

Infection Control Risk Assessment (ICRA) Toolkit for Construction, Renovation and Maintenance of Health Care Facilities in Ambulatory and Community Settings

Site Applicability:

- Existing VCH-operated health care facilities
- New VCH-operated health care facilities that are adjacent to existing VCH-operated health care facilities

*** Please note IPAC does not require ICRA to be submitted for construction/renovation projects that **do not have VCH-operated facilities in their adjacencies**. For such projects, Infection Prevention and Control (IPAC) will only be involved during the design phase and after the completion of construction/renovation activities, prior to program occupancy.

Purpose:

Activities related to construction, renovation and maintenance have been linked to health care associated infections such as aspergillosis and legionnaires' disease. While *Aspergillus* and *Legionella* species are common, there are other pathogenic agents in contaminated dust particles and water that can be dispersed into the environment from these activities. Immunocompromised patients/residents/clients, including the elderly, pregnant women and young children are most at risk of serious illness resulting from fungal or bacterial infection.

The purpose of the ICRA is to minimize the risk of infection related to construction, renovation and maintenance activities by ensuring that a plan is in place to implement appropriate preventive measures. Under the supervision of the Facilities Maintenance and Operations (FMO) / Property Manager / Project Manager, **the constructor is responsible for completing the ICRA form and submitting it to IPAC for approval, prior to the start of any construction activities**. If the scope of work changes at any time during the project, an updated ICRA needs to be re-submitted.

Procedure:

<p>1. ICRA Form Completion</p>	<ul style="list-style-type: none"> • Sections 1 to 5: Provide basic information about the project • Sections 6 & 7: Using Table 2 – Population risk group and geographical areas, identify the surrounding areas and their associated population risk group(s). Designate an overall risk group level for the project, based on the highest level identified. • Section 8: Using Table 3 – Construction activity type, identify the construction activity type for the project • Section 9: Using Table 1 – Preventive measure analysis, determine the level of preventive measures required for the project. This is the intersection between the identified population risk group (row) and construction activity type (column). Please note by signing the ICRA form, the constructor agrees to implement ALL preventive measures as required by the preventive measure level determined. Please refer to CSA Z317.13 for full description of the measures. Any exception or deviation from this requirement must be approved by the multidisciplinary team (MDT). • Section 10: Provide any additional information pertaining to the project and the required preventive measures, including but not limited to: <ul style="list-style-type: none"> ○ Elaborate on any exception or deviation approved by the MDT. ○ Describe any project-specific risk mitigation strategies: <ul style="list-style-type: none"> ➢ Special equipment/process to contain dust at the source ➢ Modified workflow/process to minimize operational impact and exposure (e.g. work to be conducted and completed during off-hours) • Section 11: Obtain relevant signatures
<p>2. Submittal Package</p>	<ul style="list-style-type: none"> • Mandatory: <ol style="list-style-type: none"> i. Completed ICRA Form

	<ul style="list-style-type: none"> ii. Floor plan that shows hoarding lines, point of exhaust for Construction Air Handling Units (CAHUs), air pressure differential monitor, dust mats, anteroom (if applicable), route lines for waste, construction materials and construction workers, impact to adjacent systems (if applicable) such as plumbing, heating, ventilation and air conditioning (HVAC), etc. Please ensure to clearly identify the differences in hoarding using different coloured lines – true slab, ceiling, envelop, hard hoarding to true slab, hard hoarding to ceiling and soft hoarding to true slab, hard hoarding to ceiling and poly across ceiling, soft hoarding to ceiling, soft hoarding to true slab, etc. • Optional: <ul style="list-style-type: none"> i. Infection Control Plan ii. Any supplemental documents from the constructor (e.g. photos, reports, etc.)
<p>3. Submission and Review Timeline</p>	<ul style="list-style-type: none"> • Submittal Package needs to be emailed to IPAC at least 3 business days prior to the construction start date. Late submission may result in construction delay and thus, impact project schedule. If the primary infection control practitioner (ICP) is not available, please email the Ambulatory and Community IPAC team: ICP-ambulatorycommunity@vch.ca • IPAC will review and provide a written response within 3 business days of package receipt. <p>*** Any exception to this timeline shall be discussed with IPAC and agreed upon in advance.</p>
<p>4. Pre- and Post-Construction IPAC Inspection</p>	<ul style="list-style-type: none"> • Construction site inspection by IPAC is required for PM III and IV projects. These visits are parts of a quality assurance process. Pre-construction visit ensures that IPAC requirements are met. If deficiencies are identified, prompt remediations must be completed before construction starts. Similarly, post-construction visit ensures adequate completion of final construction clean before barrier removal, in anticipation of a safe transition to occupancy by clinical team(s). • VCH project manager is expected to be present at the pre- and post-construction IPAC site visits. • Pre-construction visit: After all appropriate containment measures are in place, IPAC needs to inspect the site and provide approval before construction activities can start. • Post-construction visit: After the final construction clean, IPAC needs to inspect the site and provides approval before barrier wall (i.e. hoarding) can be taken down. <p>*** Any exception or deviation from these requirements shall be discussed with IPAC and agreed upon in advance. *** Please note unexpected site visits by IPAC may happen at any time during the construction phase.</p>

Infection Control Risk Assessment (ICRA) Form

1. Project name:				
2. Project location:				
3a. Project start date:			3b. Estimated duration:	
4a. Construction site contact:			4b. Phone number:	
5. Brief description of the work (include any activities that are dust-generating and/or impact plumbing, HVAC systems, any service interruptions or program relocation/operational modifications):				
6a. Area below construction:				
6b. Area above construction:				
6c. Laterally adjacent area(s) (include left, right, behind and front):				
7. Population risk group:			8. Construction activity type:	
Table 1 - Preventive measure analysis				
Population risk group (detailed description from table 2)	Construction activity type (detailed description from table 3)			
	Type A	Type B	Type C	Type D
Group 1	I	II*	II	III
Group 2	II	II	III	IV
Group 3	II	III*	III	IV
Group 4	II	III*	IV	IV
<small>Table was adopted from CSA Z317.13:22. * Denotes where a lower level might be used in accordance with Clause 7.5 in CSA Z317.13:22</small>				
9. Preventive measure level:				
10. Project-specific preventive measures and/or other important information (include any MDT-approved exception/deviation, project-specific risk mitigation strategies, etc.):				

11. Signatures:		
FMO / Property manager name:	Signature:	Date:
Constructor project manager name:	Signature:	Date:
Construction site supervisor name:	Signature:	Date:
VCH project manager name:	Signature:	Date:
Clinical project manager name:	Signature:	Date:
ICP name:	Signature:	Date:

Table 2 - Population risk groups and geographical areas

Population risk group	Typical areas
Group 1 Lowest risk	Office areas (i.e., non-clinical) Decanted patient care units (i.e., shell or decommissioned space) ¹ Transient public areas (i.e., areas of pass through) not intersecting a patient care area ² Laundry and soiled linen sorting or storage areas Loading dock (main area) Physical plant workshops Housekeeping rooms and closets
Group 2 Medium risk	Patient care areas, unless listed in Group 3 or Group 4 Outpatient clinics (except oncology and surgery) Unoccupied patient care units (e.g., ambulatory care units during off-hours, decanted spaces that still house equipment in use) ¹ Admission and discharge units Autopsy and morgue Occupational therapy and physical therapy areas remote from patient care areas
Group 3 Medium to high risk	Emergency (except trauma rooms) Diagnostic imaging Labour and birthing rooms (without operating room capability) Nurseries for healthy newborns Nuclear medicine Hydrotherapy Echocardiography Laboratories General medical and surgical wards or units (includes all areas including soiled and clean utility rooms) Pediatric units Geriatric units Long-term care units Food preparation, service, and dining areas Respiratory therapy Clean linen handling and storage areas Supply/material management handling and storage (e.g., central stores)
Group 4 Highest risk	Intensive care units (ICU, PICU, NICU, etc.) Operating rooms (including prep, induction, post-anaesthetic care unit (PACU), and scrub areas) Anaesthesia storage areas and workrooms Oncology units and outpatient clinics Transplant units and outpatient clinics Inpatient units and outpatient clinics for patients with AIDS or other immunodeficiency diseases Dialysis units Critical care nurseries Labour and delivery operating rooms Interventional or high-risk diagnostic imaging, e.g., <ul style="list-style-type: none"> • Cardiac catheterization and angiography • Interventional radiology • Endoscopy • Bronchoscopy

	<ul style="list-style-type: none"> • Cystoscopy <p>Cardiovascular and cardiology patient areas Pharmacy admixture rooms Medical device reprocessing areas (wherever located), including sterile supply storage* Clean and sterile storage located in patient care areas Burn care units Animal rooms Trauma rooms Protective isolation rooms Tissue culture laboratories Pacemaker insertion rooms Dental procedure rooms</p>
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*Table was adopted from CSA Z317.13:22. *Denotes population risk group remains at level 4 even during off hours.*

¹Decanted patient care areas refer to those areas that are shelled or decommissioned spaces. These spaces must also be decanted of equipment and supplies. This is distinct from unoccupied patient care areas that are active patient care areas, but work is being conducted during off-hours (i.e., no patient present).
²Population risk group determination for public areas and waiting rooms shall be based on the population served.

Table 3 - Construction activity type

Construction activity type	Description
Type A	<p>Inspection and non-invasive activities. These include, but are not limited to, activities that involve a single controlled opening in a wall or ceiling within a single defined space for visual inspection, that is accessed by</p> <ul style="list-style-type: none"> a) removing no more than one ceiling tile; or b) opening of an access panel on a wall or ceiling <p>Note: A single defined space refers to a continuous series of walls that extend the full height to the underside of the deck above. This definition is to ensure that multiple ceiling tiles within one area are not removed, above ceiling investigations are contained, and dust disturbance is minimized. Any existing holes or penetrations observed in the continuous series of walls shall be reported back to the MDT. A plan should be in place to deal with any existing holes or penetrations observed above the ceiling.</p>
	<p>Minor plumbing work that disrupts the water supply to a single fixture in a localized area (i.e., one room) for a short duration (e.g., less than 1 h).</p>
Type B	<p>Small-scale, short-duration (e.g., less than 2 hours) activities that create minimal dust. These include, but are not limited to,</p> <ul style="list-style-type: none"> a) activities that require access to and use of chase spaces b) cutting a small opening in a contained space where dust migration can be controlled, e.g., cutting of walls or ceilings to provide an access point for installing or repairing minor electrical work, ventilation components, telephone wires, or computer cables; and c) sanding or repair of a small area of a wall
	<p>Plumbing work that disrupts the water supply to a single fixture in a localized area (i.e., one room) for a short duration (e.g., less than 1 h).</p>
Type C	<p>Activities that generate a moderate to high level of dust, cause a moderate service disruption, require demolition, require removal of a fixed facility component (e.g., a sink) or assembly (e.g., a countertop or cupboard) and can be completed in a single or continuous work shift(s).[*] These include, but are not limited to,</p> <ul style="list-style-type: none"> a) activities that require sanding of a wall in preparation for painting or wall covering b) removal of floor coverings, ceiling tiles, and casework c) new wall construction d) minor ductwork e) electrical work above ceilings; and f) major cabling activities
	<p>Plumbing work that disrupts the water supply of more than three fixtures for a short duration (e.g., less than 1 h).</p>
Type D	<p>Activities that generate high levels of dust, activities that necessitate significant service disruptions, and heavy demolition and construction activities requiring consecutive work shifts to complete. These include, but are not limited to,</p> <ul style="list-style-type: none"> a) soil excavation b) new construction that requires consecutive work shifts to complete; or c) activities that involve heavy demolition or removal of a complete cabling system
	<p>Plumbing work that disrupts the water supply of more than three fixtures for 1 hour or more</p>
<p><i>Table was adopted from CSA Z317.13:22. [*]The intent of specifying contiguous shifts at Type C construction activity is to highlight the importance of ongoing monitoring and constructor presence in the work area. Multiple shifts that occur one right after the other with hand-off of activities from the constructor's lead of the first shift to the constructor's lead of the subsequent shift ensure continuity of preventive measures. Time gaps between work periods (e.g., day shifts occurring on subsequent days with evening and night hours unattended) have the potential to increase risks and are not considered to fall under type C construction activity.</i></p>	

Note: Type C and Type D Construction Activities both refer to demolition activities. Demolition activities can generate varying levels of dust or interruption to plumbing systems, which can create stagnation of water flow within piping. Both situations exacerbate the production and aerosolization of fungal or bacterial spores. Project MDT should determine intensity of demolition that they deem to fit within each construction activity type.

References

- Alberta Health Services.** October 2021 (Updated May 2022). Infection control risk assessment (ICRA) and preventive measures toolkit for construction, renovation and maintenance
- CSA Group.** Z317.13:22. Infection control during construction, renovation, and maintenance of health care facilities
- Fraser Health Authority.** January 23 2023. Infection control risk assessment (ICRA) form
- Fraser Health Authority.** May 10 2023. Standard Operating Procedure. Process: Infection prevention and control during construction, renovation, and maintenance of health care facilities