Infection Control Risk Assessment (ICRA) Completion Guide for Health Care Facilities in All Settings

Site Applicability:

All Vancouver Coastal Health Owned and Operated Acute, Ambulatory, Community, Long Term Care and Assisted Living Facilities.

Purpose:

The purpose of the Infection Control Risk Assessment (ICRA) is to minimize the risk of infection related to construction, renovation, and maintenance activities. ***The contractor or the Project Manager shall complete the ICRA form and submit it to Infection Prevention and Control (IPAC) for review and sign-off, at least 5 days prior to the start of any construction activities***. If the scope of work changes at any time during the project, an updated ICRA will need to be re-submitted.

Procedure:

1. ICRA Form Completion	1. Project name: Name of project 2. Project location: Location of work (e.g. site/facility, unit/programs) 3. Project start date: Expected start date 4. Project completion date: Expected completion date or duration of the project 5. a. VCH Project Manager name and contact number b. Contractor site supervisor name and contact number 6. Brief description of the project: Provide a brief description of the work and any activities that may impact any shared utilities, plumbing, HVAC system, etc. 7. Population risk group of the construction area: Risk group 1, 2, 3, or 4 8. Identify area(s) above the construction zone 9. Identify area(s) below the construction zone 10. Identify area(s) laterally adjacent to the construction zone(s) and identify highest risk group(s) adjacent to construction zone(s) (Table 2) 11. Identify Construction Activity: A, B, C, or D (Table 3) 12. Identify Preventative Measure level: I, II, III, or IV (Table 4) 13. Risk mitigation strategies: Describe mitigation strategies, including any processes, equipment to contain dust, etc. 14. Signatures: prior to sending the document to IPAC, collect relevant signatures for the project
2. Submittal Package	• **Mandatory**: i. Completed ICRA Form with relevant signatures and contact information. ii. Include a 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; envelope; 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**: i. Infection Control Plan ii. Any supplemental documents from the constructor (e.g., photos, reports, etc.)
3. Submission and Review Timeline	• Email Submittal Package to IPAC ***at a minimum of 5 business days*** prior to the construction start date. **Late submission may result in construction delays and thus impact project schedule**. If the primary infection control practitioner (ICP) is not available, please email the appropriate IPAC team: ▪ Acute - Vancouver General Hospital: ICP-VGH@vch.ca

	▪ Acute – UBC Hospital: ICP-UBC@vch.ca & GF Strong ICP-GFS@vch.ca ▪ Acute – Lion's Gate Hospital: ICP-LGH@vch.ca ▪ Acute – Richmond Hospital: ICP-RH@vch.ca ▪ Acute – Coastal Region (Powell River, Sechelt, Squamish/Sea-to-Sky): ICP-Coastal@vch.ca ▪ Long Term Care: ICP-LTC@vch.ca ▪ Ambulatory and Community: ICP-ambulatorycommunity@vch.ca • IPAC will review and provide a written response **within 5 business days** of package receipt. *** Any exception to this timeline shall be discussed with IPAC and agreed upon **in advance**. *** In the event of an emergency (i.e. fire and flood), **immediate** remediation may proceed, followed by an ICRA submission during business hours.
4. Pre- and Post-Construction IPAC Inspection	• Construction site inspection by IPAC is ***recommended for PM III and IV*** projects. • **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: ▪ Notify IPAC for an inspection of the site ▪ If IPAC is not available, other forms of inspection can be arranged between PM/contractor and IPAC (i.e. photos, virtual walkthrough) • **Construction activities:** can start once approved by IPAC ▪ If deficiencies are identified, prompt remediation must be completed before construction can start. • **Post-construction visit**: After the final construction clean, an IPAC visit is recommended **before** barrier removal. • **Terminal clean**: Following construction clean, environmental services **must** perform a terminal clean. *** Any exception or deviation from these requirements shall be discussed with IPAC and agreed upon **in advance**. *** Occasional site visits by IPAC may occur throughout the project.

Table 1 - Preventive measures analysis - Minimum values

Preventive measure analysis matrix:				
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
*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*				

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., • Cardiac catheterization and angiography • Interventional radiology • Endoscopy • Bronchoscopy • Cystoscopy 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
*Table was adopted from CSA Z317.13:22. *Denotes population risk group remains at level 4 even during off hours.*	
[1]Decanted 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). *[2]Population 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	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 a) removing no more than one ceiling tile; or b) opening of an access panel on a wall or ceiling 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.
	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).
Type B	Small-scale, short-duration (e.g., less than 2 hours) activities that create minimal dust. These include, but are not limited to, 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
	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).
Type C	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, 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
	Plumbing work that disrupts the water supply of more than three fixtures for a short duration (e.g., less than 1 h).
Type D	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, 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
	Plumbing work that disrupts the water supply of more than three fixtures for 1 hour or more
*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.*	
***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.*	

Table 4 - Preventive measure (PM) level and description

PM level	Description
PM I	1. MDT reviews the infection control construction agreement before work begins. 2. MDT to execute work by methods to minimize raising dust from construction operations. 3. MDT to consider the operational impacts of relocating occupants if necessary. 4. MDT to plan for protecting patient care equipment and supplies from dust exposure. 5. MDT to ensure that constructor immediately replaces any ceiling tile displaced for visual inspection. 6. MDT to report discoloured water and water leaks to maintenance.
PM II	***PM I measures shall be followed*** 1. MDT to determine a safe route for the transportation of clean or sterile supplies and equipment away from the construction area. 2. MDT to establish traffic patterns for construction workers that avoid, or at minimum, reduce adverse impacts on patient care areas. 3. MDT to consider active means to prevent airborne dust from dispensing into atmosphere including elevator hoist ways, duct shafts, pipe shafts and active laundry chutes and how it may impact operational requirements. 4. MDT to consider an elevator to be dedicated to construction use only. 5. MDT to consider the impact of isolating the area using polyethylene sheeting from floor to ceiling, sealing all edges. 6. MDT to review requirements with constructor regarding water mist work surfaces to control dust while cutting. 7. MDT to be aware of the requirements to seal unused doors with duct tape. 8. MDT to be aware of the requirements to block off and seal air vents. 9. MDT to be aware of the requirements to wipe work surfaces with disinfectant prior to hand over to the constructor. 10. MDT to be aware of the requirements to contain new materials in tightly covered containers during transport through the occupied areas. 11. MDT to be aware of the requirements to contain construction waste before transport in tightly covered containers. 12. MDT to be aware of the requirements to vacuum the area (with HEPA-filtered vacuum) and wet mop area daily with a hospital-grade low-level disinfectant. 13. MDT to be aware of the requirements to place dust mat at entrance and exit of work area. 14. MDT to be aware of the requirements to remove/isolate or modify HVAC system in areas where work is being performed. 15. MDT to be aware of the requirements to flush potable water lines in the construction area and adjacent areas before reuse.
PM III	***PM I and II measures will be followed*** 1. MDT to be aware of the requirements that the constructor needs to obtain infection control permit before construction begins. 2. MDT to be aware of the requirements to isolate HVAC system in area where work is being done to prevent contamination of duct system. 3. MDT to be aware of the requirements to complete all critical barriers or implement control cube method from floor to true ceiling (includes the areas above false ceilings) before construction begins. 4. MDT to be aware of the requirements to maintain ~~of~~ 7.5 Pa negative air pressure within the worksite utilizing HEPA-equipped construction air handling units (CAHU). Exhaust ideally to the outside of the building. The pressure differential monitor shall be no closer than 5 m to the entrance to the construction area. The differential pressure monitoring device should be connected to a permanently mounted data recorder.

	5. MDT to be aware of the requirements to not remove barriers from the work area until complete project is thoroughly cleaned by housekeeping. 6. MDT to be aware of the requirements to vacuum the area (with a HEPA-filtered vacuum) and wet mop area daily with a hospital-grade low-level disinfectant. 7. MDT to be aware of the requirements to remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 8. MDT to be aware of the requirements to contain construction waste before transport in tightly covered containers. 9. MDT to ensure the constructor plans routing for transporting receptacles or carts. 10. MDT should plan for removal/isolation of HVAC system in areas where work is being performed. 11. MDT shall identify risks or impacts associated with disinfection processes that may be used to disinfect the water lines before occupancy, draft the procedure and, if applicable, determine the flow path to be used to disinfect water lines, in accordance with CSA Z317.1.
PM IV	***PM I, II, and III measures shall be followed*** 1. MDT to be aware of the requirements to construct an anteroom at access points to the construction area if access is from within the HCF. 2. MDT to be aware of the requirements for at least 2.5 Pa of negative pressure between the anteroom and the occupied area (no need for monitoring device or CAHU in anteroom). 3. MDT to be aware of the requirements to place walk off mat outside the anteroom in patient care areas and inside the anteroom. 4. MDT to plan for construction workers: a. leaving the construction area through the anterooms so they can be vacuumed using a HEPA vacuum cleaner before leaving work site; or b. wearing protective clothing that is to be removed each time they leave the construction area and before going into patient care areas. 5. MDT to be aware of the requirements for repairing holes in walls within 2 hours or more quickly if negative pressure has been compromised. 6. MDT to ensure that ventilation systems are working properly in adjacent areas.
Table was adopted from CSA Z317.13:22.	

References

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