Maintenance standards for critical areas in Victorian health facilities

A Victorian Government initiative

Victoria The Place To Be

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Executive summary

During the course of a coronial inquiry in 2008, the Department of Human Services was asked if any standards or guidelines that addressed the routine maintenance of critical areas in hospitals existed. The question highlighted prior discussions over several months during meetings of the Victorian Advisory Committee on Infection Control (VACIC) about the absence of such standards. It was noted that no published document existed nationally or internationally that provided standards for maintaining critical areas in hospitals or health services. The VACIC supported a proposal put forward by the department to develop such a set of maintenance standards.

This document provides a set of general and additional maintenance standards that can be applied to all critical areas in hospitals and health services. Critical areas are defined using the risk categories (categories A and B) previously described in the department's *Cleaning standards for Victorian health facilities 2009*. It aims to clarify, standardise and formalise minimum standards and requirements for the maintenance of building services such as air conditioning and ventilation systems in high-risk patient areas within health facilities.

Inadequate maintenance of critical areas affects patient safety by posing an infection control risk. Such a set of maintenance standards contributes to patient safety and to continuous quality improvement processes. A process of auditing against the maintenance standards and timeframes for action are described. A summary of audit outcomes, such as a variance report detailing any problems identified and corrective action taken, can be used to provide a clear measure of current status to health service manages via, for example, a health service's infection control committee or quality and safety committee.

Expert reference group

An expert focus group comprising hospital engineers and infection control consultants was convened and met to discuss the aims and objectives of developing a set of maintenance standards for critical areas in Victorian health facilities. The expert working group provided input in response to the aims and objectives listed below. The group was consulted and provided feedback on drafts, or parts thereof, throughout the development of the standards as required.

Aims and objectives

- To clarify, standardise and formalise minimum standards and requirements for the maintenance of building services, such as air conditioning and ventilation systems, in high-risk patient areas within health facilities.
- To increase efficiencies and articulate lines of responsibility for health facility maintenance departments.
- To enhance the reporting capacity of health facility maintenance departments on compliance and validation.
- To increase health facility maintenance departments' contribution to internal quality improvement reports and processes.

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1 Background

A proposal for the development of maintenance standards was put forward by the Department of Human Services ('the department') and supported by the Victorian Advisory Committee on Infection Control (VACIC) in 2008. Developing a set of maintenance standards ('the maintenance standards') was considered the most effective way to manage growing concern that a lack of systematic facility maintenance was having an impact on patients. It was agreed that a set of standards that adopted risk categories described in the *Cleaning standards for Victorian health facilities 2009* ('the cleaning standards') would provide a consistent approach. The cleaning standards categorises risk, taking into account an area's use and the potential impact on the safety of patients, staff and visitors.

An extensive review of associated national and international literature, as well as industry consultation within Victoria, was undertaken. Current industry practice varies widely from health services that have developed comprehensive planned maintenance systems to those who practise basic breakdown maintenance, that is, fix something only when it breaks. A literature search indicated extensive support for the position that poor maintenance can lead to hospital-acquired infection but little on what constitutes good maintenance practice. Examples in the literature include poor or no maintenance on airborne infection (negative pressure) isolation rooms, leading to the spread of airborne contagions such as tuberculosis (*Mycobacterium tuberculosis*) and chicken pox/shingles (varicella zoster virus).

Industry consultation supported the concept that poor maintenance poses an infection control risk with a potential for increased hospital-acquired infections. The consultations also highlighted a strong desire to implement a standardised approach to improve the current situation and assist maintenance departments in providing high-quality maintenance services.

Although the current national infection control guidelines and other international bodies require maintenance to be performed, there is an absence of detail about what is to be maintained or how and when maintenance should be undertaken.

2 Methodology

The focus of the project was to develop maintenance standards for planned preventive maintenance through industry consultation and, where possible, an evidence base. Few articles on maintenance have been published in clinical literature, making an evidence base difficult. Reliable industry sources, such as the Australian Institute of Refrigeration, Airconditioning and Heating (AIRAH) and the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), were used to provide the basis for recommendations.

The maintenance standards have adopted, with some modification, two of the four functional area risk categories described in the cleaning standards:

Category A – very high risk
This category has not been modified.

Category B – high risk
This category has been expanded and incorporates some functional areas that fall into category C.

A well-maintained health care service facility will support staff in their care of patients and provide a safer environment for patients, staff and visitors. The following stakeholders have a key role in the reporting and quality improvement processes associated with maintenance in their facility:

- maintenance staff and service providers
- infection prevention and control staff
- information and communication technology (ICT) staff service providers
- biomedical engineering staff and service providers
- cleaning staff and service providers
- health care management, executive and boards of directors.

Patient care and support staff should be aware that the maintenance standards described in this document provide minimum maintenance levels only. The maintenance standards aim to provide stakeholders with a common understanding when they ask the question: 'How well maintained is this health care service?'

For the purposes of these standards the end-user department is defined as the client. However, focus underpinning the maintenance standards is on the needs and safety of patients, as they are the foundation clients of the health care service and hence the maintenance department. These standards provide a framework for a more cooperative effort between clinical staff and maintenance staff.

Current Australian infection control guidelines state that:

'The design, construction and renovation of health care establishments should take account of infection control and there should be a monitoring and maintenance program for the physical environment. The importance of monitoring and maintaining the physical environment of a health care establishment should not be underestimated. It is the primary responsibility of the engineering and building services department to maintain the services, equipment and fabric of the establishment to a safe and usable standard. Equally important is the maintenance department's role in ensuring that all facilities meet current standards, codes and regulations.'

'It is the responsibility of health care establishments to make equipment and systems (whether they are purchased, contracted, loaned or on trial) available, before they are used, to the engineering and building services department so that it may:

- undertake a safety and operational inspection;
- develop an appropriately scheduled preventive maintenance plan; and
- ensure that the equipment manufacturer's instructions, where appropriate, are available to users.'[1]

A formal product evaluation committee should evaluate all patient-related plant and equipment prior to it being put into service. The evaluation should contain a written risk management process that includes input from appropriate personnel/departments such as clinical units/wards, engineering, infection control, occupational health and safety (OH&S), a clinical product advisor, biomedical engineering or supply.

Risk management programs

The key risk elements of: establish context; identify risks; analyse risks; evaluate risks; and accept or treat risks, should be used to provide the basis of sound decision making in the maintenance context. An overall risk strategy should be used to analyse global risks such as business continuity, which will enable specific risks to be identified. The risk process should be documented to enable transference to a maintenance program, ensuring high risks are treated in an appropriate manner. Risk management should be part of administering contractors including induction.

Health care services use (and specify that maintenance service providers also use) the approach to risk management detailed in the standard AS/NZS 4360.3.

2.1 Maintenance for infection prevention and control

While infection prevention is the responsibility of every employee, some employees have greater responsibilities than others due to the nature of their work. Clinical staff having direct patient contact work to well-documented policies and procedures for managing and applying infection control. The situation is often less clear for staff not having direct patient contact. A lack of policies, procedures and education can lead to misunderstanding basic infection control principles. This can, at times, put some patients at risk.

Well-structured maintenance systems assist in minimising the risk of infection in health care settings. Maintenance departments must comply with health service infection prevention and control practices and policies as well as ensuring infection control procedures are used in their practices.

The infection prevention and control processes of health care services and maintenance departments should be coordinated to ensure complete infection prevention and control coverage. Australian infection control guidelines (the Department of Health and Ageing 2004 Infection control in the health care setting is currently under review) and guidelines released by the department should be used as the basis of a shared understanding.1

Health facilities should maintain records of all maintenance staff and maintenance contractors' participation in infection control education programs.

A good working relationship between infection control and the maintenance department will benefit both patients and staff. The level of communication between the engineering and building department and the infection control team can be maintained or improved by:

- formally involving the infection control team in renovations and new building works
- involving maintenance staff representatives on infection control committees
- ensuring that infection control manuals are readily available to all staff and that infection control and engineering policies and procedures reflect the importance of communication
- maintenance staff participating in infection control education programs, including induction.

How infection occurs

A number of factors are involved in the transmission of disease. Initially, a sufficient number of the pathogenic or opportunistic organisms (dose) are required. This varies markedly depending upon the organism. Next, the pathogenic organism needs sufficient virulence to infect the host. This will depend to a large extent on the host's immune system. The susceptibility of a host will depend upon a range of factors including age, immune status and

medical condition. An appropriate mode of transmission or transfer of the organism in sufficient numbers from source to host is required. This would be either by touching an infected item, breathing in air that contains certain organisms or connecting with aerosolised droplets. A portal of entry into the host such as a wound, skin damage or inhalation or ingestion is required and this will depend upon the type of disease-causing organism.

Modes of transmission of diseases

Contact transmission:

The most important and frequent mode of transmission of hospital-acquired infections is contact transmission, which may be divided into two subgroups: direct-contact transmission and indirect-contact transmission.

Direct-contact transmission involves direct contact and physical transfer of microorganisms from an infected or colonised person to a susceptible host. This may occur between patient and carer in the course of patient-care activities involving direct personal contact, or between any two persons (patients, careers, others) in the health care setting.

Indirect-contact transmission involves an infected or colonised person contaminating an object (inanimate objects such as a patient's immediate environment and contaminated equipment) or from a person's soiled hands or gloves. Infection may then be transmitted by contact between the contaminated item and a susceptible host.

Droplet transmission:

Droplets are generated when a person coughs, sneezes or talks, and during procedures such as suctioning and bronchoscopy. Transmission occurs when droplets containing microorganisms are generated from an infected or colonised person, propelled a short distance through the air, and deposited on the conjunctivae, nasal mucosa or mouth of a host. Droplets do not remain suspended in the air, therefore special air handling and ventilation are not required to prevent droplet transmission – do not confuse droplet transmission with airborne transmission.

Airborne transmission:

Airborne transmission occurs by dissemination of either airborne droplet nuclei or dust particles containing the infectious agent. Droplet nuclei settle so slowly that, in occupied spaces, they remain airborne and circulate on air currents until mechanically removed by the ventilation system.

Microorganisms carried in this manner can be dispersed widely by air currents and be inhaled by a susceptible host near or quite far from the source patient. Controlling environmental factors (such as special air handling and

ventilation) is necessary to prevent hospital-associated airborne transmission of microorganisms such as measles and varicella viruses and *Mycobacterium tuberculosis*.

The control of dust-borne particles is often overlooked. Dust contaminated by viable infectious agents may build up as a reservoir capable of causing an outbreak of infection, even after the departure of the infectious patient from whom the pathogens originated. Dust may become contaminated when dried sputum and other infectious secretions are suspended in the air as dust particles, and then mix with environmental dust.

Ordinary house dust settles much faster than droplet nuclei, but industrial dusts, pollens and spores may have very small particle sizes that can settle slowly. These dusts may be inhaled and deposited into the lungs in a similar manner to droplet nuclei.

Common vehicle transmission:

Common vehicle transmission applies to microorganisms transmitted by contaminated items such as food, water, medications, devices and equipment. These items are referred to as fomites.

Vector-borne transmission:

Vector-borne transmission occurs when vectors such as insects (mosquitoes, flies) or vermin (rats, mice) transmit microorganisms; this route of transmission rarely occurs in Australian hospitals.

2.2 Achieving and maintaining high standards

Asset management plan

Asset register:

An asset register linked to a planned maintenance system should be maintained. Ideally, items should have asset labels to allow individual identification of plant and equipment.[6]

Maintenance history:

Maintenance histories should be kept on all plant and equipment that is nominated in the functional risk categories.[6]

Operation and maintenance manuals:

Operation and maintenance manuals should be kept using an indexed library system to allow ready access to materials such as built drawings, maintenance manuals and manufacturer's maintenance requirements.[6] It is recommended

that a loan system be in place to ensure all documentation taken from the library are accounted for.

Reporting:
In addition to statutory compliance reporting, additional reporting, as detailed in Part 12 of the Victorian Building Regulations, should be undertaken.5

Quality improvement and accreditation

Accreditation became mandatory for all providers of acute health care services from 2000. Health care services may seek accreditation through the Australian Council on Healthcare Standards (ACHS) EQuIP, the ISO 9000 Quality Management System or other equivalent programs.

In some cases the EQuIP program calls for maintenance standards beyond these standards. In all cases the highest standard takes precedence. Care must be exercised to ensure all EQuIP standards are incorporated into the maintenance system, with a system in place to capture the ongoing changes within the EQuIP program.

2.3 Shared responsibility and accountability

Maintenance is the process of maintaining plant, equipment and building elements in their original condition. It is often labour intensive and time consuming, can be invasive and frequently messy. The health care environment is equipment and labour intensive, with much-needed resources sometimes in short supply. It is recognised as a stressful environment with a strong focus on achieving good outcomes for patients. Clear and open dialogue is essential to ensuring each client knows the full extent of services provided by the maintenance department/maintenance contract, including service intervals.

Meaningful exchanges of ideas between the two departments can identify critical needs and expectations in both service design principles (what the client, including the patient, want and need) and governance principles (how the maintenance system should work). It is vital to ensure clients understand what services can be provided to avoid confusion.

Clients have expectations about what they as users want (service design principles). The process to establish the service design should:

- clearly and in detail define the maintenance services that can be delivered (some maintenance departments can provide a greater range of services than others, such as biomedical)
- provide maintenance services from the client's perspective including client expectations and perceptions
- commit to providing a quality service (clear objectives, policies defining the quality levels and management by example are required)

- define technical and quality standards
- specify the conditions on which the service is to be provided, such as waiting times, technical and generic abilities
- provide recruitment and training consistent with the service design principles
- aim to develop standard procedures to control quality and improve outcomes
- monitor service standards with regular audits including a feedback action.

How the maintenance system should work is determined by the policies and procedures (governance principles). The policies should ensure:

- leadership can promote and develop a shared vision for service improvement
- authority to implement change
- accountability for service delivery according to best practice with clear accountability for involvement with patient safety and quality of services
- sustainability of the service system
- transparency and financial accountability.

The maintenance department is responsible for providing maintenance services within a predefined scope of works. The limits of the scope of works should be clearly articulated to the client to ensure clarity of the range and scope of services provided.

A documented procedure, such as a service level agreement, should be provided and be clear about which department is accountable for maintaining assets. This is particularly important for sophisticated equipment or systems that may leave the client unclear as to who is responsible for maintaining the item or system (engineering, biomedical engineering or ICT), irrespective if the service is in-house or contracted out.

The maintenance department should have a documented response procedure that includes graded response times depending upon end-user department category.

The end-user department is responsible for reporting maintenance defects in a timely manner. It is recommended that the end-user department maintain a register of maintenance requests, including date and time of report.

2.4 Infrastructure maintenance and facility management

As buildings and fixtures become old or are heavily used, they become more difficult to maintain in an acceptable condition. Maintenance departments are expected to contribute to infrastructure maintenance and undertake capital expenditure on infrastructure.

Where cleaning ends and maintenance or engineering work begins is a common point of dispute. Clear lines of demarcation need to be set to ensure a common understanding of who is responsible for the grey areas.[2] These should be formalised and reflected in the policies and procedures of the engineering department, infection control, and cleaning and environmental services.

Maintenance departments should document and provide details of how maintenance services will be provided. These details should be contained in service agreements, including where a maintenance service is contracted out and monitored, with the use of key performance indicators.

Maintenance service delivery procedures should be documented, including details of how maintenance departments intend to undertake the maintenance service. The procedures should include the following.

- Minimum maintenance intervals and methods (indicative only). Maintenance departments should provide maintenance services at whatever frequencies are deemed necessary in order to meet required standards.
- How the maintenance services will be managed and controlled at service level, including specific details of the on-site management functions.

2.5 Staff training and induction programs

Staff and contractor induction

In addition to the usual OH&S induction, in-service induction and training must be provided to in-house staff and contractors working in areas that require health-specific training. Infection control and clinical hazards must be included in staff induction programs, including procedures for working in high-risk areas such as operating suites, intensive care units and isolation rooms. Written protocols must be available to all personnel working in these areas.

Risk management principles should underpin training and induction programs. Risk mitigation methodologies should be used to determine appropriate levels of training and induction for staff and contractors depending on the tasks they are undertaking. Some issues to be considered are infection control, clinical continuity, business continuity, OH&S and financial risk. These should all be included in the induction program.

Infection control induction and in-service training

Staff in-service training programs should be conducted regularly, covering infection control and areas of specific risks staff will encounter, such as negative pressure isolation rooms and operating suites.

In-service education and training programs should be targeted at both in-house and contract maintenance staff. Basic infection control training, as outlined in the Commonwealth guidelines *Infection control guidelines for the prevention of transmission of infectious diseases in the health care setting*, should be regularly updated.[1] Training programs should contain information on hygiene, including detailed advice about hand washing and special requirements for specific areas where maintenance staff could be working.

In addition, information should be provided about the infectious hazards that maintenance staff could face during their employment. Information on risks in specific areas and appropriate infection control measures available to staff should be provided on commencement of employment and on a regular basis thereafter. This should include recommended vaccinations for maintenance staff, such as hepatitis A and B vaccinations.

Skills and qualifications

Appropriate skills and qualifications are required for personnel employed to deliver maintenance services and should include all levels of management, supervision and operational staff.

Record keeping

Health facilities should maintain records of in-house and contract maintenance staff participation in induction and education programs, including details of courses undertaken, the length of the course and the frequency of training, as well as immunisations administered to both staff and contractors. All safe work method statements and job safety analysis forms should be retained and made available as required.

Subcontracting arrangements

Where a maintenance service is subcontracted, such as for sterilisers or filter maintenance, the subcontractor should have clearly documented procedures for managing subcontractor training. Management procedures should include a process for maintaining training currency for individual employees.

Details of contract staff training programs should be provided to the health facility, covering details of courses undertaken, course provider details, the length of the course and the frequency of training. Training information should also cover induction courses and training in addition to in-service and other training provided to staff or provided by other health facilities.

Education and training for users of equipment and systems

The engineering and building services department has a role in educating and training end users to ensure safe and competent use of equipment and systems, and to provide ongoing support to all departments within the establishment.

Safe work practices

Procedures should be documented for the isolating plant and equipment that services all listed functional areas before undertaking maintenance. Ensure all plant and equipment that services listed functional areas is clearly labelled with isolation procedures, including notification details.

2.6 Definition of maintenance

Please note: The following section contains many technical descriptions and information specific to the engineering department. Readers from a non-engineering background may require assistance from engineering department staff to interpret some parts of the text.

Maintenance is the periodic servicing needed to preserve an asset in its original condition rather than to improve that asset. If maintenance is deferred, the building or equipment will suffer a loss in function, will not efficiently perform the service for which it is used or may pose an increased risk to patients.

A broad planned preventive maintenance (PPM) program will increase the reliability of a health care facility's buildings and systems with less interruption to patient care.

Reactive maintenance (breakdown maintenance) versus preventive or planned maintenance

For the purposes of this standard, planned maintenance and preventive maintenance are the same and will be referred to as PPM.

PPM is the programming of maintenance tasks or schedules at specific intervals. In an air-conditioning system it could include such tasks as checking the air filters, fans, coils and controls every three months.

Reactive maintenance is the principle of run-to-failure, then repair or replace. PPM mitigates the risk of a reactive approach, such as major equipment failure, but can be wasteful and does not prevent all failures.

The expert focus group determined that PPM is a superior form of maintenance and is an active risk control strategy. A properly developed planned maintenance system will reduce unplanned failures and the associated risk to patients, staff and visitors.

Maintenance in the health care facility

Maintenance of a health care facility differs from almost all other types of buildings. The biological flora that are endemic to all health premises pose a risk to both patients and staff. The design and maintenance of the building play key roles in controlling both the proliferation and dissemination of harmful

organisms. The best-designed health care facility will cease to function to the design intent if the building is not maintained to the original specifications.

Supply air and exhaust systems have the capacity to introduce harmful organisms into the building, as well as distribute and circulate introduced and hospital-acquired organisms.[6]

Walls, floors and ceilings must be maintained in good order with damage regularly repaired to enable proper cleaning.[7] All types of surfaces need to be maintained in good order to ensure organisms have less places to proliferate.

Biofilms and water damage pose particular risks to the sickest patients with compromised immune systems. All piped water systems develop algal films and, in some cases, these biofilms can be implicated in patient infections.[8, 9]

Some maintenance activities can pose an increased risk to certain classes of patients.[10] A risk analysis should be conducted prior to conducting maintenance in very high risk areas if the activity could generate dust or water, or alter airflows. In some cases solid barriers may need to be erected and the area exhausted to create a negative pressure within the work zone.

HEPA vacuuming, not sweeping, should be used to clean up. Conventional vacuum cleaners disseminate large quantities of dust and fungal spores and should not be used.[11]

As an example, patients and staff may be exposed to an increased risk of infection if maintenance staff turn off the exhaust to an infectious diseases isolation room to undertake maintenance without first informing the person in charge of the ward.

Consult with an infection control consultant to determine appropriate precautions prior to commencing work. For unique or unusual works, it is advisable to create a standardised risk procedure similar to a WorkSafe job safety analysis (JSA) form to ensure a consistent approach.[12] In most instances a safe work method statement approach will allow documentation of risk mitigation for common tasks. Ensure a robust communication strategy is in place before undertaking maintenance in high-risk areas.

3 The maintenance standards

The maintenance standards are intended to provide clear directions to health care facilities on the minimum level of PPM to be performed. The standards are consistent with continuous improvement requirements such as the ACHS EQUiP program and are risk and quality based.

Functional areas

A functional area category is a discrete operational area defined according to the risk a maintenance failure would pose to a patient. The very high risk functional areas are areas where invasive procedures or support of invasive procedures occur. A breakdown in maintenance in this category could have potentially life-threatening consequences to patients or pose a high risk to staff.

The high-risk functional areas are areas where patients are treated or undergoing medical procedures, or a department that could have a direct impact on patient wellbeing. A breakdown in maintenance in this category could have the potential to increase patient morbidity or pose an unacceptable risk to staff.

Eighteen functional areas were identified by the focus group for inclusion in these maintenance standards. They were grouped into two risk categories: very high risk and high risk. The functional areas have been adapted from *Cleaning standards for Victorian health facilities 2009*.[2] Some functional areas are in different categories to the cleaning standards because the maintenance risk to patients is sometimes different from a cleaning risk. The focus group chose to omit low-risk areas to simplify the maintenance standards.

Maintenance schedules

The maintenance schedules consist of four discrete elements. The component is the item of plant, building fabric or equipment designated to be maintained. It could be a fan, steriliser or door. The reference or required work details the maintenance to be performed on the component. Where possible, the type of maintenance has been drawn from an existing standard, guideline or code. The service intervals nominate the rate of recurrence that the required work is to be performed. The time tolerances nominate the permissible deviation from the nominated periodic service intervals.

Maintenance standards

A maintenance standard is a statement confirming the minimum level of maintenance to be performed on the listed component according to the nominated service level and interval.

Maintenance matrix

The maintenance matrix assigns maintenance standards to functional areas according to the types of plant, building fabric and equipment, and the risk a failure poses to patients.

3.1 Functional area risk categories

Functional areas

Functional areas are areas within a health care service (for example, an operating theatre, intensive care unit or oncology ward) that have been identified as posing a high risk to patients in the event a failure to maintain assets. Eighteen functional areas have been grouped together according to risk. Some functional areas, such as the library, do not require the same level of frequency or intensity of maintenance when compared with other functional areas such as the intensive care unit or operating suite.

Functional areas have been grouped into two risk categories indicating the maintenance standard and interval of maintenance based on the risks associated with inadequate maintenance in each risk level.

Very high risk – category A

Required standard of maintenance – critically important

The standard of maintenance for functional areas in the very high risk category is of critical importance. Within these functional areas there is a very high risk of harm to patients, including transmission of infection. Patients are very susceptible and/or undergoing procedures that can be highly invasive.

Maintenance must be conducted with the highest level of intensity and frequency, with processes and protocols that are clearly defined and strictly adhered to.

Functional areas included in this risk category

- Operating theatres: This may include procedure areas in other departments where significant invasive procedures are performed and patients are at a very high risk of harm or infection, such as day procedure units and procedure rooms in medical imaging
- Invasive procedure areas: endoscopy and catheter laboratories
- Intensive care unit (ICU)
- Level 2 and level 3 nurseries
- Special needs patient/area: areas with patients in protective isolation or who are immunocompromised, such as burns, transplant and oncology units and infectious disease units, including negative pressure isolation
- Central sterilising department (CSD)

A risk assessment should be undertaken and is the responsibility of both the maintenance department and the client (end-user department). OH&S and business continuity as well as infection risk need to be taken into account when assessing risk. It is recommended that a standardised form of risk analysis similar to a JSA or safe work method statement is used.

Additional internal areas

Where bathrooms, corridors, storerooms, lecture/meeting rooms, offices, pan rooms and staff lounges provide direct access to very high risk functional areas it is essential that they are also treated accordingly and receive the same level of maintenance.

High risk – category B

Required standard of maintenance – highly important

The standard of maintenance for functional areas in the high risk category is of high importance. Within these functional areas there is a high risk of harm to patients, including transmission of infection. Patients are susceptible and/or undergoing procedures that can be highly invasive.

Maintenance must be conducted with high levels of intensity and frequency, with processes and protocols that are clearly defined and strictly adhered to.

Functional areas included in this category

- Sterile stock storage
- Emergency department
- Pharmacy – clean areas including cytotoxic preparation suites
- General wards: This includes level 1 nursery and critical care unit (CCU), oncology and dialysis units, delivery and birthing suites, and non-invasive treatment and procedure rooms
- Main food preparation kitchen
- PC 3 laboratories
- Medical laboratories, including anatomical pathology
- Any area required to have a HEPA filter system, including biosafety and clean cabinets
- Any area where a process or procedure would elevate that area to a high risk category, for example, medical research involving dangerous chemicals, radiation or biological material (in this case an additional risk assessment is necessary)
- Reverse osmosis filtration plants
- Water filtration plant

A risk assessment may be required and is the responsibility of both the maintenance department and the client (end-user department). OH&S, business continuity and infection risk need to be taken into account when assessing risk. It is recommended a standardised form of risk analysis similar to a JSA or safe work method statement is used.

Additional internal areas

Where bathrooms, corridors, storerooms, lecture/meeting rooms, offices, pan rooms and staff lounges provide direct access to high-risk functional areas it is essential that they are also treated accordingly and receive the same level of maintenance.

3.2 Maintenance matrix

Maintenance standards are determined in the matrix below. The maintenance program for each functional area consists of a combination of general and additional schedules as:

- all general schedules that relate to the functional area
- all additional schedules nominated in the table below against the functional area.

Not all general schedules will apply to all functional areas. Some equipment, such as chillers, will service many areas but is included in the maintenance matrix of a functional area due to the disruption caused by failure. Plant room maintenance should be conducted according to the listed schedules.

		Maintenance standards	
	Functional areas category A – very high risk	**General**	**Additional**
Functional areas	Operating rooms including day procedure rooms	**All general schedules**	Schedules 1–8,10–12, 14
	Invasive procedure areas: including but not limited to endoscopy and catheter laboratories		Schedules 5, 8, 10, 12, 14, 15, 17
	Intensive care unit (ICU)		Schedules 13, 14, 15, 16
	Level 2 and level 3 nurseries		Schedules 13, 14, 15, 16
	Special needs patient/areas		Schedules 13, 14, 15, 16
	Protective isolation rooms		Schedules 13, 14, 15, 16
	Burns units		Schedules 13, 14, 15, 16
	Negative pressure rooms (infectious diseases isolation)		Schedules 9, 10, 12, 14, 16–19
	Positive pressure rooms (immunocompromised isolation)		Schedules 5, 9, 10, 12, 14, 15, 17
	Central sterilising department (CSD)		Schedules 9, 10, 12, 14, 16–19
	Central sterilising department (CSD) clean work/packaging, CSD sterile stock, theatre sterile stock		Schedules 11, 14, 15–17, 22–32
	Functional areas category B – high risk		
	Sterile stock storage		Schedules 5, 13, 15, 17
	Emergency unit triage, waiting room		Schedules 13, 15,16, 17
	Emergency department		Schedules 13, 14, 16
	Pharmacy – clean areas including cytotoxic preparation suites		Schedules 5, 6, 9–13, 15,16, 17, 20, 21
	Bronchoscopy, sputum and pentamidine induction		Schedules 9–11, 13, 16–19
	General wards including level 1 nurseries, coronary care units, oncology and dialysis units, delivery and birthing suites, and non-invasive treatment and procedure rooms		Schedules 11, 13, 16–20
	Main food preparation kitchen		Schedules 13
	PC 3 laboratories		Schedules 11, 13, 15–17
	Medical laboratories including anatomical pathology		Schedules 11, 13, 16–23
	Any area required to have a HEPA filter system, including biosafety and clean cabinets		Schedules 5, 13, 15–17
	Dialysis units		Schedules 13
	Reverse osmosis filtration plants		Schedules 13
	Water filtration plant		Schedules 13

3.3 Maintenance schedules

Maintenance schedules are work instructions with time intervals and are divided into two categories: general and additional.

- General schedules are routine maintenance tasks that are common to most buildings and have been predominantly sourced from the 2009 AIRAH publication *Application manual DA 19 – HVAC&R maintenance, 3rd edition*.
- Additional schedules differ from general schedules in that they are often health-specific, complex maintenance tasks that require specialised knowledge to perform while carrying a higher risk to the patient in the event of a maintenance failure. These tasks were identified by the focus group as high risk and have been implicated in sentinel events. An example is the failure of a steriliser to achieve sterilisation, which can result in compromised patient safety and financial risks.

Both categories of schedules state the minimum standard of maintenance required on each asset, component or system that makes up a health facility.

AIRAH define their maintenance schedules as 'a suggested list of possible items for inclusion in a maintenance program outlining the maintenance action required and an indication of the most appropriate method for the carrying out of the action and a frequency'.[4]

Each schedule is a block that goes towards building a maintenance program. General schedules detailed in this standard are not definitive, nor do they have to be reproduced exactly. Rather, the intention is that a health facility ensures their existing schedules are compatible with these schedules and based on sound industry practice.

These schedules are included to provide a basis for minimum standards and are based on Australian Standards, guidelines or longstanding industry practice. The maintenance intervals listed are the maximum service intervals and should be tailored to be site specific.

Schedule intervals should be under constant review, taking into account changes in and types of technology, operating environment, geographical location and operational risk, including hours of operation. In some cases service intervals will need to be more frequent, particularly in the event of repeated failure or high risk to patients or staff. Increasing service intervals should only be undertaken if supported by long-term maintenance records, experience and risk assessment. Service interval tolerances are listed at the end of this section.

All references in the maintenance standards have been abbreviated according to the following legend:

DA 19	Australian Institute of Refrigeration, Airconditioning and Heating (AIRAH) *Application manual DA 19 – HVAC&R maintenance, 3rd edition* (2009)
AS	Australian Standard
AS/NZS ISO	Australian/ New Zealand International Standard
Regs(1)	*Victorian Building Regulations*
Regs(2)	*Victorian Health (Legionella) Regulations*
MR	Manufacturers recommended service intervals
GIRHCF	Guidelines for the classification and design of isolation rooms in health care facilities, Victoria
DGHDPC	*Design guidelines for hospitals and day care facilities, Victoria*

A complete listing of all references can be found in the References and Further reading sections at the end of this document.

General schedules

Please note: The following section contains many technical descriptions and information specific to the engineering department. Readers from a non-engineering background may require assistance from engineering department staff to interpret some parts of the text.

Thirteen general schedules that apply to all functional areas in both category A and B are described. They are intended as a guide to ensure a minimum level of maintenance. There is no requirement to replace any existing schedules with the general schedules listed in this standard, provided the intent and scope is already covered.

If a reference or service interval is in conflict with an Act, Regulation, Code of Practice or Australian Standard the following hierarchy applies:

- an Act takes precedence over a Regulation
- a Regulation takes precedence over an Australian Standard or Department of Health guideline
- an Australian Standard or Department of Health guideline takes precedence over the AIRAH DA 19
- all the above take precedence over an unreferenced schedule or a manufacturer's recommendation.

Please refer to the legend given on the preceding page for the abbreviated references given; for example, DA 19: 22.1-22.5 refers to sections 22.1–22.5 of the AIRAH Application manual *DA 19 – HVAC&R maintenance, 3rd edition* (2009).

1 Air handling units

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Fans	DA 19: 22.1–22.5	1
	DA 19: 22.6–22.7	6
	DA 19: 22.8–22.12	12
	DA 19: 22.13	36
Air filters	AS 1324, DA 19: 23.1–23.9	1
	AS 1324, DA 19: 23.10–23.14	3
	AS 1324, DA 19: 23.15–23.16	6
	AS 1324, DA 19: 23.17	12
Dampers	AS 3666.2, DA 19: A16.1.1–4	6
	AS 3666.2, DA 19: A16.1.5–7	12
	AS 3666.2, DA 19: A16.2.1	12
Variable speed drives	DA 19: A17.5.1–2	3
	DA 19: A17.5.3	6
	DA 19: A17.5.4–5	12
Motors and drives	DA 19:A17.1.1–4	1
	DA 19:A17.1.5	6
	DA 19:A17.1.6	36
	DA 19:A17.2.1	3
	DA 19:A20.1	1
	DA 19:A20.2–3	3
	DA 19:A20.2–4	6
	DA 19:A20.2–5	12
	DA 19:A20.2–6	36
Air intake and discharge	AS 3666.2, DA 19: A3.2–3	1
	AS 3666.2, DA 19: A3.4–6	3
	AS 3666.2, DA 19: A3.7–12	6
	AS 3666.2, DA 19: A3.13–17	12
Minimum outdoor air quantity	AS 3666.2, 1668.2, DA 19: A2.1	12
Air distribution and balance	AS 3666.2, DA 19: A2.2–3	12

2 Supply air ductwork

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Humidifiers	AS 3666.2, DA 19: A26.1–6	1
	AS 3666.2, DA 19: A26.7	3
	AS 3666.2, DA 19: A26.8–15	6
	AS 3666.2, DA 19: A26.16	36
Fire dampers	Regs(1), DA 19:A16.3.1–8	12
Balance dampers	AS 3666.2, DA 19: A16.1.1–4	6
	AS 3666.2, DA 19: A16.1.5–7	12
	AS 3666.2, DA 19: A16.2.1	12
Duct inspection and cleaning	AS 3666.2, DA 19: A2.1–3	12
	AS 3666.2, DA 19: A18.1.1–2	12
	DA 19: A18.1.4,5,8–12	12
Air quality	DA 19: A4.1–3	12

3 Exhaust ductwork

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Fire dampers	Regs(1), DA 19:A16.3.1–8	12
Balance dampers	AS 3666.2, DA 19: A16.1.1–4	6
	AS 3666.2, DA 19: A16.1.5–7	12
	AS 3666.2, DA 19: A16.2.1	12
Duct inspection and cleaning	AS 3666.2, DA 19: A2.1–3	12
	AS 3666.2, DA 19: A18.1.1–2	12
	DA 19: A18.1.4,5,8–12	12
Kitchen exhaust ducts, hoods and grease filters	DA 19: A18.2.1–5	1
	DA 19: A18.2.6–8	12

4 HEPA filters

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
HEPA filter validation testing	AS 1807.6	12

5 Control systems

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Electric, electronic and DDC controls	DA 19: A5.2.1–2	1
	DA 19: A5.2.3–5	3
	DA 19: A5.2.6–9	6
	DA 19: A5.2.10–20	12
	DA 19: A7.1–3	6
	DA 19: A7.4	12
Pneumatic controls	DA 19: A5.1.1–4	1
	DA 19: A5.1.5–6	3
	DA 19: A5.1.7–8	6

6 Cooling towers

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Cooling tower	Regs(2), DA 19: A15.1–5	1
	Regs(2), DA 19: A15.6–11	3
	Regs(2), DA 19: A15.12	6
	Regs(2), DA 19: A15.13–14	12
	Regs(2), DA 19: A15.14	MR
Chemical dosing	AS 3666.2	1

7 Chillers

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
General	DA 19: A10.1.1	1
	DA 19: A10.1.2	6
	DA 19: A10.1.3–6	12
	DA 19: A10.1.7-10	36
Centrifugal	DA 19: A10.2.1–14	3
	DA 19: A10.2.15	6
	DA 19: A10.2.16–32	12
Screw	DA 19: A10.3.15	3
	DA 19: A10.3.16–22	12
Reciprocating	DA 19: A10.4.1–27	3
	DA 19: A10.4.28–29	6
	DA 19: A10.3.30–44	12
Magnetic	DA 19: A10.5.1–2	3
	DA 19: A10.5.3–4	12
	DA 19: A10.3.5	60
Air-cooled condenser	DA 19: A12.1.1–3	1
	DA 19: A12.1.4–8	12
	DA 19: A12.1.9	MR
Water-cooled condenser	DA 19: A12.2.1–13	12

8 Pumps

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Pump	DA 19: A30.1–11	1
	DA 19: A30.12–13	3
	DA 19: A30.14	6
	DA 19: A30.15–17	12
	DA 19: A30.18	36

9 Plumbing systems

Standard: Maintenance service has been performed according to the prescribed references, required maintenance and service intervals.

Component	Reference	Service interval in months
Warm-water systems	Maintain to Regs(2), AS 3666.2	1
Thermostatic mixing valves	Maintain to Regs(2), AS 3666.2	12
Backflow-prevention devices	AS/NZS 3500.1–4.4.6	12
Hot-water systems including heating hot-water boilers	AS 3500.4	12
Cold-water vessels and tanks	Clean vessels and tanks and maintain to AS 3500.4	12
Hot-water vessels and tanks	Clean vessels and tanks and maintain to AS 3500.4	12
Water filters for high-risk processes	AS/NZS 3497, AS/NZS 4348, replace filter cartridges and clean cartridge housing of sludge and biofilm	6
Ice machines and storage	Clean, disinfect and service ice-making machines and ice-storage chests	12
	Replace water filter cartridges and clean cartridge housing of biofilm	6
Clinical handwash basin including theatre scrub sinks	Check operation of hands free taps, ensure basin and plumbing have no leaks	3
General handwash basin	Check operation of taps, ensure basin and plumbing have no leaks	3
Reverse osmosis filtration plant	Maintain as recommended by manufacturer	MR

10 Cool rooms and freezers

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Cool/freezer room and controls	DA 19: A14	3
Condensing unit	DA 19: A13	3

11 Electrical

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Cardiac-protected areas	AS 3003, AS 2500 cl 5.6.2	12
Body-protected areas	AS 3003, AS 2500 cl 5.6.2	12
Emergency lighting and power	AS 3009, AS 2500 cl 5.6.2	12
Emergency evacuation lighting	AS 2293.2 sections 2 and 3	6
		12
Emergency generator	AS 3009 cl B3.1	1
	AS 3009 cl B3.2	12
Lighting	AS 1680.1, AS 1680.2.5	12
Electrical installation	AS 3017, AS 4510, DA 19: A19	
Electric duct heaters	AS 1851, DA 19: A19.1.1–8	12
Switchboard and wiring	AS 3000, DA 19: A19.2.1–4	1
	AS 3000, DA 19: A19.2.5	3
	AS 3000, DA 19: A19.2.6–18	12
Electric motors	DA 19: A20.1	3
	DA 19: A20.2–3	3
	DA 19: A20.4	6
	DA 19: A20.5	12
	DA 19: A20.6	36

12 Piped medical gas systems

Standard: Maintenance service has been performed according to the prescribed references and service intervals.

Component	Reference	Service interval in months
Medical air compressor – general	AS 2896 (cl 6.3.4.1)	12
Medical air compressor – specific	AS 2896 (cl 6.3.4.2)	Weekly
Medical breathing air purity	AS 2896 (cl 6.4)	12
Medical vacuum pump – general	AS 2896 (cl 6.3.4.1)	12
Medical vacuum pump – specific	AS 2896 (cl 6.3.4.2)	Weekly
Medical gas manifold inspection	AS 2896 (cl 6.3.2)	6
Medical gas manifold check	AS 2896 (cl 6.3.3)	Weekly
Medical oxygen system	AS 2896 (cl 6.3.1)	12
Safety valves	AS 2896 (cl 6.2)	12
Gas failure warning systems	AS 2896 (cl 6.2)	12
Terminal units	AS 2896 (cl 6.5)	3
Pressure gauges and switches	AS 2896 (cl 6.6)	24

13 Building fabric

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Component	Reference	Service interval in months
Floor finishes	Inspect vinyl flooring and coving; repair cracks or gaps including were the coving joins to the wall	3
	Inspect ceramic tiles; repair or replace broken, rough tiles and re-grout were necessary	3
Wall finishes	Inspect painted surfaces and finishes to ensure they are smooth with no cracks, chips, scratches, gouges or holes	3
	Inspect wall vinyl and coving to ensure it has no cracks or gaps and tiles are smooth, intact with no grout missing	3
	Inspect wall surfaces and ensure they are capable of tolerating washing	3
Ceilings	Inspect painted surfaces and finishes and ensure they are smooth with no cracks, chips, scratches, gouges or holes	3
	Inspect ceiling tiles and ensure they have no cracks or gaps and tiles are smooth, intact with no water damage or staining; wet or stained ceiling tiles should be always be replaced	3
Door closers and seals	Inspect and verify condition of doors, seals, closers and locks/catches	3
Access panels	Inspect access panels and ensure they are intact, seal properly and locked	3
Fixed cabinets and fittings	Inspect cabinets exposed to water (such as vanity units) for signs of water penetration	3
Minor water damage	Inspect minor water marks or staining on the floor, walls or ceiling for extent of water damage; if soaked through, the affected area should be removed and replaced; wet or stained ceiling tiles should be always be replaced	3
Major water damage (flood)	Clean and decontaminate within 24 hours of major leaks, such as potable water, sewer or sprinkler water systems with added chemicals (ethylene glycol)	Immediate
Water damage to carpet	Replace carpet and underlay exposed to sewage; disinfect the area with diluted bleach	Immediate
	Replace carpet that has been wet for greater than 24–48 hours as it is potentially contaminated with fungi; alternatively, conduct a risk assessment in conjunction with infection control	1–2 days
	Clean and disinfect carpet wet from steam or potable water leaks for less than 24–48 hours	1–2 days

Additional schedules

Please note: The following section contains many technical descriptions and information specific to the engineering department. Readers from a non-engineering background may require assistance from engineering department staff to interpret some parts of the text.

Thirty-two additional schedules that are intended to provide specific work instructions for specialised maintenance are described. Specific functional areas where one or more additional schedules should be applied are given in the maintenance matrix on page 23.

Please refer to the legend given on page 25 for the abbreviated references given. A complete listing of all references can be found in the References and Further reading sections at the end of this document.

1 Pressure gradients – operating room

Standard: Maintenance service has been performed according to the required maintenance and service intervals. Operating rooms designed prior to 2004 may not be able to achieve the performance targets listed. If system design performance is below the recommended performance levels, the system should be maintained to the maximum design conditions. The design conditions should be clearly documented in all reports.

Schedule	Required maintenance	Service interval in months
Pressure gradients – operating room	Test, verify and report operating-room pressure gradients to AS 1807.10. Minimum ΔP OR – corridor of 10 Pa. The pressure differentials between the different rooms should meet the design specification, which will vary from around 9 up to 30 Pa. Pressure-release dampers, if fitted, should move freely and be partially or fully open when doors are closed and move to shut when doors are opened. *Note: all tests are performed in the at rest state.* Ref: DGHDPC, AS 1807.10	12

2 Air change rate (ventilation rates) – operating room

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Air change rate (ventilation rates) – operating room	Test, verify and report conventional operating room air change rate. Minimum of 20 air changes per hour (ACH) with filters at maximum pressure drop and around 37 ACH in preparation rooms used for laying up of sterile instruments or around 11 ACH if room used as sterile pack store. *Note: all tests are performed in the at rest state.* Ref: DGHDPC	12
	Measure airflow from all supply air outlets with a flow-hood-type anemometer sized to fit the outlet. Sum all airflows to achieve total airflow. Measure room volume and calculate air change rate.	

3 Air velocity and flow characteristics – ultra clean ventilation system – operating room

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Air velocity and flow characteristics – ultra clean ventilation system – operating room	Test, verify and report operating room air velocity to AS 1807.3. Air velocity should be a minimum of 0.38 m/s approx 2 m from floor. Air velocity should be a minimum 0.3 m/s at 1 m from floor or operating table height. Multi-directional diffuser grills should not be installed on HEPA filter outlets as an alternative to the standard uni-directional diffuser. *Note: all tests are performed in the at rest state.* Ref: DGHDPC, AS 1807.3	12

4 Air velocity and flow characteristics – conventional system – operating room

Standard: Maintenance service has been performed according to the required maintenance and service intervals. Operating rooms designed prior to 2004 may not be able to achieve the performance targets listed. If system design performance is below the recommended performance levels, the system should be maintained to the maximum design conditions. The design conditions should be clearly documented in all reports.

Schedule	Required maintenance	Service interval in months
Air velocity and flow characteristics – conventional system – operating room	Test, verify and report operating room air velocity to AS 1807.3. Air velocity should be a minimum of 0.2 m/s at 1 m from floor or operating table height. Multidirectional diffuser grills should not be installed on HEPA filter outlets as an alternative to the standard unidirectional diffuser. *Note: all tests are performed in the at rest state.* Ref: DGHDPC, AS 1807.3	12

5 Conventional operating room particle concentrations validation (room class)

Standard: Conventional operating room airborne particle concentrations meet the requirements of ISO 14464.1 class 7 and service intervals. Operating rooms designed prior to 2004 may not be able to achieve the performance targets listed. If system design performance is below the recommended performance levels, the system should be maintained to the maximum design conditions. The design conditions should be clearly documented in all reports.

Schedule	Required maintenance	Service interval in months
Conventional operating room particle concentrations validation (room class)	Conventional operating room – test, verify and report operating room particle concentration (class of room) to AS/NZ ISO 14644.1, class 7. *Note: all tests are performed in the 'at rest' state.* Ref: AS/NZ ISO 14644.1 AS 1807.8	12
	Test report should include mean average sample size, max sample size, total number of samples taken, sample time and air volume sampled.	
	The photometer internal reference is not to be used. A reference port must be installed upstream of the HEPA filter.	
	The room should be revalidated outside the normal schedule after any maintenance or works that potentially disturbs or contaminates the filter, after filter replacement or any works in the room.	

6 UCV operating room particle concentrations validation (room class)

Standard: UCV operating room airborne particle concentrations meet the requirements of ISO 14464.1 class 6 and service intervals. Operating rooms designed prior to 2004 may not be able to achieve the performance targets listed. If system design performance is below the recommended performance levels, the system should be maintained to the maximum design conditions. The design conditions should be clearly documented in all reports.

Schedule	Required maintenance	Service interval in months
Ultra clean ventilation operating room particle concentrations validation (room class)	Ultra clean ventilation operating room – test, verify and report operating room particle concentration (class of room) to AS/NZ ISO 14644.1, class 6. *Note: all tests are performed in the at rest state.* Ref: AS/NZ ISO 14644.1, AS 1807.8	12
	Test report should include mean average sample size, max sample size, total number of samples taken, sample time and air volume sampled.	
	The photometer internal reference is not to be used. A reference port must be installed upstream of the HEPA filter.	
	The room should be revalidated outside the normal schedule after any maintenance or works that potentially disturbs or contaminates the filter, after filter replacement or any works in the room.	

7 Installed filter leakage

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
HEPA filter validation	Test, verify and report operating HEPA filter integrity. HEPA filter installations should be in accordance with AS 1807.6 and should be validated and certified annually in accordance with AS 1807.6. Filters should be visibly examined for condition, proper fit and sealed with no bypass or perforations. HEPA filters should not be repaired. Manometer readings should be between preset limits as determined by the manufacturer. Test ports should be installed and correctly plugged adjacent to the terminal HEPA face. *Note: all tests are performed in the at rest state.* Ref: AS 1807.6	24
	The photometer internal reference is not to be used. A reference port must be installed upstream of the HEPA filter.	
	Test report should include mean average sample size, max sample size, total number of samples taken, sample time and air volume sampled.	
	HEPA filters should be revalidated outside the normal schedule after any maintenance or works that potentially disturbs or contaminates the filter or after filter replacement.	

8 Airflow visualisation – operating room

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Airflow visualisation – operating room	Test, verify and report room airflow direction according to the requirements of AS 1807.6. Smoke testing (airflow visualisation) shows airflow taken at the position of the operating table. Air should either flow from the preparation room into theatre if used for lay-up or be at equal pressure if used as a sterile pack store, and flows into the corridor. Airflow visualisation establishes that: 1. air flows in the correct direction (with doors closed) from theatre into the anaesthetic room, the disposal room and the corridor 2. air flows from the anaesthetic room and scrub area into the corridor. *Note: all tests are performed in the at rest state.* Ref: AS 1807.6	24

9 Airflow visualisation

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Airflow visualisation	Test, verify and report room airflow direction according to the requirements of AS 1807.6. Airflow visualisation establishes that: 1. air flows in the correct direction (with doors closed) for positive pressure areas from cleanest area to the less clean area (room to corridor) 2. air flows in the correct direction (with doors closed) for negative pressure areas from cleanest area to the less clean area (from corridor to room). *Note: all tests are performed in the at rest state.* Ref: AS 1807.6	12

10 Pressure recovery

Standard: Maintenance service has been performed according to the required maintenance and service intervals. Operating rooms designed prior to 2004 may not be able to achieve the performance targets listed. If system design performance is below the recommended performance levels, the system should be maintained to the maximum design conditions. The design conditions should be clearly documented in all reports.

Schedule	Required maintenance	Service interval in months
Pressure recovery	Test, verify and report room pressure recovery according to the requirements of AS 1807.24. *Note: all tests are performed in the at rest state.* Ref: AS 1807.24	24

11 Room exhaust

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Room exhaust	Test, verify and report that room exhaust rates meet design specification. REF: DGHDPC	12

12 Room doors, pass through cabinets

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Room doors, pass through cabinets	Inspect and verify condition of doors, seals, closers and locks/catches are in good condition. Ref: DGHDPC, GIRHCF	12

13 Reporting and verification

Standard: Condition report has been provided according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Reporting and verification	Provide a condition report for infection control that includes test results and a pass/fail indication of each system listed.	12

14 Reporting and verification

Standard: Condition report has been provided according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Reporting and verification	Provide a condition report for infection control that includes test results and a pass/fail indication of each system listed.	3

15 Positive pressure gradient

Standard: Room positive pressure gradients meet design specification (or GIRHCF if an isolation room) according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Positive pressure gradient	Test, verify and report that a positive pressure is maintained and meets design specification or GIRHCF if an isolation room. Ref: DGHDPC, GIRHCF	12

16 Negative pressure gradient

Standard: Room negative pressure gradients meet design specification (or GIRHCF if an isolation room) according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Negative pressure gradient	Test, verify and report room air change rate. Minimum air changes per hour (ACH) are required with filters at maximum pressure drop. Ref: DGHDPC, GIRHCF	12

17 Ventilation rates (air change rate)

Standard: Air change rate meets design specification or DGHPD requirements (or GIRHCF if an isolation room) according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Ventilation rates (air change rate)	Test, verify and report room air change r ate. Minimum air changes per hour (ACH) are required with filters at maximum pressure drop. Ref: DGHDPC, GIRHCF	12

18 Negative pressure isolation room supply air

Standard: Supply air shut down if exhaust fails tested according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Negative pressure isolation room supply air	Test control system to ensure supply air shuts down if exhaust fails. Ref: DGHDPC, GIRHCF	3

19 Negative pressure isolation room exhaust

Standard: Exhaust is running during power failure and/or if supply air system fails according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Negative pressure isolation room exhaust	Test control system to ensure exhaust is running during power failure and/or if supply air system fails. Ref: DGHDPC, GIRHCF	3

20 Cytotoxic suite exhaust

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Cytotoxic suite exhaust	Maintain supply air and exhaust system according to AS 2639, cl 4.2.1.5. Ref: AS 2639	3

21 Cytotoxic suite supply air

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Cytotoxic suite supply air	Maintain supply air system and air pressures according to AS 2639, cl 4.1–4.2.1.4. Ref: AS 2639	3

22 Pre-vacuum steriliser

Standard: Operational qualification, validation – performance requalification, filter maintenance, leak rate test, instrument calibration and routine maintenance have been performed according to AS 4187 and AS 1410 and service intervals.

Schedule	Required maintenance	Service interval in months
Pre-vacuum steriliser	Maintain operational qualification according to AS 4187 cl 7.8.5	12
	Validate performance requalification according to AS 4187, cl 7.4.3	12
	Maintain filter according to AS 4187, cl 7.7	6
	Leak rate test according to AS 4187, cl 8.6.4.1	Weekly
	Maintain instrument calibration according to AS 4187, Table 7.1	12
	Routine maintenance according to AS 4187, Table 7.1	3

23 Downward displacement steriliser

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Downward displacement steriliser	Maintain operational qualification according to AS 4187, cl 7.8.5	12
	Validate performance requalification according to AS 4187, cl 7.4.3	12
	Maintain filter according to AS 4187, cl 7.7	6
	Maintain instrument calibration according to AS 4187, Table 7.1	12
	Routine maintenance according to AS 4187, Table 7.1	3

24 Dry-heat steriliser

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Dry-heat steriliser	Maintain operational qualification according to AS 4187, cl 7.8.5	12
	Validate performance requalification according to AS 4187, cl 7.4.3	12
	Maintain filter according to AS 4187, cl 7.7	6
	Maintain instrument calibration according to AS 4187, Table 7.1	12
	Routine maintenance according to AS 4187, Table 7.1	3

25 Ethylene oxide steriliser

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Ethylene oxide steriliser	Maintain operational qualification according to AS 4187, cl 7.8.5	12
	Validate performance requalification according to AS 4187, cl 7.4.3	12
	Maintain filter according to AS 4187, cl 7.7	6
	Maintain instrument calibration according to AS 4187, Table 7.1	MR
	Routine maintenance according to AS 4187, Table 7.1	3

26 Peracetic acid steriliser

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Peracetic acid steriliser	Maintain operational qualification according to AS 4187, cl 7.8.5	12
	Validate performance requalification according to AS 4187, cl 7.4.3	12
	Maintain filter according to AS 4187, cl 7.7	6
	Maintain instrument calibration according to AS 4187, Table 7.1	MR
	Routine maintenance according to AS 4187, Table 7.1	3

27 Hydrogen peroxide plasma steriliser

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Hydrogen peroxide plasma steriliser	Maintain operational qualification according to AS 4187, cl 7.8.5	12
	Validate performance requalification according to AS 4187, cl 7.4.3	12
	Maintain filter according to AS 4187, cl 7.7	6
	Maintain instrument calibration according to AS 4187, Table 7.1	MR
	Routine maintenance according to AS 4187, Table 7.1	3

28 Ultrasonic cleaner

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Ultrasonic cleaner	Conduct electrical safety test according to AS 2773.1	12
	Routine maintenance according to AS 4187, Table 7.2	3

29 Rack conveyor washer

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Rack conveyor washer	Instrument calibration – general is maintained according to AS 4187, Table 7.2	12
	Instrument calibration – thermocouple is maintained according to AS 4187, Table 7.2	3
	Routine maintenance according to AS 4187, Table 7.2 and AS 3836	3

30 Aeration cabinet

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Aeration cabinet	Instrument calibration – general is maintained according to AS 4187, Table 7.2	12
	Filter is maintained according to AS 4187, Table 7.2	12
	Routine maintenance according to AS 4187, Table 7.2	3

31 Batch washer

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Batch washer	Instrument calibration – general is maintained according to AS 4187, Table 7.2	12
	Instrument calibration – thermocouple is maintained according to AS 4187, Table 7.2	3
	Routine maintenance according to AS 4187, Table 7.2	3

32 Drying cabinet

Standard: Maintenance service has been performed according to the required maintenance and service intervals.

Schedule	Required maintenance	Service interval in months
Drying cabinet	Instrument calibration – general is maintained according to AS 4187, Table 7.2	12
	Routine maintenance according to AS 4187, Table 7.2	3

3.4 Time tolerance for service intervals

The following tolerances for service intervals are adapted from the DA 19 and apply to all schedules.

Service intervals	Functional area category A Omit for no more than:	Functional area category B Omit for no more than:
Weekly	One day	Two days
Fortnightly	Two days	Three days
Monthly (4 weekly)	Three days	Four days
Quarterly (3 months – 13 weeks)	Five days	One week
Half yearly (6 months – 26 weeks)	One week	Two weeks
Annual (12 months – 52 weeks)	One week	Two weeks
Biennial (24 months – 104 weeks)	One month	One month
Triennial (36 months – 156 weeks)	One month	One month

4 Auditing and reporting

4.1 Maintenance audit program

Auditing of PPM is essential to ensuring a safe environment exists on an ongoing basis and verifies standards are being met. This is an essential process that demonstrates historically appropriate standards have been met should an adverse event occur.

Maintenance audits will help maintain confidence in the health care facility's maintenance capability by verifying conformance with the maintenance standards and by contributing to the continual improvement of the EQUiP accreditation program.

The audit program should be fully documented and include: audit objectives and extent; audit program implementation, including procedures on conducting audits; audit record keeping; and audit reporting. The audit program should be regularly reviewed and evaluated, ideally by an external colleague.

A systematic program of internal auditing should be clearly documented. The use of AS/NZ 9001: Quality management systems – requirements and AS/NZS ISO 19011: *Guidelines for quality and/or environmental management systems auditing*, along with key performance indicators to measure performance, is recommended. To reduce the audit workload, both physical and desktop audits are utilised.

Audit program responsibilities

A senior member of the maintenance department should be made responsible for the audit and report program. The audits can be conducted by an experienced person nominated by the audit manager. The audit program plan should be provided to the infection control committee at the beginning of each financial year. Any proposed capital expenditure or upgrades to the functional areas nominated in this standard should be submitted to the infection control committee to ensure adequate communication and recognition of risk can be undertaken.

An audit report should be provided to the manager of each functional area and the variance results of audits should be tabled at the infection control committee meetings. The reporting format should be developed with input from infection control and clinical staff.

Physical audit

A physical audit requires the auditor to physically verify the work has been satisfactorily completed as detailed in the maintenance schedule. For example, the auditor would visit the plant room containing the operating suite air-handling units and check that the maintenance schedules listed on the work order have been completed.

Desktop audit

A desktop audit is a document-based audit that verifies the work has been satisfactorily completed as detailed in the maintenance schedule for that particular work order. A desktop audit does not require the auditor to physically check the work.

Audit scoring

Audits should be conducted to verify the percentage of completed planned preventive maintenance (PPM) work orders against the total number of PPM work orders for the listed criteria. Work order completion rates of less than 75% of PPM for a given criteria should receive a score of zero. If work order completion rates are less than 100% but greater 75% for a given criteria, the score received is one. If 100% of PPM work orders for a given criteria are completed, the score is two. A total possible score of 206 is achievable for 100% compliance. A suggested maintenance standard audit template has been included in the appendix.

Scoring criteria

0 = Less than 75% compliance
1 = Less than 100% but greater than 75% compliance
2 = 100% compliance
Total possible score = 206

Corrective action

If an audit reveals unsatisfactory compliance, corrective action is required by completing outstanding PPM work orders within the time tolerances for service intervals listed in section 3.4. A re-audit of noncompliant criteria should be conducted once the corrective action has been completed.

4.2 Audit of functional areas category A – very high risk

An audit comprising 10% of maintenance conducted in category A – very high risk areas should be conducted every six months with 100% of all category A – very high risk areas maintenance audited every five years. This audit should consist of 50% physical audits with the remaining 50% a desktop audit of completed and non-completed work orders.

4.3 Audit of functional areas category B – high risk

An audit comprising 20% of all maintenance in category B – high risk areas should be conducted every 12 months with 100% of all high risk maintenance audited every five years. This audit should consist of 25% physical audits with the remaining 75% a desktop audit of completed and non-completed work orders.

4.4 Routine reporting to the client

A routine audit report should be provided to the manager of each functional area within two weeks of an audit being performed.

In the event of a failure to conduct maintenance or were a plant breakdown in a category A area occurs, a variance report should be provided to the functional area manager and infection control within one day.

In the event of a failure to conduct maintenance or were a plant breakdown in a category B area occurs, a variance report should be provided to the functional area manager and infection control within one week.

4.5 Variance reporting to infection control and the client

A variance report (also known as reporting by exception) should be generated if critical plant or equipment fails (excluding a power failure), detailing the plant failure and the response to the failure including corrective action taken. The report should be provided to the functional area manager and through infection control to the infection control committee.

The reporting and feedback processes should demonstrate that variance reports are tabled at appropriate meetings, such as infection control committee meetings, included in quality reports, and that feedback is given to staff including managers or supervisors of functional areas. This report can be in the form of key performance indicators agreed to by the managers receiving the reports.

4.6 Annual audit report

An annual report should be compiled that provides analysis of maintenance performance. The report should provide details on maintenance completed, time tolerances, variance from required maintenance, remedial maintenance works required, planned capital expenditure and the number of reports issued to functional areas and sent through infection control to the infection control committee.

Appendix: Maintenance standards audit template

Maintenance standards audit template

Organisation: _____

Date: _____

☐ Very high risk area audit

☐ High risk area audit

Audits should be conducted to verify the percentage of completed planned preventive maintenance (PPM) work orders against the total number of PPM work orders for the listed criteria. If less than 75% of PPM work orders for a given criteria are not completed, the score is 0. If less than 100% but more 75% of PPM work orders for a given criteria are not completed, the score is 1. If 100% of PPM work orders for a given criteria are completed the score is 2.

Scoring criteria

0 = Less than 75% compliance

1 = < 100% but > 75% compliance

2 = 100% compliance

Audit of functional areas category A – very high risk

An audit comprising 10% of maintenance conducted in category A – very high risk areas should be conducted every six months with 100% of all category A – very high risk areas maintenance audited every five years. This audit should consist of 50% physical audits with the remaining 50% a desktop audit of completed and non-completed work orders.

Audit of functional areas category A – high risk

An audit comprising 20% of all maintenance in category B – high risk areas should be conducted every 12 months with 100% of all high risk maintenance audited every five years. This audit should consist of 25% physical audits with the remaining 75% a desktop audit of completed and non-completed work orders.

Criteria	Comment	Rating
1. Air handling units		
Fans		
Air filters		
Dampers		
Variable speed drives		
Motors and drives		
Air intake and discharge		
Minimum outdoor air quantity		
Air distribution and balance		
	Score	/16
2. Supply air ducts		
Humidifiers		
Fire dampers		
Balance dampers		
Duct inspection and cleaning		
Air quality		
	Score	/10
3. Exhaust ducts		
Fire dampers		
Balance dampers		
Duct inspection and cleaning		
Kitchen exhaust ducts, hoods and grease filters		
	Score	/8
4. HEPA filters – general		
HEPA filter validation testing		
	Score	/2
5. Controls		
Electric, electronic and DDC controls		
Pneumatic controls		
	Score	/4
6. Cooling towers		
Cooling tower		
Chemical dosing		
	Score	/4
7. Chillers		
Chillers – general		
Centrifugal		
Screw		
Reciprocating		
Magnetic		
Air-cooled condenser		
Water-cooled condenser		
	Score	/14

Criteria	Comment	Rating
8. Pumps		
Pumps		
	Score	/2
9. Plumbing systems		
Warm-water systems		
Thermostatic mixing valves		
Hot-water systems		
Cold-water vessels and tanks		
Hot water vessels and tanks		
Water filters for high-risk processes		
Ice machines and storage		
Clinical handwash basin		
General handwash basin		
Reverse osmosis filtration plant		
	Score	/20
10. Cool rooms and freezers		
Cool/freezer room and controls		
Condensing unit		
	Score	/4
11. Electrical		
Cardiac-protected areas		
Body-protected areas		
Emergency lighting and power		
Emergency generator		
Lighting		
Electrical installation		
Electric duct heaters		
Switchboard and wiring		
Electric motors		
	Score	/18
12. Piped medical gas systems		
Medical air compressor – general		
Medical air compressor – specific		
Medical breathing air purity		
Medical vacuum pump – general		
Medical vacuum pump – specific		
Medical gas manifold inspection		
Medical gas manifold check		
Medical oxygen system		
Safety valves		
Gas failure warning systems		
Terminal units		
Pressure gauges and switches		
	Score	/24

Criteria	Comment	Rating
13. Building fabric		
Floor finishes		
Wall finishes		
Ceilings		
Door closers and seals		
Access panels		
Fixed cabinets and fittings		
Minor water damage		
Major water damage (flood)		
Water damage to carpet		
	Score	/18
14. Surgical air systems		
Pressure gradients – OT		
Ventilation rates (air change rate) – operating room		
Air velocity and flow characteristics – ultra clean ventilation system – operating room		
Air velocity and flow characteristics – conventional system – operating room		
HEPA filter validation		
Conventional operating room particle concentrations validation (room class)		
Ultra clean ventilation operating room particle concentrations validation (room class)		
Airflow visualisation – operating room		
Airflow visualisation		
Pressure recovery		
Room exhaust		
Room doors, pass through cabinets		
	Score	/24
15. Special air systems		
Positive pressure gradient		
Negative pressure gradient		
Ventilation rates (air change rate)		
Negative pressure isolation room supply air		
Negative pressure isolation room exhaust		
Cytotoxic suite exhaust		
Cytotoxic suite supply air		
	Score	/14

Criteria	Comment	Rating
16. Sterilising		
Pre-vacuum steriliser		
Downward displacement steriliser		
Dry-heat steriliser		
Ethylene oxide steriliser		
Peracetic acid steriliser		
Hydrogen peroxide plasma steriliser		
Ultrasonic cleaner		
Rack conveyor washer		
Batch washer		
Drying cabinet		
	Score	/20
17. Reporting		
Reporting and verification – 13 weekly		
Reporting and verification – yearly		
	Score	/4
	Total score	**/206**

Total possible score: 206

Score achieved: _____

Compliance percentage: _____

Corrective action

If an audit reveals unsatisfactory compliance, corrective action is required by completing outstanding PPM work orders within the time tolerances for service intervals listed in section 3.4. A re-audit of noncompliant criteria should be conducted once the corrective action has been completed.

Specific action required to address mandatory standards non-conformance:

1. _____
2. _____
3. _____

Other actions required (if applicable):

1. _____
2. _____
3. Table report at next infection control committee meeting.

Audit conducted by: _____

Reporting

Routine reporting to the client

A routine audit report should be provided to the manager of each functional area within two weeks of an audit being performed. In the event of a failure to conduct maintenance or were a plant breakdown in a category A area occurs, a variance report should be provided to the functional area manager and infection control within one day. In the event of a failure to conduct maintenance or were a plant breakdown in a category B area occurs, a variance report should be provided to the functional area manager and infection control within one week.

Variance reporting to infection control and the client

A variance report (also known as reporting by exception) should be generated if critical plant or equipment fails (excluding a power failure), detailing the plant failure and the response to the failure including corrective action taken. The report should be provided to the functional area manager and through infection control to the infection control committee. The reporting and feedback processes should demonstrate that variance reports are tabled at appropriate meetings, such as infection control committee meetings, included in quality reports, and that feedback is given to staff including managers or supervisors of functional areas. This report can be in the form of key performance indicators agreed to by the managers receiving the reports.

Annual audit report

An annual report should be complied that provides analysis of maintenance performance. The report should provide details on maintenance completed, time tolerances, variance from required maintenance, remedial maintenance works required, planned capital expenditure and the number of reports issued to functional areas and sent through infection control to the infection control committee.

Physical audit

A physical audit requires the auditor to physically verify the work has been satisfactorily completed as detailed in the maintenance schedule. For example, the auditor would visit the plant room containing the operating suite air-handling units and check that the maintenance schedules listed on the work order have been completed.

Desktop audit

A desktop audit is a document-based audit that verifies the work has been satisfactorily completed as detailed in the maintenance schedule for that particular work order. A desktop audit does not require the auditor to physically check the work.

Glossary of terms and abbreviations

Term/abbreviation	Definition
ACHS	Australian Council on Healthcare Standards
AS	Australian Standard
AS/NZ ISO	International standard (ISO) adopted by Australian and New Zealand
Audit	An examination or inspection. A procedure for investigating or assessing. Maintenance standards audits are internal audits (see definitions below).
CCU	Coronary care unit
CEO	Chief executive officer
Client	End-user department such as a ward or department
Contractor/contracted maintenance services provider	Persons employed by an external company that provides maintenance services to a health care facility. Contracted maintenance companies have responsibility for their employees.
CSD	Central sterilising department
DA 19	Application Manual DA 19 – HVAC&R maintenance, 3rd edition, 2009. Australian Institute of Refrigeration, Airconditioning and Heating (AIRAH)
DGHDPC	Design guidelines for hospitals and day procedure centres, Department of Human Services, Victoria.
The department	Department of Human Services, Victorian Government.
Engineer	Health care facility owner representative usually working in the maintenance department
EQuIP	Evaluation and Quality Improvement Program
Functional area	An area in which maintenance occurs, for example a hospital ward or an operating theatre. Eighteen functional areas within to the health care facility can be found in one of two categories.
Functional area risk category	Eighteen functional areas have been categorised according to risk to reflect the level of intensity and frequency of maintenance needed. The two categories are: very high risk and high risk.
GIRHCF	Guidelines for the classification and design of isolation rooms in health care facilities, Department of Human Services, Victorian Advisory Committee on Infection Control.
HEPA filter	High efficiency particulate air filters that filter air to an efficiency of 99.97% at 0.3µ (micron)
ICT	Information and communication technology is the new name for information technology (IT) departments
ICU	Intensive care unit

Term/abbreviation	Definition
Immunodeficient	Immunodeficiency (or immune deficiency) is a state in which the immune system's ability to fight infection is compromised or entirely absent. An immunocompromised person may be particularly vulnerable to opportunistic infections, in addition to normal infections that could affect everyone.
In-house maintenance services provider	A team or group that provides maintenance services to a health care service and is employed by that health care service. In-house maintenance services and employees are the responsibility of the health care service.
Internal audit	A maintenance standards audit of a functional area, a functional area risk category or a health care facility performed by in-house staff.
L2 or L3 nursery	Level 2 or level 3 nursery
MR	Manufacturers recommended service intervals
Regs(1)	Victorian Building Regulations
Regs(2)	Victorian Health (Legionella) Regulations
Sentinel event	Sentinel events are relatively infrequent, clear-cut events that occur independently of a patient's condition commonly reflect hospital system and process deficiencies, and result in unnecessary outcomes for patients. (Department of Human Services Victoria definition)
Statutory compliance reporting	Maintenance of buildings and places of public entertainment, maintenance of essential safety measures, Part 12, Victorian Building Regulations

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