Risk Assessment

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Government of South Australia
Health
Central Adelaide
Local Health Network

Acknowledgement of Country

We acknowledge that this land we meet, work, live and play on is the traditional lands of the Kaurna people, and we respect their spiritual relationship with this country.

We pay our respects to their leaders, past, present and emerging and acknowledge that their language, cultural and traditional beliefs held for over 60,000 years are still as important and relevant to the living Kaurna and all Aboriginal people today.

Artwork

Wardli Purrutinthi,"*Place to live or to be alive*"

Designed by accomplished Aboriginal South Australian artist Allan Sumner, a descendant of the Ngarrindjeri, Kaurna and Yankunytjatjara people.

Objectives

- What is a Risk Assessment - ICRA?
- Why is it undertaken?
- Challenges with risk assessments
- ICRA ???
- What's next?
- Resources

Risk?

What is risk?

- Risk is associated with the probability (chance) of an outcome.
- Risk is subjective and is relative to an individual's or organization's perspective.
- The purpose of undertaking a risk assessment is to inform decisions that involve risk, costs and benefits.

Components of Risk Mitigation Process

Why risk assess?

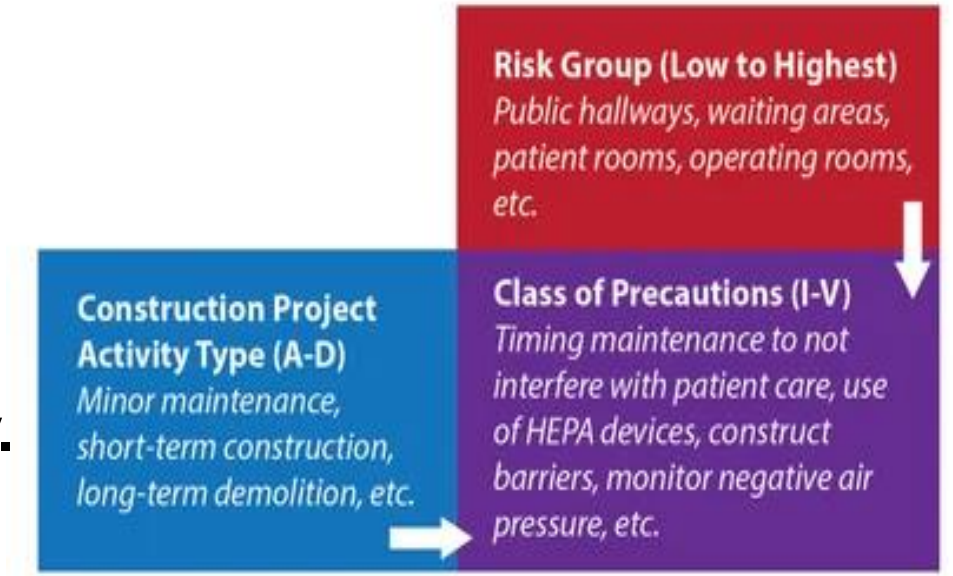
- New buildings and even renovating an existing building can impact on the existing buildings surroundings it creating risks
- Construction, renovation and maintenance projects can generate large amounts of dust and debris which may carry microorganisms including fungal spores
- Main goal = minimize transmission to vulnerable populations
- Risk assessment!!!

What is a Risk Assessment?

A Infection Control Risk Assessment (ICRA) utilises three categories:

1. The construction activity to be undertaken
2. The patient risk group/s that may be affected
3. The class of precautions required based on 1 &2

It is undertaken when designing, renovating or constructing a new or existing healthcare facility.



Challenges with risk assessments!!

- Interpreting architectural plans!
- Incorporating this process within your current ICP role
- Volume of meetings, communication via email/phone
- Knowledge of reference documents
- Knowledge and understanding building materials
- Application of infection control principles to building structures, processes and materials
- Finding and applying appropriate references – acceptable parameters
- Understanding each person's role and how this impacts on decisions to ensure good outcomes – clinical/building

What’s next?

Completing the ICRA!

ICRA 2.0

- It involves a matrix that allows you to assess how a project may effect the facility varying with the degree of building activity, accounting for the type of exposure risk potential to the varying patient population.
- Provides more clarification for better decision-making and a clear guide to help educate others about infection risk mitigation.
- Is undertaken during the early planning phase of a project, before any construction begins, and will continue through the project construction and commissioning.

ICRA 2.0

ICRA considerations include at a minimum:
Design elements
- Isolation rooms
- HVAC needs
- Water/plumbing systems
- Surfaces and furnishings

Construction elements
- Infection Control Risk mitigation requirements

Impact to other systems
- Data
- Mechanical
- Medical Gases
- Hot/Cold Water

Step 1 Construction Activity Type

- Major renovation?
- Minor renovation?

Step 2 Identifying the Patient Risk Group

- In-patient area/high risk ambulatory?
- Non-inpatient area/office space or kitchen?
- Ambulatory patients/outpatient area?

Step 3 Class of Precautions

- Low risk?
- Medium risk?
- High risk?
- Highest Risk?

Step One:
Using Table 1, Identify the Activity Type (A-D).

Table 1 - Activity Type: _____

Type A	**Inspection and non-invasive activities.** Includes but is not limited to: • Removal of ceiling tile for visual inspection-limited to 1 tile per 50 square feet with limited exposure time. • Limited building system maintenance (e.g., pneumatic tube station, HVAC system, fire suppression system, electrical and carpentry work to include painting without sanding) that does not create dust or debris. • Clean plumbing activity limited in nature.
Type B	**Small-scale, short duration activities that create minimal dust and debris.** Includes but is not limited to: • Work conducted above the ceiling (e.g., prolonged inspection or repair of firewalls and barriers, installation of conduit and/or cabling, and access to mechanical and/or electrical chase spaces). • Fan shutdown/startup. • Installation of electrical devices or new flooring that produces minimal dust and debris. • The removal of drywall where minimal dust and debris is created. • Controlled sanding activities (e.g., wet or dry sanding) that produce minimal dust and debris.
Type C	**Large-scale, longer duration activities that create a moderate amount of dust and debris.** Includes but is not limited to: • Removal of preexisting floor covering, walls, casework or other building components. • New drywall placement. • Renovation work in a single room. • Non-existing cable pathway or invasive electrical work above ceilings. • The removal of drywall where a moderate amount of dust and debris is created. • Dry sanding where a moderate amount of dust and debris is created. • Work creating significant vibration and/or noise. • Any activity that cannot be completed in a single work shift.
Type D	**Major demolition and construction activities.** Includes but is not limited to: • Removal or replacement of building system component(s). • Removal/installation of drywall partitions. • Invasive large-scale new building construction. • Renovation work in two or more rooms.

Step Two:
Using Table 2, identify the Patient Risk Group(s) that will be affected. If more than one risk group will be affected, select the higher risk group.

Table 2 - Patient Risk Group: _____

Low Risk Non-patient care areas such as:	**Medium Risk** Patient care support areas such as:	**High Risk** Patient care areas such as:	**Highest Risk** Procedural, invasive, sterile support and highly compromised patient care areas such as:
• Public hallways and gathering areas not on clinical units. • Office areas not on clinical units. • Breakrooms not on clinical units. • Bathrooms or locker rooms not on clinical units. • Mechanical rooms not on clinical units. • EVS closets not on clinical units.	• Waiting areas. • Clinical engineering. • Materials management. • Sterile processing department - dirty side. • Kitchen, cafeteria, gift shop, coffee shop, and food kiosks.	• Patient care rooms and areas • All acute care units • Emergency department • Employee health • Pharmacy - general work zone • Medication rooms and clean utility rooms • Imaging suites: diagnostic imaging • Laboratory.	• All transplant and intensive care units. • All oncology units. • OR theaters and restricted areas. • Procedural suites. • Pharmacy compounding. • Sterile processing department - clean side. • Transfusion services. • Dedicated isolation wards/units. • Imaging suites: invasive imaging.

Table 3 - Class of Precautions:

Patient Risk Group	Project Type			
	TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III*
MEDIUM Risk Group	I	II	III*	IV
HIGH Risk Group	I	III	IV	V
HIGHEST Risk Group	III	IV	V	V

Consideration- a Type C (medium risk group) and Type D (low risk group) work areas (Class III precautions) that cannot be sealed and completely isolated form occupied patient care spaces should be elevated to include negative air exhaust requirements as listed under Class IV Precautions!

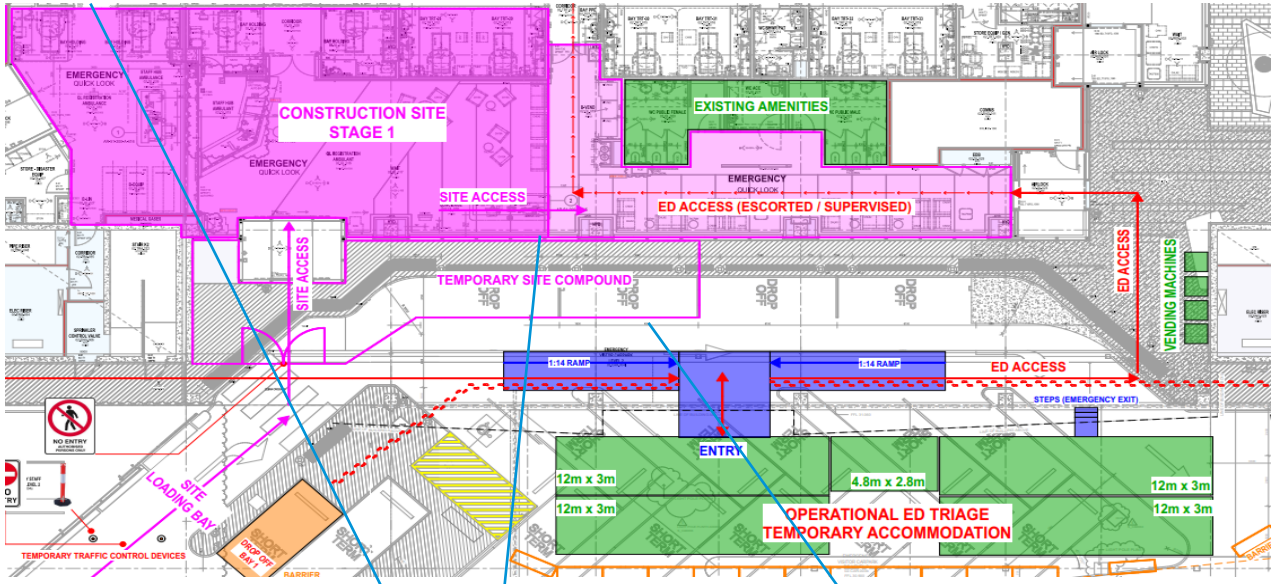
Table 5 - Minimum Required Infection Control Precautions by Class | Before and During Work Activity

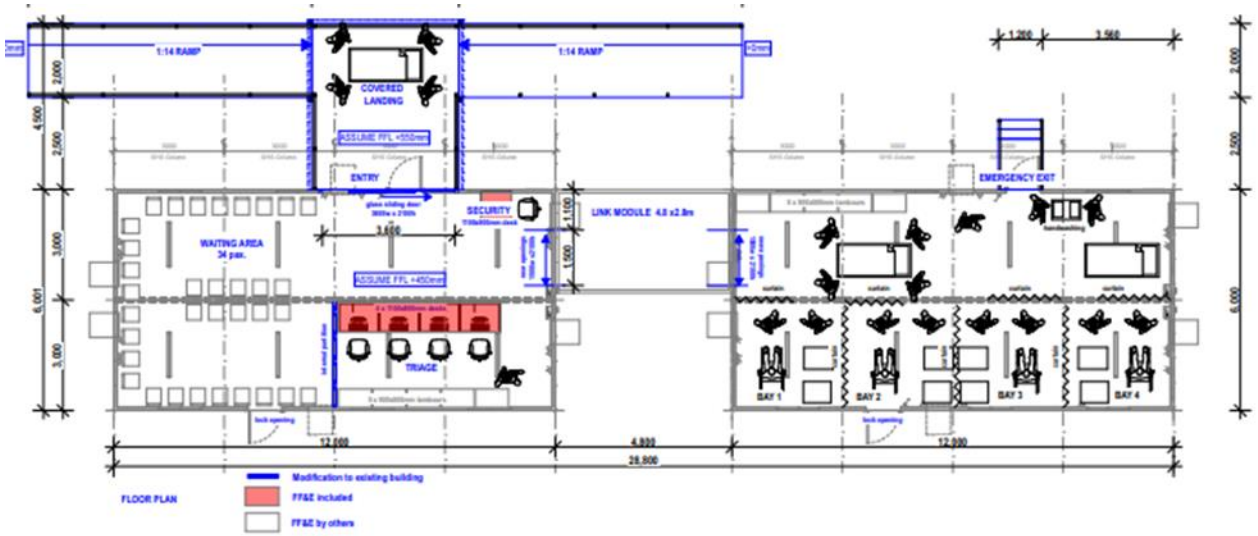
Class of Precautions	Mitigation Activities (Performed Before and During Work Activity)
Class I	1. Perform noninvasive work activity as to not block or interrupt patient care. 2. Perform noninvasive work activities in areas that are not directly occupied with patients. 3. Perform noninvasive work activity in a manner that does not create dust. 4. Immediately replace any displaced ceiling tile before leaving the area and/or at end of noninvasiv work activity.
Class II	1. Perform only limited dust work and/or activities designed for basic facilities and engineering work. 2. Perform limited dust and invasive work following standing precautions procedures approved by th organization. 3. This Class of Precautions must never be used for construction or renovation activities.
Class III	1. Provide active means to prevent airborne dust dispersion into the occupied areas. 2. Means for controlling minimal dust dispersion may include hand-held HEPA vacuum devices, polyethylene plastic containment, or isolation of work area by closing room door. 3. Remove or isolate return air diffusers to avoid dust from entering the HVAC system. 4. Remove or isolate the supply air diffusers to avoid positive pressurization of the space, 5. If work area is contained, then it must be neutrally to negatively pressurized at all times. 6. Seal all doors with tape that will not leave residue. 7. Contain all trash and debris in the work area. 8. Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. 9. Install an adhesive (dust collection) mat at entrance of contained work area based on facility polic Adhesive mats must be changed routinely and when visibly soiled. 10. Maintain clean surroundings when area is not contained by damp mopping or HEPA vacuuming surfaces.
Class IV	1. Construct and complete critical barriers meeting NFPA 241 requirements including: Barriers must extend to the ceiling or, if ceiling tile is removed, to the deck above, and all penetrations through t barrier shall meet the appropriate fire rating requirements. 2. All (plastic or hard) barrier construction activities must be completed in a manner that prevents du release. Plastic barriers must be effectively affixed to ground and ceiling and secure from movem or damage. Apply tape that will not leave a residue to seal gaps between barriers, ceiling or floor. 3. Seal all penetrations in containment barriers, including floors and ceiling, using approved material (UL schedule firestop if applicable for barrier type). 4. Containment units or environmental containment units (ECUs) approved for Class IV precautions small areas totally contained by the unit and that has HEPA-filtered exhaust air. 5. Remove or isolate return air diffusers to avoid dust entering the HVAC system. 6. Remove or isolate the supply air diffusers to avoid positive pressurization of the space. 7. Negative airflow pattern must be maintained from the entry point to the anteroom and into the construction area. The airflow must cascade from outside to inside the construction area. The ent construction area must remain negatively pressurized. 8. Maintain negative pressurization of the entire workspace by use of HEPA exhaust air systems directed outdoors. Exhaust discharged directly to the outdoors that is 25 feet or greater from entrances, air intakes and windows does not require HEPA-filtered air. 9. If exhaust is directed indoors, then the system must be HEPA filtered. Prior to start of work, HEPA filtration must be verified by particulate measurement as no less than 99.97% efficiency and must not alter or change airflow/pressure relationships in other areas. 10. Exhaust into shared or recirculating HVAC systems, or other shared exhaust systems (e.g., bathroom exhaust) is not acceptable. 11. Install device on exterior of work containment to continually monitor negative pressurization. To assure proper pressure is continuously maintained, it is recommended that the device(s) have a visual pressure indicator. 12. Contain all trash and debris in the work area.
	13. Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. 14. Worker clothing must be clean and free of visible dust before leaving the work area. HEPA vacuuming of clothing or use of cover suits is acceptable. 15. Workers must wear shoe covers prior to entry into the work area. Shoe covers must be changed prior to exiting the anteroom to the occupied space (non-work area). Damaged shoe covers must b immediately changed. 16. Install an adhesive (dust collection) mat at entrance of contained work area based on facility policy. Adhesive mats must be changed routinely and when visibly soiled. 17. Consider collection of particulate data during work to monitor and ensure that contaminates do not enter the occupied spaces. Routine collection of particulate samples may be used to verify HEPA filtration efficiencies.
Class V	1. Construct and complete critical barriers meeting NFPA 241 requirements including: Barriers must extend to the ceiling, or if ceiling tile is removed, to the deck above, and all penetrations through the barrier shall meet the appropriate fire rating requirements. 2. All (plastic or hard) barrier construction activities must be completed in a manner that prevents dust release. Plastic barriers must be effectively affixed to ground and ceiling and secure from movemer or damage. Apply tape that will not leave a residue to seal gaps between barriers, ceiling or floor. 3. Seal all penetrations in containment barriers, anteroom barriers, including floors and ceiling using approved materials (UL schedule firestop if applicable for barrier type). 4. Construct anteroom large enough for equipment staging, cart cleaning, workers. The anteroom mus be constructed adjacent to entrance of construction work area. 5. Personnel will be required to wear disposable coveralls at all times during Class V work activities. Disposable coveralls must be removed before leaving the anteroom. 6. Remove or isolate return air diffusers to avoid dust entering the HVAC system. 7. Remove or isolate the supply air diffusers to avoid positive pressurization of the space. 8. Negative airflow pattern must be maintained from the entry point to the anteroom and into the construction area. The airflow must cascade from outside to inside the construction area. The entire construction area must remain negatively pressurized. 9. Maintain negative pressurization of the entire workspace using HEPA exhaust air systems directed outdoors. Exhaust discharged directly to the outdoors that is 25 feet or greater from entrances, air intakes and windows does not require HEPA-filtered air. 10. If exhaust is directed indoors, then the system must be HEPA filtered. Prior to start of work, HEPA filtration must be verified by particulate measurement as no less than 99.97% efficiency and must not alter or change airflow/pressure relationships in other areas. 11. Exhaust into shared or recirculating HVAC systems, or other shared exhaust systems (bathroom exhaust) is not acceptable. 12. Install device on exterior of work containment to continually monitor negative pressurization. To assure proper pressure is continuously maintained, it is recommended that the device(s) have a visual pressure indicator. 13. Contain all trash and debris in the work area. 14. Nonporous/smooth and cleanable containers (with a hard lid) must be used to transport trash and debris from the construction areas. These containers must be damp-wiped cleaned and free of visible dust/debris before leaving the contained work area. 15. Worker clothing must be clean and free of visible dust before leaving the work area anteroom. 16. Workers must wear shoe covers prior to entry into the work area. Shoe covers must be changed prior to exiting the anteroom to the occupied space (non-work area). Damaged shoe covers must b immediately changed. 17. Install an adhesive (dust collection) mat at entrance of contained work area based on facility policy. Adhesive mats must be changed routinely and when visibly soiled. 18. Consider collection of particulate data during work to monitor and ensure that contaminates do not enter the occupied spaces. Routine collection of particulate samples may be used to verify HEPA filtration efficiencies.

Class of Precautions	Mitigation Activities (Performed upon Completion of Work Activity)
Classes I, II and III	Cleaning: 1. Clean work areas including all environmental surfaces, high horizontal surfaces and flooring materials. 2. Check all supply and return air registers for dust accumulation on upper surfaces as well as air diffuser surfaces. HVAC Systems: 1. Remove isolation of HVAC system in areas where work is being performed. Verify that HVAC systems are clean and operational. 2. Verify the HVAC systems meet original airflow and air exchange design specifications.
Classes III, IV and V	Class III (Type C Activities only), IV, and V precautions require inspection and documentation for downgraded ICRA precautions. Construction areas must be inspected by an infection preventionist or designee and engineering representative for discontinuation or downgrading of ICRA precautions. Work Area Cleaning: 1. Clean work areas including all environmental surfaces, high horizontal surfaces and flooring materials. 2. Check all supply and return air registers for dust accumulation on upper surfaces as well as air diffuser surfaces. Removal of Critical Barriers: 1. Critical barriers must remain in place during all work involving drywall removal, creation of dust and activities beyond simple touch-up work. The barrier may NOT be removed until a work area cleaning has been performed. 2. All (plastic or hard) barrier removal activities must be completed in a manner that prevents dust release. Use the following precautions when removing hard barriers: i. Carefully remove screws and painter tape. ii. If dust will be generated during screw removal, use hand-held HEPA vacuum. iii. Drywall cutting is prohibited during removal process. iv. Clean all stud tracks with HEPA vacuum before removing outer hard barrier. v. Use a plastic barrier to enclose area if dust could be generated. Negative Air Requirements: 1. The use of negative air must be designed to remove contaminates from the work area. 2. Negative air devices must remain operational at all times and in place for a period after completion of dust creating activities to remove contaminants from the work area and before removal of critical barriers. HVAC systems: 1. Upon removal of critical barriers, remove isolation of HVAC system in areas where work is being performed. 2. Verify that HVAC systems are clean and operational. 3. Verify the HVAC systems meets original airflow and air exchange design specifications.

Examples

Emergency Department Upgrade





Transportable Unit

Resources

AusHFG

Australasian Health Facility Guidelines

Part D - Infection Prevention and Control

AS/NZS 3816:1998

Management of clinical and related wastes

AS 1071:2015

Placement and presentation of hand hygiene materials in relation to the basin in healthcare settings

AS/NZS 4187:2014

Australian/New Zealand Standard™

Reprocessing of reusable medical devices in health service organizations

Other Resources to consider

1. *Construction and Renovation at Existing Health Care Facilities: Infection prevention and control. SA Health Policy Guideline V1.2 July 2018*
2. 2nd edition Victorian Building and Construction Guidelines

3. NHMRC (2019) Australian Guidelines for the Prevention and Control of Infection in Healthcare

4. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008. *William A. Rutala, Ph.D., M.P.H.1,2, David J. Weber, M.D., M.P.H.1,2, and the Healthcare Infection Control Practices Advisory Committee (HICPAC)3*

5. Centers for Disease Control and Prevention (CDC), 2003. *Guidelines for Environmental Infection Control in Health-Care Facilities – Animals as Patients in Human Health-Care Facilities.*

6. Using the Healthcare Physical Environment to Prevent and Control Infection. *A Best Practice Guide to Help Health Care Organizations Create Safe, Healing Environments. https://www.ashe.org/sites/default/files/ashe/CDCfullbookDIGITAL.pdf*

1. Guidelines for Environmental Infection Control in Health-Care Facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC) *Recommendations and Reports* June 6, 2003 / 52(RR10);1-42 Available at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm

2. *Infection Control in the built environment.* Design and briefing. NHS estates. Accessed 24.8.04 https://www.england.nhs.uk/estates/health-building-notes/ [Accessed 10/11/2023]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