fire Safety**

All flammable liquids should be stored in accordance with local policies.

### **3.9.4 Hydraulic Services**

Backflow prevention or a physical discontinuity to the water supply in the Autopsy Unit should be provided.

Suction should be provided to remove body fluids as required.

### **3.9.5 Lighting**

Adequate lighting should be available in all areas and will need to be of various types dependent on the task. Surfaces should be glare-free particularly at eye height for those working on dissections.

The main lighting requirements in the Autopsy Room are:

- efficient, shadow-free lighting for the critical examination and dissection of the body;
- sufficient light for the correct manipulation of the instruments;
- characteristics of clinical colour rendering;
- even distribution of luminance throughout the non-working areas;
- walls that do not show reflections, particularly at eye height of staff when working; and
- all light fittings in the Autopsy Room should be splash and dust proof.

### **3.9.6 Power Supply**

Power supply outlets must be protected from wetting by having protective covers. An emergency back-up system for the power supply should be available for refrigeration, high priority equipment and illumination.

As trolleys require recharging, the trolley bay will need power outlets. These trolleys cannot be stored in refrigerated areas.

### **3.9.7 Trade Waste**

The trade waste plumbing and drainage system must be designed to meet the requirements of the relevant sewerage authority and health jurisdictions. Information regarding chemicals and body fluids to be used and discharged must be provided by the client to the hydraulics engineer.

## 04 COMPONENTS OF THE UNIT

### 4.1 STANDARD COMPONENTS

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Rooms / spaces are defined as:

- standard components (SC) which refer to rooms or spaces for which room data sheets, room layout sheets (drawings) and textual description have been developed;
- standard components – derived rooms (SC-D) are rooms, based on a SC but they vary in size. In these instances, the standard component will form the broad room 'brief' and room size and contents will be scaled to meet the service requirement;
- non-standard components which are unique rooms that are usually service-specific and not common.

The standard component types are listed in the attached Schedule of Accommodation.

The current Standard Components can be found at:

<https://www.healthfacilityguidelines.com.au/standard-components>

### 4.2 NON-STANDARD COMPONENTS

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#### 4.2.1 Observation Area

##### Description and Function

Visitors to the Unit will primarily be students, medical officers and police in coronial cases. A separate observation area with its own entrance and physical separation from the Autopsy Room will enable procedures to be viewed without placing the audience at risk and without contaminating the autopsy.

The orientation of the observation area to the autopsy room will depend on the purpose of the room, i.e. for non-coronial autopsies viewing of the organs is more important, however for coronial cases police will prioritise the viewing of injuries on the body.

##### Location and Relationships

- direct oversight of the Autopsy Room; and
- direct access to a staff toilet (in case of physical reaction to the autopsy).

##### Considerations

An intercommunication system would be fitted for the purposes of communication between the two spaces. Non-reflective glass should be used.

A raised floor is recommended to enable maximum view of autopsy examination.

#### 4.2.2 Procedure Room - Mortuary

##### Description and Function

Selected health services may not conduct autopsies but may still collect selected information for the purposes of documenting injuries and drawing blood samples etc. This examination is external only and includes photographs, images and percutaneous needle sampling. Inclusion of this room is optional and dependent on a demonstrated need. Functions and activities include:

- washing bodies;
- external examination of bodies;
- preparation of bodies prior to viewing;
- storage of equipment and consumables associated with examinations; and

- hand washing.

**Location and Relationships**

Direct access from the Body Holding area.

**Considerations**

Mechanical extract ventilation needed to manage fumes and odours.

## 05 APPENDICES

### 5.1 SCHEDULE OF ACCOMMODATION

The schedule of accommodation below includes recommended areas for all elements of a Mortuary / Autopsy unit as described above. Project teams will need to adjust the area allocations to align with the proposed scope of the unit. Not all facilities will include autopsy units and body viewing areas.

The capacity of each area will also need to be confirmed on a project-by-project basis and spatial allocations adjusted accordingly. This is particularly relevant to the capacity of the body holding area, number of autopsy rooms to be provided and number of viewing rooms required.

External areas are not included in the schedule of accommodation but will need to include a vehicle bay, in an external weatherproof area. This must be adjacent to the Mortuary and will provide waiting space and parking for funeral directors' vehicles and other vehicles, screened from public view. Where viewing facilities are provided it is highly desirable that access to an outdoor space is provided off the public waiting area.

For recommended spatial allocations relating to small rural health services, including Multipurpose Services (MPS), refer to HPU 350 Multipurpose Service Unit.

The 'Room / Space' column describes each room or space within the Unit. Some rooms are identified as 'Standard Components' (SC) or as having a corresponding room which can be derived from a SC. These rooms are described as 'Standard Components –Derived' (SC-D). The 'SD/SD-C' column identifies these rooms and relevant room codes and names are provided.

All other rooms are non-standard and will need to be briefed using relevant functional and operational information provided in this HPU.

In some cases, Room / Spaces are described as 'Optional' or 'o'. Inclusion of this Room / Space will be dependent on a range of factors such as operational policies or clinical services planning.

#### Body Reception

AusHFG Room Code	Room / Space	SC / SC-D	Qty	m2	Remarks
MOR-BR	Body Reception Area	Yes	1	7	Entry / exit point for signing bodies in and out.
BHWS-B	Bay - Handwashing, Type B	Yes	1	1	
	Discounted Circulation			20%	

**Body Holding**

AusHFG Room Code	Room / Space	SC / SC-D	Qty	m2	Remarks
MOR-BH	Mortuary -Body Holding	Yes	1	24	May be provided as a bank of refrigerated cabinets or walk in cool room. This standard component assumes 9 individual body cabinets (3x3 tiers) with one tier providing bariatric capacity. Space allocation includes manoeuvring/ loading space. 12m2 recommended for storage of 3 bodies, 45m2 for 21 bodies and 60m2 for 36 bodies. Includes hand wash basin.
BMEQ-4	Bay - Mobile Equipment	Yes	1	3	For ward trolley and/or mobile lifting equipment
BPPE	Bay - PPE	Yes	1	0.5	
BLIN	Bay - Linen	Yes	1	2	
CLRM-5	Cleaners Room	Yes	1	5	Shared with Autopsy Suite if provided.
DISP-8	Disposal Room		1	8	Shared with Autopsy Unit if provided. Area allocation will depend on size of unit and provision of autopsy service.
	Discounted Circulation			20%	

**Waiting / Viewing**

The inclusion of a waiting / viewing area will depend on local operational policies. Some facilities are moving towards operational models whereby the viewing function occurs on the clinical unit.

The SOA below assumes one viewing room is provided. For large units where more than one viewing room is required, a series of 'sub-wait' areas may be provided, collocated with each viewing room.

AusHFG Room Code	Room / Space	SC / SC-D	Qty	m2	Remarks
MOR-W	Mortuary - Waiting	Yes	1	9	Accommodates up to 5 people, includes optional water dispenser. Access to outdoor area is highly desirable.
MOR-VR	Mortuary - Viewing Room	Yes	1	8	Accessed from viewing room and cool store.
BS-1	Bay - Storage	Yes	1	1	Viewing linen / apparel. Can be shared between multiple viewing rooms or space may be incorporated within the viewing room for services with one viewing room only.
	Discounted Circulation			20%	



## Autopsy Unit

The inclusion of an autopsy unit will depend on the scope of the project, acknowledging that most jurisdictions are implementing centralised models for autopsy services whereby both coronial and non-coronial are centralised to a small number of facilities across a jurisdiction.

The SOA below assumes the provision of one autopsy room. This will need to be adjusted to suit larger facilities.

An optional CT room and associated support areas may be considered for specialised / coronial units. If this is included in scope refer to HPU 440 Medical Imaging Unit.

AusHFG Room Code	Room / Space	SC / SC-D	Qty	m2	Remarks
CHST-10	Change - Staff (Male/ Female)	Yes	2	8	Male and female (if required) includes property locker (full length lockers and hooks), shower, toilet and bench.
ANRM	Anteroom	Yes	1	6	Include area to don / doff boots, hand wash basin, hooks, dirty linen skips.
MOR-AU	Mortuary - Autopsy Room	Yes	1	30	Includes emergency eye wash / shower.
	Observation Area		1	10	Minimum of 1 to be provided per autopsy suite. Orientation to autopsy room will depend on the type of autopsies being undertaken ie. coronial or non-coronial.
	Store - Tissue Samples		1	6	Storage of tissue samples in formalin until they can be disposed of. Sized to meet type and volume of cases per year, eg coronial autopsies will require long term secure storage of tissues.
	Store - Flammable Liquids		1	1	
	Office - Workstation			4.4	Number of workstations required will be dependent on staff profile.
	Discounted Circulation			20%	

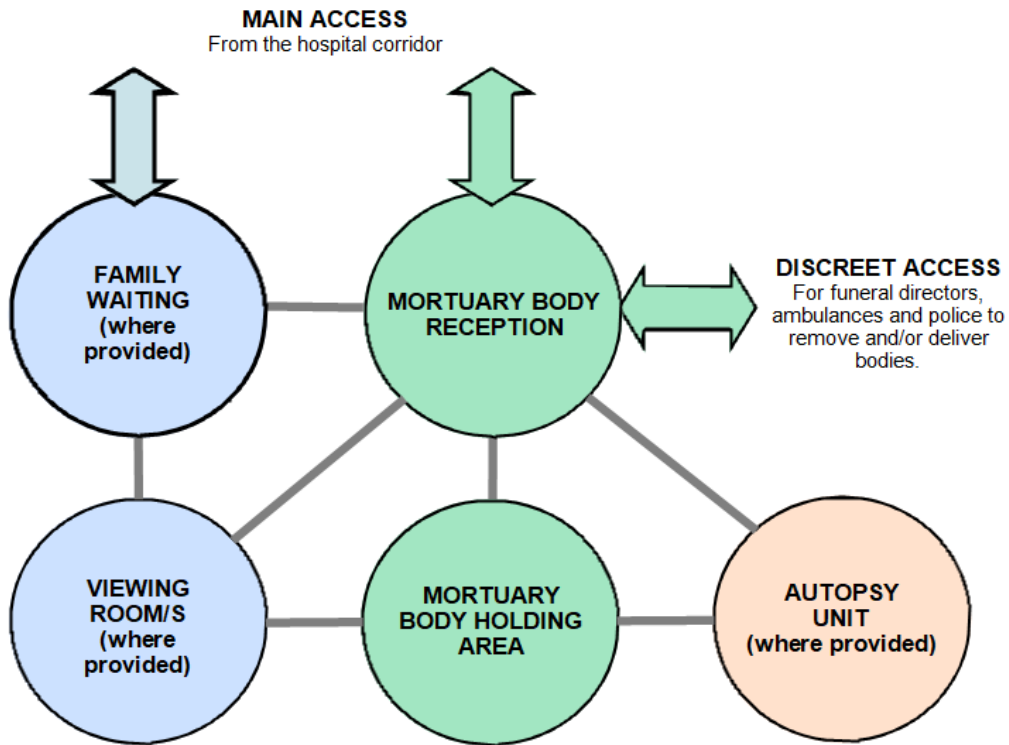
### Optional Areas

The inclusion of the optional areas below is dependent on the service scope, local clinical and/or operational requirements and opportunities to share with adjacent areas. The requirement for each area should be confirmed on a project by project basis and included where it is essential to meet the service need.

As noted above the inclusion of waiting or viewing areas as part of the Mortuary Unit will depend on local operational policies relating to body viewing. The inclusion of autopsy rooms will depend on the service scope.

AusHFG Room Code	Room / Space	SC / SC-D	Qty	m2	Remarks
<b>Body Reception</b>					
	Bay - Weight		1	2 (o)	Optional. Weighing of bodies may be provided via trolleys.
OFF-S9	Office - Single Person	Yes	1	9 (o)	Optional. For administration duties
<b>Body Holding</b>					
	Procedure Room - Mortuary		1	20 (o)	Optional and provided when an Autopsy Unit is not required yet there is some requirement to collect clinical information. Referred to as visual examinations.
WCST	Toilet - Staff	Yes	1	3 (o)	Optional, only provided where Autopsy Unit is not collocated as additional amenities provided in this circumstance.
<b>Waiting / Viewing</b>					
INTF	Interview Room	Yes	1	12 (o)	Optional. May be shared with an adjacent department or waiting room may be utilised. For family meetings with social work, pastoral care, counsellor's, police etc.
WCAC	Toilet - Accessible	Yes	1	6 (o)	Optional. To be provided if not located nearby

## 5.2 FUNCTIONAL RELATIONSHIPS / DIAGRAMS



### 5.3 REFERENCES

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- ACHS, 2013, The Australian Council on Healthcare Standards (ACHS)
- AHIA, 2016, AusHFG Part B: Section 90, Standard Components, Australasian Health Facility Guidelines, Australasian Health Infrastructure Alliance (AHIA), Sydney, NSW
- AHIA, 2016, AusHFG Part B: Section 80 General Requirements, Australasian Health Facility Guidelines, Australasian Health Infrastructure Alliance (AHIA), Sydney NSW
- AHIA, 2018, AusHFG Part C: Design for Access, Mobility, Safety and Security, Australasian Health Facility Guidelines, Australasian Health Infrastructure Alliance (AHIA), Sydney, NSW
- AHIA, 2016, AusHFG Part D: Infection Prevention and Control, Australasian Health Facility Guidelines, Australasian Health Infrastructure Alliance (AHIA), Sydney NSW
- AS/NZS 4187 Reprocessing of reusable medical devices in health services organisations (Standards Australia)
- Australian Government Department of Health, National Industrial Chemicals Notification and Assessment Scheme (NICNA), Formaldehyde Safety for Workers
- Australian Government Department of Health, 2015, 'Australian Clinical Guidelines for Acute Exposures to Chemical Agents of Health Concern: A Guide for the Emergency Department Staff'.
- Australian Health Ministers' Advisory Council (AHMAC), 2002, The National Code of Ethical Autopsy Practice, South Australian Department of Human Services, Adelaide, South Australia
- National Pathology Accreditation Advisory Council, 2013, Requirements for the Facilities and Operation of Mortuaries (Third Edition 2013)
- NZS/ISO 15189:2012 Medical Laboratories – Requirements for quality and competence
- Standards Australia, 2010, AS/NZS 2243.3: 2010 Safety in laboratories (SAI GLOBAL), Standards Australia, Sydney, NSW
- Standards Australia, 2017, AS 1940:2017 The storage and handling of flammable and combustible liquids (SAI GLOBAL), Standards Australia, Sydney
- Standards Australia, 2010, AS/NZS 2982:2010 Laboratory design and construction, (SAI GLOBAL), Standards Australia, Sydney, NSW
- WHO Regional Office for the Eastern Mediterranean, 1999, Ethical Practice in Laboratory Medicine and Forensic Pathology, World Health Organisation, Alexandria, Egypt

### 5.4 FURTHER READING

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- NSW Health: PD2013\_051 Non-Coronial Port Mortems, December 2013
- NSW Health: GL2013\_015 Retention of Bodies – Approval to Retain Bodies for Longer than Permitted, December 2013
- NSW Health: PD2016\_001 Donation, Use and Retention of Living Tissue from Living Persons, February 2016
- NSW Health: PD2007\_025 Stillbirth – Management and Investigation, April 2007
- Perinatal Society of Australia and New Zealand, Clinical Practice Guidelines for Care Around Stillbirth and Neonatal Death, December 2019.