

SESLHD PROCEDURE COVER SHEET



Health
South Eastern Sydney
Local Health District

NAME OF DOCUMENT	Infection prevention and control during construction, renovation or maintenance
TYPE OF DOCUMENT	Procedure
DOCUMENT NUMBER	SESLHDPR/374
DATE OF PUBLICATION	September 2024
RISK RATING	Medium
LEVEL OF EVIDENCE	National Safety and Quality Health Service Standards: Standard 3 - Preventing and Controlling Healthcare Associated Infections (Action 3.12)
REVIEW DATE	September 2027
FORMER REFERENCE(S)	Nil
EXECUTIVE SPONSOR or EXECUTIVE CLINICAL SPONSOR	Director, Clinical Governance and Medical Services
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FUNCTIONAL GROUP(S)	Clinical Governance Infection Control
KEY TERMS	Renovation, redevelopment, building works, infection prevention and control
SUMMARY	<p>To provide additional guidance in conjunction with the Australasian Health Facility Guidelines, Part D-Infection Prevention and Control - Construction and Renovation, to ensure that all construction, renovation, installation and maintenance activities on healthcare sites are undertaken in a safe and appropriate manner to reduce the risk of infection to patients, visitors and staff.</p> <p>This procedure outlines the risk factors contributing to healthcare associated invasive infections such as <i>Aspergillois</i>, and other environmental pathogens and identifies at-risk patient groups. Recommendations are made for the measures that can be undertaken to reduce these health risks. This procedure does not cover Asbestos. Please refer to SESLHDPR/314 - Asbestos Risk Management.</p>

COMPLIANCE WITH THIS DOCUMENT IS MANDATORY

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1. POLICY STATEMENT

The documentation and implementation of infection control principles is critical to the planning, design and construction/renovation process in all areas of the facility. Building services should comply with the relevant Australian and New Zealand standards, legislative, and regulatory requirements, in addition to the relevant guidelines issued by the NSW controlling authority. Healthcare associated infection (HAI) is a significant problem for modern healthcare facilities which can lead to poor outcomes for the patient (including death) and management inefficiencies. This procedure does not cover Asbestos. Please refer to procedure [SESLHDPR/314 - Asbestos Risk Management](#).

2. BACKGROUND

Current construction practices can impact on patient wellbeing by disseminating bacteria and filamentous fungi that can cause healthcare-associated infections. Of these healthcare-associated infections, the vast majority are due to filamentous fungi such as *Aspergillus*. Filamentous fungi typically produce many airborne spores that can be inhaled. Outbreaks of invasive Aspergillosis has become a well-recognised complication of construction, demolition or renovation activities generating dust containing fungal spores in or near hospital wards accommodating immunocompromised patients.

Fungal organisms are resistant to desiccation and can remain suspended in the air for long periods, travelling far from their source. Transmission of these contaminated dust particles can be from construction or renovation projects within, or adjacent to, the healthcare facility, improperly functioning or poorly maintained air handling systems, false ceilings, open door construction sites, open windows, carpet, hospital vacuum cleaners and air filters.

Activities that disrupt water supplies can introduce waterborne pathogens such as *Legionella* species into the drinking water supply which can then contaminate cooling water systems (water cooling towers) increasing the risk of *Legionella* outbreaks. Increased dust from construction can also reduce the effectiveness of cooling tower disinfection, compounding the risk of microbial overgrowth. *Legionella* is controlled in NSW under the *Public Health Act 2010* and *Public Health Regulation 2012*.

It is essential that all key stakeholders are included in all stages of the project to minimise the risk of vulnerable patients acquiring a serious infection whilst in a healthcare setting.

3. DEFINITIONS

Airborne transmission: Occurs by dissemination of either airborne droplet nuclei (small particle residue [5µm or smaller in size] of evaporated droplets that may remain suspended in the air for long periods of time) or dust particles containing the infectious agent.

Aspergillus: Is a spore forming fungi that commonly occurs in soil, water, organically enriched debris, decaying vegetation and within the structure of buildings.

Aspergillosis: Is an infection caused by *aspergillus* which usually affects the respiratory system, but their signs and severity vary greatly.

Biocide: a chemical agent used to eliminate microorganisms in cooling water systems.

Colony forming units per millilitre: Estimate of viable bacteria or fungal units.

Construction: Is a process that consists of the building or assembling of infrastructure.

Construction Activity Type: Construction activity type is defined by the amount of dust that is generated, the duration of the activity and any impact on the Heating/Ventilation/Air Conditioning (HVAC) systems.

Cooling water systems: are a device for lowering the temperature of water or other liquid by evaporative cooling or an evaporative condenser that incorporates a device containing a refrigerant.

Demolition: Tearing down of buildings or other structures.

Dust: Particles in the atmosphere that come from various sources.

Excavation: Excavation work generally means work involving the removal of soil or rock from a site to form an open face, hole or cavity using tools, or machinery.

Filamentous Fungi: Fungi are subdivided on the basis of their life cycles, the presence or structure of their fruiting body and the arrangement of and type of spores (reproductive or distributional cells) they produce. Filamentous fungi make up two of the three major groups of moulds.

Healthcare-associated infection (HAIs): Any infection that occurs during or after a healthcare encounter that was not present or incubating at the time of the patient's admission.

Immunosuppressed: An abnormal condition of the immune system is characterised by markedly inhibited ability to respond to antigenic stimuli.

Infection: The invasion of the body by pathogenic microorganisms that reproduce and multiply, causing disease by local cellular injury, secretion of a toxin or antigen-antibody reaction in the host.

Legionella Risk Management Plan: A Risk Management Plan (RMP) which documents the risk assessment, actions, and control strategies to reduce the risk of legionella growth and transmission from a cooling water system. The Legionella RMP is a core safeguard in preventing Legionnaires' disease outbreaks and must be documented using the Risk Management Plan (Approved Form 1). This is to be completed by a competent person. Refer to [NSW Guidelines](#) for further information.

Micro-organisms: A living thing that is too small to be seen with the naked eye. Examples of micro-organisms include bacteria, viruses or fungi.

Mould: The colloquial term 'mould' is applied to a large and taxonomically diverse number of fungal species where their growth results in a mouldy appearance of objects.

Renovation: (also called **remodelling**) is the process of improving a structure.

Repair: To restore to sound condition after damage.

Reservoirs: Is the principal habitat where a specific infectious agent lives and multiply and from which it may spread to cause disease.

Spores: A dormant, reproductive cell formed by certain organisms. It is thick-walled and highly resistant to survive under unfavourable conditions.

Transmission: A passage or transfer, as of a disease from one individual to another.

Warm water system: a system designed to heat and deliver water at a temperature of at least 60 degrees C at each outlet point. Refer to procedure [SESLHDPR/344 - Water Systems: Legionella Control in Hospitals](#) for more information.

4. RESPONSIBILITIES

Project Manager, Engineering Department Manager and/or Corporate Facility Coordinator will:

- Ensure all contractors have been provided with this procedure prior to commencement of works and its significance understood in order to aid with compliance.

General Managers / Service Managers will:

- Ensure that Infection Prevention and Control services are appropriately consulted during the planning process of work, before commencement of construction activities during construction and for sign-off of works where infection control implications exist
- Develop and maintain a water risk management plan for the warm water and cooling water systems
- Include an Infection Prevention and Control/Work Health and Safety (WH&S) Coordinator, Microbiologist and/or Infectious Diseases physician in the risk assessment team
- Consult with the Public Health Unit where required
- Manage and escalate risks.

Infection Prevention and Control (IPC) or delegate and Work Health and Safety (WHS) Officer will:

- Ensure that a risk assessment of the patient population within or adjacent to construction site is conducted prior to the commencement of any construction activities
- Audit compliance with dust mitigation activities during redevelopment
- Educate staff members as needed about risk to immune-suppressed patients exposed to construction dust.

Project Coordinator will:

- Work with Engineering Department and/or Senior Corporate Support Service Operations Manager to confirm support for cleaning requirements prior to the project commencing
- Ensure the area undergoes the required level of cleaning prior to re-commissioning an area
- Coordinate inspection and Environmental Audit of final cleaning with infection control and an Senior Environmental Service representative prior to opening/re-opening the area.

Employees will:

- Comply with Infection Prevention and Control policies in relation to building works
- Report any risks and incidents related to building works to line manager

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

- Must be aware of potential risks to their patient groups when construction projects are being undertaken, and take all measures to identify symptoms, diagnose, treat, and consult an infectious diseases physician as necessary.

5. PROCEDURE

5.1 Preliminary Considerations

Prior to the commencement of any construction or renovation project the facility/service executive and the project team/engineering and maintenance in conjunction with WHS Coordinator and IPC Department must consider the following:

- Design and function of the new structure or area
- Assessment of the infection risk from environmental organisms
- Strategies to minimise the risk of construction associated infection e.g. dust control
- Monitoring requirements indicated during the project including costs of monitoring
- If risk changes during project, and unforeseen risks occurs i.e. additional dust monitors needed, contracts can be updated to include that additional expenses will be incurred by contractor
- Ensure the competent person who completes the Legionella Risk Management Plan has been advised of the risk of contamination and has documented requirements for the additional risk assessment
- Cleaning requirements throughout, during and at the end of the project.

5.2 Risk Assessment and Infection Prevention Measures

- The risk identification strategy must address as a minimum:
 - The extent of construction work
 - The identification of the patient population at risk
 - The location of the patient population in relation to the site and construction
 - Ventilation system types and potential impact
 - Traffic and supply routes
 - Determination of air monitoring requirements, methodology and frequency, including baseline measurements if required (air quality and dust monitoring)
 - The identification of possible contaminants and their locations, as contaminants may be present in ceiling dust; service shafts (especially damp conditions); sprayed fire retardants, and bird droppings
 - Prophylactic treatment options for at risk patients if required.

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

5.3 Patient Risk Assessment, Management of at risk patients, and controls

No evidence of increased risk	<ul style="list-style-type: none"> All patients/staff/service providers and contractors <i>not</i> listed below.
At risk	<ul style="list-style-type: none"> Patients/individuals on prolonged courses of high dose steroids particularly those hospitalised for prolonged periods Severely immunosuppressed HIV/AIDS patients Patients undergoing mechanical ventilation Patients/individuals having chemotherapy who are not neutropenic* Dialysis patients.
High risk	<ul style="list-style-type: none"> Neutropenia* for less than 14 days following chemotherapy Solid organ transplantation Neonates in Intensive Care Units (ICU). Adult Acute lymphoblastic leukaemia (ALL) on high dose steroid therapy Chronic Granulomatous Disease of Childhood (CGDC)
Very high risk	<ul style="list-style-type: none"> Allogeneic bone marrow transplantation: within 12 months of transplant, if >12 months, consult with haematologist Autologous peripheral blood stem cell transplantation, i.e. during the neutropenic period Prolonged neutropenia for greater than 14 days following chemotherapy or immunosuppressive therapy: e.g. acute myeloid leukaemia (AML), acute lymphoblastic leukaemia (ALL), primary CNS lymphoma Aplastic anaemia patients Children with Severe Combined Immunodeficiency Syndrome (SCIDS); or Chronic Granulomatous Disease of Childhood (CGDC) Peripheral stem cell transplantation, i.e. during the neutropenic period

• Table 1: Risk for Invasive Aspergillosis

*Neutropenia defined as absolute neutrophil count (ANC), $<1 \times 10^9/L$

5.4 Clinical Risk Assessment and Management

- A risk assessment of the patient population within or adjacent to construction site must be undertaken by the clinical service manager/director or delegate prior to the commencement of any construction/renovation activities. This is particularly important when demolition or major construction works are planned external to or within the healthcare facility
- This type of activity is recognised as the most significant risk for the severely immunosuppressed patient population group (refer table 1)
- All clinicians must be aware of potential risks to their patient group when construction projects are undertaken and take all measures to identify symptoms, diagnose, treat, and consult infectious diseases as necessary.

5.5 Minimising Patient Exposure to Construction-associated Contaminants

- If possible relocate at-risk patients who are adjacent or near to the construction zone
- Where indicated, inform high risk patients of risks of exposure when going near construction zone
- Ensure surgical masks are available to high-risk patients to wear in transit when near construction zones, if it is unavoidable
- Where HEPA-filtered positive pressure rooms are available, high-risk inpatients must have priority access.

5.6 Environmental Controls

[The Australian Health Facilities Guidelines](#) Part D identifies minimum control measures to be implemented when undertaking construction activities on occupied healthcare sites. Based on these recommendations and international best practice, control measures for a specific activity can be identified that will reduce the risk of infection to designated patient groups or zones.

There are five key components to this assessment and management of associated risks:

- Determine the type of construction activity (refer to [Step 1](#))
- Determine the population or geographical risk group (refer to [Step 2](#))
- Determine the 'Class' of control measures prescribed using the construction activity and Risk Group Matrix (refer to [Step 3](#))
- Determine the type of precautions that will be required ([Step 4](#)) according to the risk identified in Step 3.
- Complete the construction and Renovation Risk Assessment Form ([Step 5](#)).
- During the construction/renovation phase dust barriers and other protective measures should be regularly monitored. The frequency of monitoring depends on a risk assessment of the area involved, e.g. If high risk areas and patient groups are involved then daily monitoring should occur using the Environmental Monitoring Compliance Checklist ([appendix 3](#)).
- Once the construction/renovation project is completed, and before occupation, all barriers should be removed, the area thoroughly cleaned and air handling and water systems tested. Prior to use, results must be within acceptable parameters – use [part A](#) of [appendix 4](#)- Completion of Project Checklist as a guide.
- Prior to use, a member of the multi-disciplinary planning committee should inspect the area to ensure it is fit for purpose using [part B](#) appendix 4 of the Completion of Project Checklist.

5.7 Assessment of Existing Air Quality Controls and Implementation of 'Enhanced Controls'

- Healthcare facilities undertaking major construction or renovation, including demolition and excavation must:
 - Identify the location of all air-conditioning intake vents in relation to proposed works
 - Identify the areas within the facility served by these vents
 - Confirm type of primary air filter installed is compliant with AS 1324.1 2001
 - Retrofit those air vents that do not comply with this standard, especially if servicing high-risk areas. If the air handling units cannot tolerate the retro-fit of these filters, then the highest rating tolerable should be installed
 - Increase routine inspection, maintenance and replacement of filters as necessary during the construction works
 - Where construction work is being undertaken the competent person completing the Legionella RMP should evaluate the risk of construction dust on the cooling water system and increase monitoring, sampling and cleaning/maintenance where required. Refer to [NSW Guidelines](#) for further information.

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

- Cleaning, disinfection and maintenance processes and schedule must be consistent with AS/NZS 3666.2: 2011. Air-handling and water systems of buildings - Microbial control may need to be increased during periods of heavy excavation.

5.8 Identification of Potential Dust and Spore Intrusion Zones

- Healthcare facilities undertaking major construction or renovation, including demolition and excavation must:
 - Identify all opening doors and windows within the facility
 - Areas with shared air routines
 - Gaps or ingress locations in external and internal walls, ceilings, roof, or eaves etc. where dust and spores may gain access to internal patient zones or ceiling spaces
 - Identify missing, broken, or ajar ceiling tiles and replace, repair or adjust.

5.9 Water Quality Controls

- See procedure [SESLHDPR/344 - Water Systems: Legionella Control in Hospitals.](#)

5.10 Microbial Sampling Fungal Spore Sampling

- Baseline microbial sampling for fungal spores may be considered prior to the commencement of major construction and renovation activities but only in certain circumstances. Cumulative data is used to establish indoor and outdoor background levels of fungi or bacterial for a particular site.
- The location for sampling is determined in consultation with the facility planners and in consultation with key stakeholders i.e. Microbiology, WHS, Infectious Diseases, Infection Control using the location of the proposed works, population and geographical risk groups.

5.11 Dust Monitoring

- Constructing buildings, roads and other infrastructure can have a substantial, temporary impact on local air quality. The most common impacts are increased particulate matter (PM) concentrations and dust soiling. Depending on the risk of dust effects occurring, monitoring may need to be carried out during both demolition and construction activities to:
 - Ensure that the applied mitigation measures are effective
 - Ensure that the construction activities do not give rise to any exceedances of the air quality objectives/limit values for PM10 and/or PM2.5, or any exceedances of recognised threshold criteria for dust deposition/soiling
 - Provide an 'alert' system with-regard to increased emissions of dust, and a trigger for cessation of site works or application of additional abatement controls
 - Help to attribute any high levels of dust to specific activities on site in order that appropriate action may be taken
- A period of baseline monitoring prior to the start of construction activities (including any demolition or site clearance works) can often be beneficial
- In the selection of monitoring locations, a number of issues need to be taken into account, including a decision on the number of sites that are to be established, whether they are to remain in a permanent position throughout the entire construction works, and whether monitoring is required for direct comparison with the objectives/limit values. There are a number of practical issues that also must be considered, such as the availability of electrical power, access to the monitoring sites, and security
- As reports are often retrospective. It is important for builders to document findings of daily visual assessments, including obvious reasons for increased release of dust i.e. weather (dry periods with higher wind speeds) and site operations (activities with increased potential for dust

release). This assists to provide evidence to healthcare facilities about strategies that were used at the time of the spike to mitigate risk i.e. increasing the use of sprinkler systems

- When it is clear that these conditions are occurring, the nominated representative (building supervisor) should increase the frequency of visual assessments of dust release and monitoring of any visible surface soiling. This is particularly the case if the prevailing wind is in a direction towards sensitive receptors. If cooling water systems are impacted, increase frequency of microbial water sampling to assess elevated Legionella risk.

5.12 Operating theatre Commissioning Microbiological Testing

- There is no national or international consensus on the methods, frequency, types of sampling or acceptable levels of microbial contamination. However, there is evidence to support microbiological air sampling of operating rooms as part of the commissioning process of a new facility or following major refurbishment, as an adjunct to other heating, ventilation and air conditioning (HVAC) quality assurance controls.
- The purpose of microbiological air sampling is to gauge the efficacy of the HVAC systems, including high-efficiency particulate air (HEPA) filters following installation or after major structural refurbishment. Please refer to appendix 7 for Microbiological Air Sampling.

Pre-construction and renovation assessment

5.1. Step 1 – Construction activity type

Construction activity type is defined by:

- The expected amount of dust generated
- Duration of the involvement of the heating, ventilation and air conditioning (HVAC) systems

<ul style="list-style-type: none"> • Type A 	<ul style="list-style-type: none"> • Activities which do not generate dust (inspection and non-invasive activities). Includes but is not limited to: • Activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection, e.g. painting, minor plumbing or electrical trim work
<ul style="list-style-type: none"> • Type B 	<ul style="list-style-type: none"> • Activities which generate minimal dust. Includes but is not limited to: • Installation of telephone and computer cabling • Access to chase spaces • Cutting of walls or ceilings where dust migration can be controlled
<ul style="list-style-type: none"> • Type C 	<ul style="list-style-type: none"> • Activities which generate a moderate to high level of dust. Includes but is not limited to: • Demolition or removal of built-in building components or assemblies • Sanding of walls for painting or wall covering • Removal of floor coverings, ceiling tiles and casework • New wall construction • Minor duct work or electrical work above ceilings • Major cabling activities
<ul style="list-style-type: none"> • Type D 	<ul style="list-style-type: none"> • Major demolition and construction projects. Includes but is not limited to: • Heavy demolition • Removal of a complete ceiling system • New construction.

- Note: For type B activities that are being undertaken in areas that house high risk patients, the level of dust containment will depend on the potential impact in patient care areas e.g. a cabling installation in a corridor adjacent to patient rooms may not require full sealing of the area-conditioning shut down etc. if patients can be moved, doors closed etc. this would mitigate the risk to these patients.

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

5.2. Step 2 – Identify patient risk groups

The patient risk group is defined by the project location.

Using the following table, identify the patient risk group. If more than one area will be affected, select the higher risk group.

Group 1-Low risk	<ul style="list-style-type: none"> • Office areas • Public areas • Unoccupied wards • Non-patient/low risk areas not listed elsewhere
Group 2-Medium risk	<ul style="list-style-type: none"> • Admission/discharge units • Allied health areas • Catering services (kitchens) • Laundry services • Mental health areas • Outpatient clinics (except oncology/haematology) • All other patient care areas unless stated in high and highest risk groups • Public corridors used by patients and to transport linen & supplies • Laboratories not specified under High risk group
Group 3-High risk	<ul style="list-style-type: none"> • Dental clinics • Echocardiography • Emergency department • Patient care laboratories e.g. pulmonary (respiratory) function, sleep • Labour and delivery units (except operating room) • Maternity/paediatrics • Microbiology and Virology laboratories • Medical/surgical wards • Nuclear medicine • Radiology/magnetic resonance imaging (MRI)
Group 4-Highest risk	<ul style="list-style-type: none"> • Anaesthesia areas • Cardiac catheterisation and angiography areas • Cardiovascular/cardiology wards • Day surgery units • Dialysis units • Endoscopy and bronchoscopy areas • Haematology/oncology wards and outpatient clinics (including radiotherapy) • Intensive care • High dependency units • Operating theatres (including recovery) • Pharmacy clean rooms • Sterilising departments (including sterile stores) • Transplant units

5.3. Step 3 – Determine the class of precautions

Match the **construction activity type** (A, B, C, D) determined in step 1 with the **patient risk group** determined in step 2 (low, medium, high, highest) to ascertain the **class of precautions** required (I, II, III, IV)

Patient risk group	Construction activity type			
	Type A	Type B	Type C	Type D
Group 1 - Low	Class I	Class II	Class II	Class III / IV
Group 2 - Medium	Class I	Class II	Class III	Class IV
Group 3 - High	Class I	Class III	Class III / IV	Class IV
Group 4 - Highest	Class I – III	Class III / IV	Class III / IV	Class IV

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

5.4. Step 4 – Type of precautions required during construction or renovation project

- IP&C staff (or designated responsible person) in liaison with the appropriate clinical manager will determine whether construction or renovation activity poses a sufficient increased risk to require patients to be moved away from the construction/renovation area of the healthcare facility where such activities are not occurring.
- Where indicated, inform high risk patients of risks of exposure when going near construction zone.
- Ensure surgical mask are available to high-risk patients to wear in transit when near construction zones, if it is unavoidable.

	Concise Description of Required Infection Control Precautions by Class	Check	Detailed Description of Required Infection Control Precautions by Class
Class I	<ol style="list-style-type: none"> 1. Work in a manner to minimise generation dust from construction operations. 2. Immediately after visual inspection completed, replace any ceiling tile displaced. 		<p>Maintenance Staff & Contractors</p> <p><u>Dust Control</u></p> <ul style="list-style-type: none"> • Immediately replace tiles displaced for visual inspection • Vacuum work area <p><u>Plumbing</u></p> <ul style="list-style-type: none"> • Schedule water interruption during low activity • Flush water lines prior to reuse. • Watch for discoloured water. • Ensure water temperature meets the standards set by the health care facility. <ul style="list-style-type: none"> • Ensure tap aerators are not installed or used. • Maintain as dry an environment as possible and report any water leaks that occur to walls and substructures. <p>Environmental Services</p> <p><u>Plumbing</u></p> <ul style="list-style-type: none"> • Report discoloured water and water leaks to maintenance and ICP. <p>Medical/Nursing Staff</p> <p><u>Risk Reduction</u></p> <ul style="list-style-type: none"> • Minimise patient exposure to construction/renovation area.

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

			<ul style="list-style-type: none"> Report discoloured water and water leaks to maintenance and ICP.
Class 2	<p>The following are to be considered in addition to Class I</p> <ol style="list-style-type: none"> Provide active means to prevent dust from dispersing into atmosphere (e.g. use of extractor fans). Seal unused doors with masking tape. Water mist work surface or utilise HEPA vacuum to control dust while cutting. Isolate HVAC system in areas where work is being performed Place dust mats at entrance to work area and replace or clean when no longer effective. Contain construction waste before transport in tightly covered containers. 		<p>The following specifications are to be considered in addition to Class I. Class II specifications must be followed if dust will be created during the Type A construction activity.</p> <p><u>Maintenance Staff & Contractors</u></p> <p><u>Dust Control</u> Execute work by methods that minimise dust generation from construction or renovation activities.</p> <ul style="list-style-type: none"> Wet mop and/or vacuum as necessary Provide active means to minimise dust generation and migration into the atmosphere Use drop sheets to control dust Control dust by water misting work surfaces while cutting. Seal windows and unused doors with duct tape Seal air vents in construction/ renovation areas Place dust mat at entrance to and exit from work areas. <p><u>Ventilation</u></p> <ul style="list-style-type: none"> Disable the ventilation system in the construction/renovation area until the project is complete Monitor need to change and/or clean filters in construction or renovation area. <p><u>Debris Removal & Clean-up</u></p> <ul style="list-style-type: none"> Contain debris in covered containers or cover with a moistened sheet before transporting for disposal. <p><u>Plumbing</u></p> <ul style="list-style-type: none"> Avoid collection tanks and long pipes that allow water to stagnate <p><u>Environmental Services</u></p> <p><u>Dust Control</u></p> <ul style="list-style-type: none"> Wet mop and vacuum area with a HEPA filtered vacuum as needed and when work is complete

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

			<ul style="list-style-type: none"> Wipe horizontal work surfaces with a disinfectant. <p><u>Plumbing</u></p> <ul style="list-style-type: none"> Refer to the hospital water management plan for warm water systems for decontamination where a water supply has been found to have Legionella growth. <p><u>Medical/Nursing Staff</u></p> <p><u>Risk Reduction</u></p> <ul style="list-style-type: none"> Identify high-risk patients who may need to be temporarily moved away from the construction zone Ensure that patient care equipment and supplies are protected from dust exposure.
Class 3	The following are to be considered in addition to Class I and II		The following specifications are to be considered in addition to Class I and II
	1. Alter or isolate the air handling system in the construction activity area to prevent contamination of the entire duct system. Supply ducts and return air ducts should be covered to prevent dust contamination.		<u>Maintenance Staff & Contractors</u>
	2. Where containment is possible, utilise building walls and close all doors (excluding construction access doors) and seal with duct tape to prevent escape of dust and debris.		<u>Risk Reduction</u>
3. In Construction, demolition, or reconstruction projects where containment with existing building walls and doors is not possible, use one of the following:		<u>Dust Control</u>	Ensure that ICP consultation has been completed and infection prevention and control measures have been approved.
	a. Airtight plastic barriers (e.g. Zipwall system) extending from floor to ceiling decking or ceiling tiles (if not removed)		<ul style="list-style-type: none"> Erect an impermeable dust barrier made of plasterboard or plywood from true ceiling (includes area above false ceilings) to the floor Ensure that windows, doors, plumbing penetrations, electrical outlets and intake and exhaust vents are properly sealed with plastic and duct taped within the construction/renovation area Vacuum air ducts and spaces above ceilings if necessary. Ensure that construction workers wear protective clothing that is removed each time they leave the construction site before going into patient care areas Do not remove dust barrier until the project is complete and the area has been cleaned thoroughly and inspected
	b. Plastic barriers with seams sealed with duct tape to prevent dust and debris escape		
	c. Drywall barriers with seams or joints covered or sealed to prevent escape of dust		

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

	and debris.		<ul style="list-style-type: none"> Remove dust barrier carefully to minimise spreading dust and other debris particles associated with the construction project.
	4. Maintain negative pressure within work site, if necessary.		<p><u>Ventilation</u></p> <ul style="list-style-type: none"> Maintain negative pressure within construction zone by using portable HEPA equipped air filtration units Ensure air is exhausted directly outside and away from intake vents or filtered through a HEPA filter before being recirculated Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction or renovation project is complete.
	5. Direct pedestrian traffic from construction areas away from patient-care areas and limit opening and closing of doors (or other barriers) that may cause dust dispersion, entry of contaminated air, or tracking of dust to patient areas.		<p><u>Debris Removal & Clean-up</u></p> <ul style="list-style-type: none"> Remove debris at the end of the work day. Erect an external chute if the construction is not taking place on ground level Vacuum work area with HEPA filtered vacuums daily or more frequently if needed. <p><u>Plumbing</u></p> <ul style="list-style-type: none"> Flush water lines at construction or renovation site and adjacent patient care areas before patients are readmitted. <p><u>Environmental Services</u></p> <ul style="list-style-type: none"> Increase frequency of cleaning in areas adjacent to the construction zone while the project is under way In cooperation with ICP ensure that the construction zone is thoroughly cleaned when work is complete. <p><u>Infection Prevention and Control Personnel</u></p> <p><u>Risk Reduction</u></p> <ul style="list-style-type: none"> Move high-risk patients who are in or adjacent to the construction area In cooperation with environmental services ensure that construction zone is thoroughly cleaned when work is complete

SESLHD PROCEDURE

Infection Prevention and Control during Construction,
Renovation and Maintenance

SESLHDPR/374

			<ul style="list-style-type: none"> Inspect dust barriers. <p><u>Traffic Control</u></p> <ul style="list-style-type: none"> In cooperation with the facility project manager designate a traffic pattern for construction workers that avoids patient care areas and a traffic pattern for clean or sterile supplies and equipment that avoids the construction area. <p><u>Plumbing</u></p> <ul style="list-style-type: none"> conduct a follow up microbial water sample to ensure the system is not contaminated Refer to the hospital water management plan for warm water systems for decontamination where a water supply has been found to have Legionella growth. <p><u>Medical/Nursing Staff Risk Reduction</u></p> <ul style="list-style-type: none"> Move high-risk patients who are in or adjacent to the construction area Ensure that patients do not go near the construction area. In cooperation with environmental services and ICP ensure that construction zone is thoroughly cleaned when work is complete.
Class 4	<p>The following are to be considered in addition to Class I, II and III</p> <ol style="list-style-type: none"> Place isolation barriers at penetration of ceiling envelopes, chases and ceiling spaces to stop movement of air and debris. When openings are made into existing ceilings in clinical/laboratory areas, where possible, a decontamination unit which will seal off opening and fit tightly from ceiling to floor should be used. 		<p>The following specifications are to be considered in addition to those in Class I, II and III.</p> <p><u>Maintenance Staff & Contractors Dust Control</u></p> <ul style="list-style-type: none"> Before starting the construction project erect an impermeable dust barrier that also has an anteroom. Place a walk-off mat outside the anteroom in patient care areas and inside the anteroom to trap dust from the workers' shoes, equipment and debris that leaves the construction zone

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

	<p>3. Construct an anteroom to ensure airflow from the clean area through the anteroom and into the work area. Require all personnel to pass through the anteroom whenever entering or exiting the construction/renovation site to put on or remove disposable coveralls or shoe covers.</p>	<ul style="list-style-type: none"> • Ensure that construction workers leave the construction zone through the anteroom so they can be vacuumed with a HEPA filtered vacuum cleaner before leaving the work site; or that they wear cloth or paper coveralls that are removed each time they leave the work site. • Direct all personnel entering the construction zone to wear shoe covers • Ensure that construction workers change the shoe covers each time they leave the work site • Repair holes in walls within eight hours or seal them temporarily. <p><u>Ventilation</u></p> <ul style="list-style-type: none"> • Ensure negative pressure is maintained within the anteroom and construction zone • Ensure ventilation systems are working properly in adjacent areas • Review ventilation system requirements in the construction area with ICP to ensure system is appropriate and is functioning properly. <p><u>Evaluation</u></p> <ul style="list-style-type: none"> • Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project. <p><u>Plumbing</u></p> <ul style="list-style-type: none"> • If there are concerns about Legionella in the drinking water, refer to the hospital water management plan for actions to undertake. <p><u>Environmental Services</u></p> <p><u>Evaluation</u></p> <ul style="list-style-type: none"> • Review infection prevention and control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the
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SESLHD PROCEDURE

Infection Prevention and Control during Construction,
Renovation and Maintenance

SESLHDPR/374

		<p>construction project.</p> <p><u>Infection Prevention and Control Personnel</u></p> <p><u>Risk Reduction</u></p> <ul style="list-style-type: none"> • Regularly visit the construction site to ensure that preventive measures are being followed • Wear coveralls and shoe covers when visiting the site. <p><u>Evaluation</u></p> <ul style="list-style-type: none"> • Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project. <p><u>Medical/Nursing Staff</u></p> <p>To reduce the possibility of transferring fungal spores, staff are not permitted to visit the construction site.</p> <p><u>Evaluation</u></p> <ul style="list-style-type: none"> • Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project. • Consider using another source of potable water for patients who are at greatest risk until potable water has been cleared of signs of Legionella after major plumbing installation/repairs.
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5.5. Step 5 – Construction and renovation risk assessment

A risk assessment form listed in [appendix 2](#) must be undertaken by the designated responsible staff which include (but not limited to) project manager, infection prevention and control, work health & safety, engineering services and the building contractor, before construction or renovation activities commence.

- The location and frequency of the microbial water sampling program should form part of the risk management plan.

6. DIAGNOSIS AND SURVEILLANCE

- It is imperative to maintain a high index of suspicion for any diagnosis of health care associated Aspergillosis in at-risk patient groups. This surveillance should be achieved through review of relevant clinical cases at ward level and review of relevant microbiological/histological specimens at laboratory level
- Potential outbreaks/cases of invasive disease related to construction activities require immediate action and notification to Facility Executive, Director of Clinical Services, Microbiologists, Infectious Diseases Clinicians, Infection Prevention and Control, the Public Health Unit, WHS and treating teams.

7. COMMUNICATION AND EDUCATION

- Communication and education are two vital elements to the successful implementation of proactive infection control measures to reduce the risk of construction-associated nosocomial infections from environmental organisms. [See appendix 4 and 5](#)
- It is imperative that all relevant parties including but not limited to: architects, project managers, contractors, sub-contractors, hotel services, building services, medical and nursing staff are provided with appropriate education and communications regarding the implementation of effective infection control measures and personal safety at all stages of construction work
- Factsheets are available for clinical staff and patients. [See appendix 6](#)
- Site induction of building workers should be carried out as per [SESLHDPR/333 - Contractor Management](#).

11. REFERENCES

- [Australian Health Facility Guidelines. Part D - Infection Prevention and Control.](#)
- [NSW Health Policy Directive PD2023_025 - Infection Prevention & Control in Healthcare Settings](#)
- [Australian Commission on Safety & Quality in Healthcare: Australian Guidelines for the Prevention and Control of Infection in Healthcare 2024](#)
- [National Standard 3: Preventing and Controlling Infections](#)
- Vonberg, R-P, Gastmeier, & P. (2006) Nosocomial Aspergillosis in outbreak settings. Journal of Hospital Infection, 63, 246-254
- AS 1324.1-2001 Air filters for use in general ventilation and air conditioning - Application, performance and construction
- AS 4260-1997 High efficiency particulate air (HEPA) filters - Classification, construction and performance
- [NSW Health Guideline GL2023_009 - Engineering Services](#)
- [National Guidelines for the Prevention of Nosocomial Invasive Aspergillosis During Construction/Renovation Activities, Ireland 2018.](#)
- [NSW Health Policy Directive PD2015_008 - Water Requirements for the Provision of Cold and Heated Water](#)

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

- [enHealth Guidelines for Legionella Control in the Operation and Maintenance of Water Distribution Systems in Health and Aged Care Facilities 2016](#)
- [NSW Health Guidelines for Legionella Control in Cooling Water Systems 2018](#)
- AS/NZS 3666.3:2011 Air-handling and water systems of buildings-Microbial control Part 3: Performance – based maintenance of cooling water systems
- AS/NZS 3666.2:2011. Air-handling and water systems of buildings - Microbial control
- [SESLHDPR/344 - Water Systems: Legionella Control in Hospitals](#)
- [IAQM. 2012. Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites](#)
- [South Australia Health. 2018. Infection prevention and control during construction and renovation: toolkit](#)
- [SESLHDPR/314 - Asbestos Risk Management](#)
- [SESLHDPR/333 - Contractor Management](#)

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

8. DOCUMENTATION

- Infection Risk Assessment and Prevention and Control Measures for Construction Activities Checklist and Permit [Refer to Appendix 2](#)
- Infection Prevention and Control Compliance Check List [Refer appendix 3 & 4](#)
- Also refer to [Pre-Occupancy Checklist](#).

9. AUDIT

- [See appendix 3](#): Infection Risk Assessment for Construction Activities
- [See appendix 4](#): Site Inspections

10. VERSION AND APPROVAL HISTORY

Date	Version No.	Author and approval notes
November 2014	0	Draft procedure developed
April 2015	1	Draft for Comment Period
September 2015	1	Endorsed by Executive Sponsor. Forwarded to CE and CQC for approval to be published.
September 2015	1	Approved for publishing by CE and CQC
July 2018	2	Minor review – tables and references updated and endorsed by Executive Sponsor.
July 2018	2	Executive Services processed prior to publishing – Minor review.
May 2021	3	Minor changes and update of tables, reference, responsibility and appendix. Clarification of Legionella control requirements.
July 2021	3	Approved by Executive Sponsor.
26 September 2024	3.1	Minor changes - update to hyperlinks and inclusion of Microbiological Air Sampling checklist.

Appendix 1 - Fungal Spore Monitoring

Interpretation of Fungal Spore Monitoring
<p>Factors that influence fungal spore counts</p>
<p>Levels of fungal spores vary by several orders of magnitude during the course of a day due to:</p> <ul style="list-style-type: none"> • Activity levels in any one particular area • Fluctuations in temperature • Fluctuations in humidity • Fluctuations in air flow • Changes in light level <p>A single air sample will often underestimate the fungal contamination in the air and multiple air sampling has to be performed.</p>
<p>Threshold guidance</p>
<p>No strict numerical guidelines are available for <i>Aspergillus</i> counts, which are appropriate for assessing whether the contamination in a particular location is acceptable or not but the following threshold levels have been recorded:</p> <ul style="list-style-type: none"> • Outdoor air (Note: seasonal variation recognised): <i>Aspergillus</i>: 5-10 CFU/m³ • HEPA-filtered air (>99.95% efficiency and >10 ACH): <1 CFU/m³ • In ward area with no air filtration: <5.0 CFU/m³ <p>Other authorities (121) recommend for:</p> <ul style="list-style-type: none"> • Protected environments (including rooms or areas with HEPA filtration): no <i>Aspergillus</i> CFUs • Other clinical areas: <i>Aspergillus</i> ≤2 CFU/m³
<p>The following principles guide interpretation of results and indications further action:</p> <ul style="list-style-type: none"> • Total indoor counts are greater than outdoor counts • Fungal counts should not vary significantly from baseline values • Comparison of indoor and outdoor levels of fungal organisms show one of the following: <ul style="list-style-type: none"> ○ Organisms are present in the indoor sample and not in the outdoor sample ○ The predominant organisms found in the indoor sample is different from the predominant organism in the outdoor sample ○ A monoculture of an organism is found in the indoor sample. It may be absent from samples taken in other areas of the building ○ A low reading is not conclusive evidence that there has not been any fungal spore contamination ○ A single high reading is always significant and should be investigated. <p><i>*National Guidelines for the Prevention of Nosocomial Invasive Aspergillosis During Construction / Renovation Activities, Ireland 2018</i></p>
<p>Recommended Actions</p>
<p>When results exceed the threshold limit an investigation of possible sources of contamination should be undertaken and corrective actions implemented as soon as possible.</p> <p>An intensive evaluation and review of procedural practice in high-risk patient care environments is indicated in the following circumstances:</p> <ul style="list-style-type: none"> • Threshold counts are exceeded • Total indoor counts are greater than outdoor counts • Comparison of indoor and outdoor levels of fungal organisms show one of the following:

SESLHD PROCEDURE

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

- Organisms are present in the indoor sample and not in the outdoor sample
- The predominant organisms found in the indoor sample is different from the predominant organism in the outdoor sample
- A monoculture of an organism is found in the indoor sample. It may be absent from samples taken in other areas of the building
- Persistently high counts.

If persistently high counts are recorded, or nosocomial invasive Aspergillosis suspected or confirmed, identify source of contamination by sampling:

- dust
- fabrics
- ventilation ducts / screens / fans
- ceiling voids
- kitchen areas
- excreta of roosting birds in close proximity of windows.

Appendix 2: Infection Risk Assessment for Construction Activities

A copy of this risk assessment must be forwarded to the responsible person nominated during the planning phase.

Infection Prevention and Control during construction, renovation and maintenance: RISK ASSESSMENT				
Project:	Date:			
Requested by:	Authorised by:			
Planned date of commencement:	Estimated duration:			
Site:				
Construction type:	Patient risk group:			
Select the class of infection control precautions required below.				
Patient risk group	Construction activity type			
	Type A	Type B	Type C	Type D
Group 1-Low	Class I	Class II	Class II	Class III / IV
Group 2-Medium	Class I	Class II	Class III	Class IV
Group 3-High	Class I	Class III	Class III / IV	Class IV
Group 4-Highest	Class I – III	Class III / IV	Class III / IV	Class IV
Infection Control Recommendations:				

Appendix 3: Environmental Monitoring Compliance Checklist

	YES	NO	N/A	CORRECTED
1. Construction Hoarding				
Barriers sealed, no penetrations				
Walk off mats in place and clean				
Barrier doors have closers and they are working				
Door frames have gaskets, doors are closed and properly sealed				
Signs posted informing about spread of dust				
Comments:				
2. Negative Air				
Negative pressure at barrier entrance				
All windows and doors closed behind barrier				
Negative air units or exhaust fans running				
Negative air filters clean				
Negative air units discharge ducts intact				
Comments:				
3. Adjacent areas with staff/patient access				
Adjacent floor is clean and no dust tracked				
Adjacent ceiling areas intact				
Walls intact and dry				
Horizontal surfaces dust free				
Vents dust free				
All ventilation ducts from building site sealed				
No signs of pest infestation				
4. Traffic flow				
Building contractors accessing site through approved non-patient care areas				
Debris removed in containers				
Route and timing of debris removal as per agreement				
Comments:				

SESLHD PROCEDURE



Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

5. Occupied Areas

Work authorised and scheduled				
Barrier in place and properly sealed				
Ceiling access sign posted				
Surrounding areas are clean				

Comments:

6. Water Management and Legionella Control

Legionella Risk Management Plan reviewed				
Warm and cooling water system maintenance per plan				
Warm and cooling water system monitoring per plan				

Comments:

Appendix 4: Completion of Project

Part A- to be completed by the contractor or as determined by the multi-disciplinary planning committee

	Tasks	Check
Class I	<ol style="list-style-type: none"> 1. Clean work area upon completion of the task. This includes all horizontal and vertical surfaces to ensure all dust and debris has been removed. 	
Class II	<ol style="list-style-type: none"> 1. Contain construction waste before transport in tightly covered containers. 2. Clean work surfaces with water and detergent/disinfectant 3. Wet mop and/or vacuum with HEPA filtered vacuums before leaving the work area. 4. Remove isolation of HVAC system in areas where work is performed 	
Class III	<ol style="list-style-type: none"> 1. Do not remove barriers from work area until completed project has been inspected by Workforce and Infection Control staff; and thoroughly cleaned by Housekeeping staff. 2. Contain construction waste before transport in tightly covered containers. 3. Remove barrier materials carefully to minimise spreading of dust and debris associated with construction. 4. Clean work surfaces with hot water and detergent/disinfectant. 5. Vacuum work area with HEPA filtered vacuums. 6. Wet mop area with hot water and detergent/disinfectant. 7. Remove isolation of HVAC system in areas where work is performed. 	
Class IV	<ol style="list-style-type: none"> 1. Do not remove barriers from work area until completed project is inspected by Workforce and Infection Control staff; and thoroughly cleaned by Housekeeping staff. 2. Contain construction waste before transport in tightly covered containers. 3. Remove barrier material carefully to minimise spreading of dust and debris associated with construction. 4. Cover transport receptacles or carts. Tape down covering unless solid lids are in use. 5. Clean work surfaces with hot water and detergent/disinfectant. 6. Vacuum work area with HEPA filtered vacuums. 7. Wet mop area with hot water and detergent/disinfectant. 8. Remove isolation of HVAC system in areas where work is performed 	

Infection Prevention and Control during Construction, Renovation and Maintenance

SESLHDPR/374

Part B – Prior to handover and before patient occupation. It is the responsibility of the multi-disciplinary planning committee to ensure the area is fit for purpose.

Project _____

Review date _____

Infection control measure	Answer (tick one)		
	Yes	No	Not applicable
<ul style="list-style-type: none">• The area has been thoroughly cleaned. This includes all horizontal and vertical surfaces to ensure all dust and debris has been removed.			
<ul style="list-style-type: none">• The area has been vacuumed with a HEPA filter vacuum			
<ul style="list-style-type: none">• When commissioning a new or refurbished operating theatre or pharmacy clean room check air sampling and particle counts have been performed and results are within acceptable limits• Air conditioning is working correctly and within recommended parameters as per engineering and building services and/or the Contractor• HEPA filters and laminar/clean flow systems (where installed) have been recertified			
<ul style="list-style-type: none">• If the water supply has been disrupted: maintenance/contractor has flushed water through all taps and water sampling has occurred (as per the Guidelines for the Control of Legionella (2018), as necessary, with results within acceptable levels (<10 cfu/ml)			
<ul style="list-style-type: none">• Sinks and plumbing fixtures are suitable for the task and properly located (as per relevant Standards)			
<ul style="list-style-type: none">• Air intake and exhaust outlets are located and working properly			
Comments			

Appendix 5a: Letters to immunocompromised patients

Families of Immunocompromised patients

To be emailed to Senior Medical Staff and Clinical Nurse Consultants with the following:

“If you have patients who are severely immunocompromised and at risk of fungal infections as a result of congenital or acquired T cell or neutrophil disorders, that may be visiting the hospital in between [insert date], could you please arrange for the attached letter and information sheet to be given to them”

TO Facility Patients and Families

CC Facility Director of Clinical Operations

DATE

SUBJECT Safety during building works

Commencing [insert date], building works will start in [briefly describe project location and extent of planned works]. These works will be in close proximity to [identify entrances and other specific units] and may impact on patients and families visiting the hospital.

Hospital management is committed to providing all patients and visitors with a safe environment at all times. While all steps will be taken to minimise risk, there may still be dust generated during this work that could invade other spaces.

During construction and demolition activities a tiny fungus called *Aspergillus* may be released into the air. *Aspergillus* can travel on air currents to areas surrounding these works, and may cause infection in severely immunocompromised patients.

Patients who are undergoing high dose chemotherapy for leukemia and related illnesses, are having bone marrow, stem cell or other transplants, or are having other forms of therapy which may suppress their immune system may be at risk of developing *Aspergillus* infection. Healthy adults, women and children are not at risk of infection during construction work.

If you have been identified by your doctor as being at risk, you will be provided with a special mask to wear when coming to the hospital. Once you have arrived at your ward or treatment area you are free to remove the mask.

Yours sincerely

<Name>

<Title>

Appendix 5b: Internal Memorandum to staff

TO Facility Patients and Families

CC Facility Director of Clinical Operations

DATE

SUBJECT Safety during building works

As you are aware, there are significant building and construction works underway at [insert hospital].

Hospital management is committed to providing all staff with a safe work environment at all times. While all steps will be taken to eliminate and minimise risk there may still be dust generated during the refurbishment that could invade other work spaces. We are advised that microbes in the dust may be harmful to anyone with immune-compromised conditions that require ongoing care of a specialised Immunologist.

If you believe that you are at any level of risk, please notify your manager immediately. Please note that you need only provide advice regarding your degree of risk and full confidentiality of any information provided will be maintained. Hospital management will work with any affected staff, and their relevant clinician, to make alternative arrangements during this period.

I understand the disruption that building works such as this can have to the general work environment and ask for your understanding and patience during this short period.

Yours sincerely

<Name>
<Title>

Appendix 6: Factsheets

Invasive Aspergillosis Factsheet

Information for Staff

Construction Associated Nosocomial Invasive Aspergillosis

Certain types of demolition and construction activities can result in an increased risk of invasive Aspergillosis among immunosuppressed patients.

Introduction

- *Aspergillus* species are spore forming fungi that commonly occur in soil, water, organically enriched debris, decaying vegetation and within the fabric of buildings.
- Many species of *Aspergillus* have been recognised in nature, but only a few have been associated with human disease, particularly *A. fumigatus*, *A. flavus*, *A. niger*, *A. terreus* and *A. nidulans*.
- Most people are immune to infection and *Aspergillus* rarely poses a threat to healthy people. It is however, recognised as a potential cause of severe illness and mortality in highly immunocompromised patients.
- *Aspergillus* spp. are responsible for a wide spectrum of human illnesses ranging from colonisation of the bronchial tree to more widespread disease in people receiving immunosuppressive or cytotoxic therapy, transplant recipients, patients with HIV infection and people with granulomatous disease who are those at increased risk of developing *Aspergillus* infection.

Incubation Period

- From a few days to a few months

Common Clinical Presentations

- Pneumonia
- Acute Aspergillus sinusitis
- In less than half of immunocompromised people with Aspergillus infection, other parts of the body may be affected such as the kidney, brain, liver, eyes or skin.

Acquisition

- Healthy people commonly inhale Aspergillus spores from environmental sources without becoming sick.
- The concentration of Aspergillus in the air commonly increases during construction works.
- Immunocompromised people are at risk of illness but Aspergillus is not spread person to person.

Prevention and control

Contractor:

Environmental control measures to minimise the risk of Aspergillus spores being dispersed into the air will be put in place by the contractor during demolition / construction / refurbishment activities.

Patients:

- Patients accommodated in the nearby areas require a risk assessment to identify whether they fall into any of the risk groups overleaf, prior to the demolition/construction/refurbishment work commencing
- Whilst the construction work is in progress, this risk assessment must be carried out for all patients on admission to hospital or their attendance at outpatient appointments
- Those considered by their clinician as being at increased risk, and who are adjacent or near the refurbishment / demolition area may need to be moved to another ward well away from the construction site
- Those identified by their clinician as being in the highest risk group should be nursed in a HEPA filtered

positive pressure room during the neutropenic period (treating physician to advise on accommodation in facilities that do not have HEPA filtered positive pressure rooms)

- All new admissions to areas near to the demolition / construction / refurbishment sites should be risk assessed against the risk groups below by their clinical team.

Staff:

- Unauthorised staff, patients and visitors **must not** enter construction areas
- All staff must be vigilant and report the spread of construction dust into adjacent patient areas to their line manager
- SESLHD staff members who identify themselves as being at risk should discuss their circumstances with their manager and seek advice from their treating clinician

A high index of suspicion for the diagnosis of Aspergillosis should be maintained for those persons identified as being at risk and surveillance through clinical and microbiological / histological specimen reviews.

Highest risk groups

Anyone who is/has:

- neutropenic;
- undergoing or who has recently completed any organ or tissue transplant
- had a solid organ transplant (i.e. liver, kidney, heart etc) in the past
- had at least three (3) months of immunosuppressant treatment, with multiple medications, for renal disease
- diagnosed graft vs host disease following a transplant
- Acute Lymphoblastic Leukaemia (ALL)
- aplastic anaemia.

Children with:

- Severe Combined Immunodeficiency Syndrome (SCIDS)
- Chronic Granulomatous Disease of Childhood (CGDC).

Further information

Contact the Infection Prevention and Control Service

**Adapted from Illawarra Shoalhaven Local Health District Infection Management and Control Service-April 2012*

Aspergillus Infection Factsheet

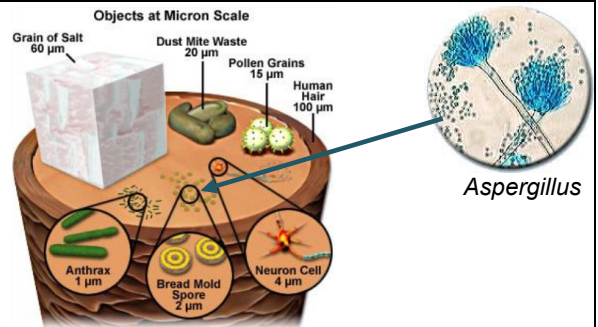
Information for Construction Site Workers

Construction Works in Healthcare Facilities

- As construction workers you would be familiar with the disease Asbestosis, and that there are specific control measures required to prevent the release of asbestos fibres into the air to protect workers and the general public.
- Hospitals provide healthcare to a large number of people, some of whom may be extremely at risk of getting infections caused by germs that would normally not be a problem if the person was healthy.
- One example of such a germ is a fungus called Aspergillus. This is unlikely to make a healthy person ill, but if a person has an illness, or is having treatment, that damages their immune system, Aspergillus can make them extremely sick.
- For this reason we ask that you are committed to reducing the chances of dust and fungal spores entering the buildings.

What is Aspergillus?

- Aspergillus lives all around us, in soil, decaying vegetation, and within the structure of buildings.
- Construction, demolition and excavation activities disturb the fungus and may release millions of tiny spores.
- Because of their size and shape they can stay in the air and travel for long distances on air currents.
- Hospital air conditioning includes filters to clean outside air as it moves inside the building, but construction works often change the way that air moves into and inside the building and filters may not be relied on.



Relative sizes of fungal spores

• Who is at risk? (Please remember that Aspergillus rarely causes illness in healthy people)

- People who do not have a healthy immune system e.g. cancer or kidney patients, or those who are very young.
- How much of a problem Aspergillus will be to a person will depend on their immune system and the amount of contact they have with the fungus.
- We know that some demolition and construction activities are more risky than others which is why a risk assessment is done for each project and the advice may differ from one project to another.

How is it spread?

- Aspergillus cannot be spread from person to person.
- If Aspergillus spores are breathed in by a person who has a problem with their immune system the person may develop a lung infection, or the fungus can spread in the blood to other parts of the body.

How does it affect patients?

- Patients who get sick with Aspergillus need special drugs to treat the infection.
- They may need to stay in hospital for longer than expected.
- They may get very sick and might die from the infection.

What can you do to protect patients?

Whenever dust is created, it is important to stop it from contaminating the environment and the air. These can be done in a number of ways:

- Water misting during demolition or excavation activities
- Floor to ceiling hoarding when working inside the healthcare facility
- Timely repair of any breaches in hoarding barriers
- Covering waste with plastic sheeting before removing it from the construction zone
- Sticky mats at the exit and entrance to an internal construction zone
- Not wearing dusty cloths and shoes outside the internal construction zone
- Regular cleaning with a damp mop or vacuum with a HEPA filter.

Further information

Infection Prevention and Control Service

**Adapted from Illawarra Shoalhaven Local Health District Infection Management and Control Service-April 2012*

Appendix 7: Recommended Process for Microbiological Air Sampling

Microbiological Air Sampling of Operating Rooms

1. Purpose:

The purpose of this document is to provide the healthcare worker responsible for overseeing the microbiological air sampling with a step by step check list to complete. This is to ensure all procedural requirements have been met throughout the process.

2. Requirements:

Air sampling must be undertaken in collaboration with Perioperative Services and Infection, Prevention and Control Services. A National Association of Testing Authority (NATA) accredited laboratory for environmental testing must be utilised for this process. The sampler used must be capable of sampling a minimum of 1,000 litres (1m³) from each OR without causing excessive drying of the recipient agar surface. The air sampler must be checked prior to ensure it has been collaborated and serviced in accordance with the manufacturer’s instructions. Prior to sampling, agar plates should be at room temperature.

Date	
Operating Room/Anaesthetic Bay	
Company	

3. Pre Procedure

Deep Clean	Yes	No	Date:	Time:
Doors Sealed	Yes	No	Seal Breached	Yes No

3.1 PPE

Theatre attire	Yes	No
A scrub hat	Yes	No
Surgical shoe covers	Yes	No
A surgical mask	Yes	No
Sterile gloves	Yes	No

4. Process

4.1 Prior to entering the room to be sampled:

Ensure door has been closed for at least 1 hour	Yes	No
Air sampler was run briefly prior to loading agar strips/plates	Yes	No
Air sampler cleaned prior to and between use	Yes	No
Hand hygiene	Yes	No

4.2 On entering the room to be sampled:

Air sampler is placed in the middle of the operating table	Yes	No
Technician performs hand hygiene	Yes	No
Technician dons sterile gloves	Yes	No

Places agar strips/plate into the sampler	Yes	No
Sets timer to commence 15 minutes after technician leaves the OR. Technician closes the doors and exits the OR	Yes	No
Aseptic technique is maintained throughout the process	Yes	No
OR doors remained closed until sampling is complete	Yes	No
OR remained empty of personnel until sampling is complete	Yes	No

5. Post Sampling

Hand hygiene	Yes	No
Dons sterile gloves	Yes	No
Removes agar strip/plate and packages to avoid contamination	Yes	No
Aseptic technique is maintained throughout the process	Yes	No

6. Labelling of Samples

Date	Yes	No
Time	Yes	No
Hospital Name	Yes	No
OR/AB Number	Yes	No
Volume of air sampled	Yes	No

Comments:

Sample Number:

Supervising Healthcare Worker:

Name	
Position	