Infection Control Risk Assessment (ICRA)
and
Preventive Measures Toolkit
for
Construction, Renovation and Maintenance

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Alberta Health Services
Infection Prevention & Control

Version History

Date	Minor/Major Revision	Description
2022-05	Minor	Update to Appendix C – Plenum Box Position Statement
2021-10	Major	Updated – Preventive Measures Tools condensed to one tool; separated from Design Requirements; general revisions based on updated standards.

Introduction

Serious health risks for patients, staff and visitors are created during construction, renovation and maintenance activities. At the initial stages of design and planning, the completion of an Infection Control Risk Assessment (ICRA) by the multidisciplinary team (MDT) is an essential component of all construction, renovation and maintenance projects in a healthcare facility. Any situation that poses a risk to patients and staff shall be reported immediately. [CSA Z317.13-17: 6.1.14][1]

The ICRA and preventive measures toolkit has been developed to help MDTs determine the actions required to minimize the risk of infection for patients, staff and visitors during construction renovation and maintenance activities.

The term "construction activity" is defined as major and minor facility activities that disturb or modify facility structures and systems. This includes all new construction, renovation, maintenance, repurposing and remediation activities. [CSA 317.13-17: 3.1][1]

Note: Modification of a facility or area with the intent to change the original functional purpose is considered new construction, and shall necessitate the need to meet current and applicable standards. [CSA 317.13-17, 3.1][1]

What is a multidisciplinary team (MDT)?

A group of professionals from various disciplines in the healthcare facility that works with the project management team and others to ensure that the appropriate infection prevention and control measures are followed during construction activities.

Membership on a MDT should include: Infection Prevention and Control (IPC), Facilities Maintenance and Engineering (FME), operational or clinical representative, Project Management, Environmental Services, Designers and Constructors

Adapted from: CSA Z317.13-17, 3.1

Risk factors related to construction renovation and maintenance

Construction, renovation, and maintenance projects in healthcare facilities pose a potential threat of infection to current and future occupants, particularly those with reduced immunity. During construction, environmental sources including soil, water, and dust, which can be contaminated with fungal spores, bacteria, or other micro-organisms, can lead to serious infections, including death. For more information on construction renovation and maintenance related risks, see CSA Z317.13-17, Section 0.1-0.3.

Guidelines for ICRA and preventive measures

1. Construction activities shall include IPC personnel in the project planning stages prior to blue print creation, contracting and commencement of activities. [CSA Z317.13-17: 6.2.1.5, 6.2.2, 6.3.2][1], [CSA Z8000-18: 4.5.1.2][2], [FGI: 1.2-1.2.1][3]

2. There shall be an assessment of occupied areas adjacent to the construction area, and the systems serving those areas, to identify potential risks to the occupants. [CSA Z317.13-17: 6.1.3][1]

3. An infection control risk assessment (ICRA) shall be conducted before construction, renovation, and maintenance begins on any project involving preventive measures III or IV (PM III or IV) and Population Risk Group 3 or 4. For other projects (PM I or II), an ICRA should be conducted. [CSA Z317.13-17: 6.1.3][1]

   Note: Sufficient advance notice allows the MDT to make the appropriate preparations and organize alternative arrangements if needed. Notice should be provided at least three business days in advance.

4. For new construction and contracted renovations the ICRA and preventive measures analysis shall be completed collaboratively by project MDT before construction begins. [CSA Z317.13-17: 6.1.3, 6.1.4][1]

   Note: The project manager confirms that ICRA and preventive measures analysis is completed by the MDT and is documented in the project records.

5. ICRA and Preventive Measures Analysis (PMA) shall be included in tendering documents. [APIC: 117][4], [CSA Z8000-18: 4.5.1.3, 4.5.5, 5.3.1.1][2], [CSA Z317.13-17: 6.1.6][1], [FGI: 1.2-1.2, 1.2-3.1.2][3]

6. The constructor leadership shall have demonstrated experience and knowledge of the principles and practices of infection control during construction.

   Note: Experience and knowledge of infection control during construction may be demonstrated, for example, by presenting proof of training classes completed, documentation showing work on HCFs in the past, or work performed with experienced supervisors. [CSA Z317.13-17: 6.1.7][1]

7. Development of a written infection control plan, describing the procedures, process, and safeguards for the specific construction project shall be completed by the constructor or their qualified representative. [CSA Z317.13-17: 6.1.5, Annex D][1]

8. A documented plan for meeting the required PMA shall be completed and reviewed by the project MDT including the contractors. [CSA Z317.13-17: 6.1.5][1], [FGI: 1.2-3.1.4, 1.2-3.3.2, 1.2-3.4.1][3]

9. PMA identified shall be implemented, monitored and updated as required. If the scope of the construction activity changes, a new ICRA shall be required [CSA Z317.13-17: 6.1.10][1], [APIC: 117][4], [FGI; 1.2-3.1.2][3]

What is an infection control plan?

A sequence of events that includes:

- Healthcare Facility identification of potential risks, done through an ICRA
- communication of risks and preventive measures in tendering documents
- contractor development of infection control plan that is appropriate to the project
- MDT approval of the infection control plan
- implementation of the infection control plan, including the necessary training of personnel
- updating the infection control plan as needed throughout the project

Adapted from: CSA Z317.13-17, 6.1.6

See Appendix A for the table of contents of a sample infection control plan.

10. For construction activity that involves ceiling access for minor work or inspection, refer to CSA Z317.13-17 for specific recommendations and preventive measures.

11. Monitoring of construction activity is a shared responsibility between the project MDT members (IPC, Project Management, FME, Operations, etc.). A documented monitoring plan shall be developed, reviewed and implemented. [CSA Z317.13-17: 6.1.11][1], [FGI: 1.2-3.3.3][3]

12. If events that can present an infection risk occur during construction, intervention procedures shall be implemented immediately to resolve the problems. [CSA Z317.13-17: 7.3.4.9][1]

13. Written protocol for a stop work order shall be identified prior to beginning work. A stop work plan will include lines of authority, communication, investigation and remediation prior to restarting activity. [CSA Z317.13-17: 5.3.11][1], [CSA Z8000-18: 6.1.15][2] [APIC: 117][4], [FGI: 1.2-3.3.3][3]. See Appendix B for a Stop Work Order protocol.

14. The facility shall have an IPC education plan for staff and external contractors regarding construction related potential risks and preventive measures. [CSA Z317.13-17: 6.3.1.5][1], [FGI: 1.2-3.4.1.5][3], [APIC: 117][4]

15. Food and drink (other than water) should be prohibited on all construction sites, except in designated eating areas (e.g., a lunch room or trailer). [CSA Z317.13-17: 6.1.16][1]

16. Infection prevention and control personnel shall ensure that an effective surveillance system is in place to monitor patients for Legionella in the event that soil excavation takes place on, or in proximity to, HCF grounds; or the water supply has been disrupted and then repressurized [CSA Z317.13-17 7.2.3.3][1] Any lab-confirmed clinical cases of Legionella will be investigated.

Infection Control Risk Assessment (ICRA) Toolkit

Contents of ICRA Toolkit:

Form 1: Infection Control Risk Assessment (ICRA)
Form 2: Construction Activity Type (detailed)
Form 3: Population Risk Group (detailed)
Form 4: Infection Control Preventive Measures Tool
Form 5: Infection Prevention & Control Construction Site Monitoring Tool
Form 6: Infection Control Post Construction Checklist

Instructions for Using the Infection Control Risk Assessment (ICRA) Toolkit

1. Complete the ICRA (Form 1) using the following instructions:
    a. Project MDT designate to collect and record project information.
    b. Use Form 2, Construction Activity Type to identify construction activity type.
    c. Use Form 3, Population Risk Group to identify the population risk group.
    d. Using the Risk Analysis and Preventive Measures Class Matrix identify the Preventive Measures required and record on Form 1.
    e. Include any additional IPC recommendations or comments.
    f. Obtain all necessary signatures from the project MDT.
    g. Circulate copies of Form 1 to the project MDT.
2. There are four Preventive Measure Levels. Use Form 4 to identify the preventive measures for each construction project.
    a. For Infection Control Preventive Measures Level 1, the form may be completed by project MDT or their Designate to identify required the preventive measures for the activity described in the Infection Control Risk Assessment and Preventive Measures Analysis (Form 1). Identify the appropriate measures by marking X in the check boxes that apply.
    b. For Infection Control Preventive Measures Level 2, Level 3, and Level 4, the form is completed by the project MDT or designated person(s) to identify the required preventive measures for the activity described in the Infection Control Risk Assessment and Preventive Measures Analysis (Form 1). Identify the appropriate measures by marking X the check boxes that apply.
    c. Responsibility for each item is determined by the project MDT at start-up meeting, before any work is initiated.
3. Form 5 Construction Site Monitoring Tool may be used for compliance and quality monitoring, at the discretion of the project MDT or any of its members, to monitor preventive measures required during construction/renovation activities.
4. Form 6 Post Construction Checklist should be completed prior to area occupancy. This form is used by Infection Control Professional or their designate to ensure the post construction area is ready for patient/staff occupancy.

Form 1: Infection Control Risk Assessment (ICRA) Form

This form shall be completed by project multidisciplinary team, which may include Project Management, Facilities, Maintenance and Engineering (FME), Infection Prevention and Control (IPC) for all maintenance, design, planning, construction, renovation or remediation activities. Refer to Preventative Measures Tool.

Project Number:	**Project Name and Description:**
Facility/Location:	
Scope of Work (brief summary):	
Project start date:	**Estimated duration:**

Construction Activity Type

These categories are not limited to the examples provided; refer to Form 2 for details. [CSA: Table 3][1]

See CSA Z317.13-17, Clause 7.5 for exceptions if activity requires only ceiling access for investigation or minor work.

Type A	**Inspection and non-invasive activities such as**: a single controlled opening in a wall or removal of one ceiling tile or wall panel for inspection, painting (no sanding), wall covering, electrical trim work, activities that do not generate dust or require cutting of walls, or work in ceiling, minor plumbing limited to one patient care room/area that does not disrupt water for more than 15 minutes
Type B	**Small scale, short duration, creates minimal dust activities such as:** access to chase spaces, where dust can be controlled, cutting of walls/ceilings for cabling, wiring, minor electrical, ventilation or plumbing. Minor sanding and repair of surfaces, plumbing work in one or more patient care rooms that does not disrupt water for more than 30 minutes.
Type C	**Moderate to high levels dust, requires demolition or removal of fixed components. May include:** major sanding, removal of flooring, ceiling tiles, casework, new wall construction, minor duct or electrical work in ceilings, major cabling, plumbing work in two or more patient care rooms not disrupting water more than one hour. Activities cannot be completed in a single work shift.
Type D	**High levels of dust, major demolition and construction, includes:** complete removal of cabling, demolition of wall(s), plumbing that disrupts water in two or more patient care rooms for more than one hour, requires consecutive shifts to complete.

Population Risk Group **(these groups are not limited to the examples provided descriptions; refer to Form 3 for details)**

*Consideration should be given to **adjacencies** (above, below and beside) when determining the population risk group.*

Group 1	***Group 2***	***Group 3***	***Group 4***
• Office areas • Unoccupied spaces* • Public areas • Laundry, soiled linen	• Patient care areas not listed in Group 3 or 4 • Outpatients (except oncology and surgery) • Admission, discharge, waiting areas	• ER (except trauma rooms) • DI, nuclear medicine, MRI • Labour, delivery and nursery • Pediatrics • General medical/surgical units • Continuing Care units • Geriatric units • Respiratory therapy	• Operating Rooms • Trauma rooms • Oncology • ICU, CCU, NICU • Bronchoscopy/Endoscopy • Medical Device Reprocessing and sterile storage

*An unoccupied space refers to an area where there are no patients or patient-related activities and that is absent of any medical supplies or equipment. Unoccupied spaces may include vacant wards, basements, shelled spaces for future development, or spaces only accessed for equipment servicing. Patient care areas that are intermittently unoccupied due to designated working hours are not considered unoccupied spaces.

Risk Analysis & Preventive Measures Class Matrix:

IPC must be notified when Risk Level indicates Class III and IV

** Denotes where modified preventive measures level may be used (see Clause 10, ICRA and Preventive Measures Toolkit).*

Population Risk Group (choose one)	***Construction Activity Type (choose one)***				***Preventive Measures Determined***
	□ Type A	**□ Type B**	**□ Type C**	**□ Type D**	
□ Group 1	I	**II***	**II**	**III/IV**	
□ Group 2	I	**II***	**III**	**IV**	
□ Group 3	I	**III***	**III/IV**	**IV**	
□ Group 4	**I-III**	**III/IV***	**III/IV**	**IV**	

Additional Recommendations (include hoarding details, exhaust location and other critical notes. Consideration should be given to HVAC and Plumbing systems)

Please attach corresponding Preventative Measures checklist.

Monitoring Tool Form 5	Required: YES ☐ NO ☐
Post Construction Checklist Form 6	Required: YES ☐ NO ☐
Stop Work Order (see Appendix B of guidelines)	Approved by team ☐ N/A ☐
Contractor training	Done ☐ Not required ☐ Checklist ☐

Approval (Print Name and sign)	**Date**
Project Manager:	
Facilities Maintenance & Engineering:	
Contractor:	
Infection Control Professional:	
Clinical Representative:	
Other:	
Other:	

Form 2: Construction Activity Type

Construction activity type	Description [Refer to CSA Z317.13-17 Table 3][1]
Type A	Inspection and non-invasive activities. These include, but are not limited to: a. activities that involve a single controlled opening in a wall or ceiling for minor work or visual inspection, that is accessed by: i. removing no more than one ceiling tile; or ii. opening of an access panel on a wall or ceiling; b. painting (but not sanding) and wall covering; c. electrical trim work; d. minor plumbing work that disrupts the water supply to a localized patient care area (i.e., one room) for less than 15 minutes; and e. other maintenance activities that do not generate dust or require cutting of walls or access to ceilings other than as specified in item a.
Type B	Small-scale, short-duration (e.g., less than two 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; c. sanding or repair of a small area of a wall; and d. plumbing work that disrupts the water supply of one or more patient care areas for less than 30 minutes.
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., sink) or assembly (e.g., countertop, cupboard), or cannot be completed in a single work shift. 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; f. major cabling activities; and g. plumbing work that disrupts the water supply of one or more patient care areas for more than 30 minutes but less than one hour.
Type D	Activities that generate high levels of dust, activities that necessitate significant service disruptions, and major 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; c. activities that involve heavy demolition or removal of a complete cabling system; or d. plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for one hour or more.

Form 3: Population Risk Group

Population Risk Group	Description [Refer to CSA Z317.13-17, Table 2][1]	
Group 1 Lowest Risk	• Office areas (i.e., non-clinical) • Unoccupied spaces* • Public areas not intersecting a patient care area	• Laundry and soiled linen sorting or storage areas • Physical plant workshops • Housekeeping rooms and closets *An unoccupied space refers to an area where there are no patients or patient-related activities and that is absent of any medical supplies or equipment. Unoccupied spaces may include vacant wards, basements, shelled spaces for future development, or spaces only accessed for equipment servicing. Patient care areas that are intermittently unoccupied due to designated working hours are not considered unoccupied spaces.
Group 2 Medium Risk	• Patient care areas, unless listed in Group 3 or Group 4 • Outpatient clinics (except oncology and surgery) • Admission and discharge units • Waiting rooms	• 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/surgical wards or units (includes all areas within the units, e.g., soiled and clean utility rooms) • Pediatric units • Geriatric units • Continuing care units • Food preparation, serving, and dining areas • Respiratory therapy • Clean linen handling and storage areas
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 care (including inpatient units and outpatient clinics) • Transplant care (including inpatient units and outpatient clinics) • AIDS/immunodeficiency diseases (including inpatient units and outpatient clinics) • 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) • Central sterile supply • Clean and sterile storage • Burn care units • Trauma rooms • Protective isolation rooms • Tissue culture laboratories • Pacemaker insertion rooms • Dental procedure rooms

Form 4: Preventive Measures Tool

This form is completed by the multi-disciplinary team (MDT) or designated person(s) to identify the required preventive measures for the activity described in Form 1 *Infection Control Risk Assessment and Preventive Measures Analysis*.

All CSA standards identified below refer to CSA Z317.13-17 *Infection control during construction, renovation and maintenance of healthcare facilities*. The tool below is not an exhaustive list of preventive measures: for new construction in a new location, an existing detached location, or existing connected location, refer to CSA Z317.13-17, Section 8: *Infection prevention and control measures for new construction projects*; for complete details of all preventive measures refer to CSA Z317.13-17.

Project Name:	**Location:**
Scope of Work (Brief Summary):	
Project start date:	**Estimated Duration:**

Mark X in the check boxes (☐) to identify the appropriate preventive measures for your project.

Item	Level	☒	1.0 Preventive Measures – Before Construction	Project MDT Designate Responsible	Comments
1.1	All	☐	The Project Manager shall identify essential services (e.g., water supply, electricity, and ventilation systems) that could be disrupted and appropriate measures to address the disruption. [CSA: 7.2.2.1].		
1.2	All	☐	Identify high-risk patients who might need to be temporarily moved away from the construction area. [CSA: 7.2.2.2]		
1.3	II-IV	☐	Determine a safe route for the transportation of clean or sterile supplies and equipment away from the construction area.[CSA 7.2.3.1, 7.3.3.8]		
1.4	II-IV	☐	Establish traffic patterns for construction workers that avoid patient care areas. [CSA 7.2.3.1, 7.3.3.8]		
1.5	II-IV	☐	Minimize exhaust output from elevators serving construction areas to ensure that construction dust is not re-circulated into the health care facility. [CSA 7.2.3.1]		
1.6	II-IV	☐	Designate an elevator for use exclusively by construction workers. [CSA 7.2.3.1]		
1.7	II-IV	☐	Confirm water temperature standards for the health care facility. [CSA 7.2.3.1]		
1.8	II-IV	☐	Determine whether domestic cold, hot, and recirculation water lines will be affected by the construction. This assessment shall include: 1. Identifying plumbing lines that will need to be a. Shut off or interrupted using existing valves; or b. Isolated by additional valves. 2. Determining the method to be used to disinfect the water lines before occupancy. 3. Drafting the procedure to be used to disinfect the water system, including identifying the required equipment. 4. Determining the flow path to be used to hyperchlorinate and flush water lines affected by the construction[CSA 7.2.3.2] See Plumbing section in Design guidelines for further guidance on assuring adequate water quality during construction.		
1.9	II-IV	☐	Drawings shall be obtained that show the layout of the ventilation systems that supply air to, or exhaust air from, the work area. The project plan shall state whether it is necessary to close outlets, modify performance, shut down systems or make other changes to the HVAC system. [CSA:7.2.3.4]		
1.10	III-IV	☐	Plan for regular monitoring (Form 5) and develop a process for issuing and documenting a Stop Work Order (see Appendix B).		

Item	Level	☒	2.0 Preventive Measures - During Construction	Responsibility	Comments
Dust Control					
2.1.	All	☐	Immediately after Type A activity (e.g., visual inspection) has been completed, close access panels, replace displaced tiles, clean work area with a HEPA-filtered vacuum cleaner. [CSA 7.3.1.1]	Project Manager/ Contractors/ FME	
2.2.	All	☐	Patient care equipment and supplies are relocated or protected from dust exposure. [CSA 7.3.1.5; 7.3.3.9]	Healthcare Staff	
2.3.	II-III	☐	Place a walk-off mat outside the entrance to the construction area to trap dust from the equipment and footwear of personnel leaving the area. [CSA 7.3.2.2(g)]	Project Manager/ Contractors/ FME	
2.4.	II-IV	☐	Use drop sheets [CSA 7.3.2.2(a)]	Project Manager/ Contractors/ FME	
2.5.	II-IV	☐	Control dust by water-misting work surfaces while cutting. *Note: Caution should be exercised when such techniques are used on cellulose or fibre-based materials that are intended to stay in place following construction work.* [CSA 7.3.2.2(c)]	Project Manager/ Contractors/ FME	
2.6.	II-IV	☐	Seal windows and unused doors. [CSA 7.3.2.2(d)]	Project Manager/ Contractors/ FME	
2.7.	II-IV	☐	Seal plumbing penetrations, electrical outlets, and any other sources of potential air leaks in the construction area. [CSA 7.3.2.2(e)]	Project Manager/ Contractors/ FME	
2.8.	II-IV	☐	Seal air supply and return ducts in the construction area, [CSA 7.3.2.2(f)]	Project Manager/ Contractors/ FME	
2.9.	II-IV	☐	Walk-off mats shall be of sufficient size to ensure that constructors have to place both feet on the mat at least once on exiting the construction area and vacuumed (with a HEPA filter-equipped vacuum cleaner) or replaced daily and when visibly soiled. [CSA 6.6.1.9]	Project Manager/ Contractors/ FME	
2.10.	III-IV	☐	Erect an impermeable dust barrier, from the floor to the underside of the deck (including the areas above false ceilings) consisting of two layers of 0.15 mm (6 mil) fire-retardant polyethylene (or an equivalent barrier accepted by the MDT) and gypsum wallboard protective layer. The polyethylene membrane shall be present under all circumstances to maintain the required pressurization. Fire retardant polyethylene shall be used for exposed surfaces. The surface closest to the hospital zone shall be wipeable. The dust barrier shall remain in place until the project is complete and the area has been cleaned thoroughly and inspected. After construction has been completed, the dust barrier shall be removed in such a manner to prevent the spread of dust and other debris particles adhering to the barrier. [CSA 7.3.3.2.1] Where deemed appropriate by the MDT, the composition of the dust barrier may be modified to suit time, space, or impact constraints. [CSA 7.3.3.2.2]	Project Manager/ Contractors/ FME	

Item	Level	☒	2.0 Preventive Measures - During Construction	Responsibility	Comments
2.11.	III-IV	☐	Use impermeable temporary containment units constructed to contain contaminants that have a monolithic (one-piece) exterior shell constructed of a minimum of 0.20 mm (8mil) fibre-reinforced, fire-retardant polyethylene (or an equivalent barrier). The construction of the containment unit shall allow for containment of contaminants within the vessel and have ports through which HEPA-filtered vacuum cleaners or portable construction air handling units (CAHUs) can be easily attached to draw the unit under negative pressure. [CSA 7.3.3.2.1] Where deemed appropriate by the MDT, the composition of containment units may be modified to suit time, space, or impact constraints. [CSA 7.3.3.2.2]	Project Manager/ Contractors/ FME	
2.12.	III-IV	☐	HEPA vacuum mechanical and electrical systems and spaces above drop or false ceilings, if necessary. [CSA 7.3.3.2.1]	Project Manager/ Contractors/ FME	
2.13.	III-IV	☐	Measures to ensure that contaminants from the construction site are not transferred to patient care areas on workers' clothing, such as: routes from construction areas should be away from patient care areas; use of protective clothing while in construction areas that is removed before entering patient care areas, or don protective clothing when entering patient care areas. [CSA 7.3.3.2.3]	Project Manager/ Contractors/ FME	
2.14.	IV	☐	Ensure that all access be from outside the occupied areas of the healthcare facility, or construct anterooms at access points to the construction area if access is from within the healthcare facility. [CSA 7.3.4.2, 7.3.4.3(a)]	Project Manager/ Contractors/ FME	
2.15.	IV	☐	Place a walk-off mat outside and inside the anteroom to trap dust from equipment, debris, and the footwear of personnel leaving the construction area. [CSA 7.3.4.3(b)]	Project Manager/ Contractors/ FME	
2.16.	IV	☐	Ensure that all workers leave the construction area through the anteroom so that they can be vacuumed with a HEPA filter-equipped vacuum cleaner before leaving; or wear protective clothing that is to be removed each time they leave the construction area and before going into patient care areas. [CSA 7.3.4.3(c)]	Project Manager/ Contractors/ FME	
2.17.	IV	☐	Repair holes in walls or breaches in the containment system immediately when found. [CSA 7.3.4.3(e)]	Project Manager/ Contractors/ FME	
2.18.	IV	☐	Carefully remove barrier walls and use short term protection to minimize environmental contamination during removal. [CSA 7.3.4.3(g)]	Project Manager/ Contractors/ FME	
Ventilation					
2.19.	II	☐	If possible, the ventilation system should be disabled until the project has been completed. If not possible, an engineering analysis shall be performed to ensure that the fan systems are performing as intended to maintain relative pressurization and exhaust contaminated air, and that the operation of the HVAC system is not compromised. [CSA:7.3.2.3]	Project Manager/ Contractors/ FME	
2.20.	III-IV	☐	Disable the ventilation system and seal duct openings in the construction area until the project is completed. [CSA 7.3.3.3.1]	Project Manager/ Contractors/ FME	
2.21.	III-IV	☐	The main facility system shall be verified for operation in accordance with design during construction work. [CSA 7.3.3.5]	Project Manager/ Contractors/ FME	

Item	Level	☒	2.0 Preventive Measures - During Construction	Responsibility	Comments
2.22.	III-IV	☐	Ensure that the facility's permanent ventilation system is functioning properly and is cleaned if contaminated by soil, dust, or moisture after construction is complete. [CSA 7.3.3.3.1]	Project Manager/ Contractors/ FME	
2.23.	III-IV	☐	The healthcare facility and constructor shall verify the pressure relationships for critical areas near the construction area (e.g., Population Risk Group 4 areas). [CSA 7.3.3.5]	Project Manager/ Contractors/ FME	
2.24.	III-IV	☐	Ensure that the air is exhausted directly outside and away from intake vents and filtered through a HEPA filter. In conditions that prohibit exhausting to the outside, air may be re-circulated in accordance with CSA Z317.13-17, Clause 7.3.3.6. [CSA 7.3.3.3.1, 6.6.3.1] or as determined by the MDT (see Item 2.30 below).	Project Manager/ Contractors/ FME	
2.25.	III-IV	☐	When planning projects in facilities with operable windows that may be used for exhausting construction air, consider adjacent rooms, and lock windows so that construction air is not reintroduced to the building.		
2.26.	III-IV	☐	Permanent air handling systems should not be used for exhausting air from construction or renovation work areas, except if: a. the air handling system is an exhaust system leading directly to the outdoors; b. an engineering analysis is performed to ensure that the exhaust system continues to perform its intended function and that the operation of the HVAC system is not compromised; c. the operation of the exhaust fan is monitored and alarmed to building operations staff and alarmed in the construction zone. [CSA 7.3.3.6.1, 7.3.3.3.5] If the conditions outlined in the above three (3) items cannot be satisfied, then the steps outlined in CSA Z317.13-17, Clause 7.3.3.6 shall be followed.	Project Manager/ Contractors/ FME	
2.27.	III-IV	☐	In cases where air cannot be exhausted directly outside, exhaust air may be temporarily ducted to the building exhaust system if an engineering analysis has been performed by qualified personnel to ensure that exhaust air will not be re-entrained into the occupied building and the MDT approves temporary ducting to the exhaust system. [CSA 7.3.3.6.2]	Project Manager/ Contractors/ FME	
2.28.	III-IV	☐	In cases where air cannot be exhausted directly outside or piped through the building exhaust system, it may be re-circulated into areas of the building occupied by Risk Group 1 or 2, if MDT approval is granted. [CSA 7.3.3.6.3]	Project Manager/ Contractors/ FME	
2.29.	III-IV	☐	Construction exhaust air shall not be re-circulated into building areas occupied by Risk Group 3 or 4 [CSA 7.3.3.6.3, 6.6.1.7]. Refer to use of permanent exhaust in Item 2.26 above. See Item 2.30 below for use of plenum boxes for recirculation.	Project Manager/ Contractors/ FME	
2.30.	III-IV	☐	If approved by the MDT to use a plenum box for exhausting construction air, after all other options have been considered, follow the guidelines indicated in the AHS Plenum Box Position Statement, and document rationale for use. (See Appendix C of the ICRA and Preventive Measures Toolkit).	Project Manager/ Contractors/ FME	

Item	Level	☒	2.0 Preventive Measures - During Construction	Responsibility	Comments
2.31.	III-IV	☐	Measures related to re-circulated air shall require approval from the MDT, and include arranging on-site and in-place performance leak-testing of construction air handling units (CAHUs). [CSA 6.6.1.7]	Project Manager/ Contractors/ FME	
2.32.	III-IV	☐	Use portable HEPA filter-equipped CAHUs that include pressure gauges and an alarm, according to CSA Z317.13-17, Clause 6.6.	Project Manager/ Contractors/ FME	
2.33.	III-IV	☐	CAHUs used for Preventive Measures III or IV shall be performance leak-tested and verified at the beginning of the project, except as provided in CSA Z317.13-17, Clause 6.6.4.4. [CSA 6.6.4.3]	Project Manager/ Contractors/ FME	
2.34.	III-IV	☐	HEPA filters and pre-filters for CAHUs shall be visually inspected, according to manufacturer's instructions, before installation and at least daily and their condition shall be documented. [6.6.3.3]	Project Manager/ Contractors/ FME	
2.35.	III-IV	☐	HEPA filters shall be replaced if: airflow falls below 70% of the manufacturer's specified level; the unit fails a performance leak test; or the filter is visibly damaged, wet, or clogged. [CSA: 6.6.4.5, 7.3.3.3.1]	Project Manager/ Contractors/ FME	
2.36.	III-IV	☐	Minimum negative air pressure of 7.5 Pa is monitored by a device that constantly displays the pressure differential between the construction area and occupied areas, continuously monitors and is connected to a local alarm, with pressure recorded daily. If the pressure is less than 7.5 Pa for more than four hours (cumulative over 24 hours), or less than 2.5 Pa for more than 90 seconds, the contractor will take immediate corrective actions to restore and maintain the required pressure differential. [CSA: 6.6.1.3, 7.3.3.3.2, 7.3.3.3.3]	Project Manager/ Contractors/ FME	
2.37.	IV	☐	Ensure that ventilation systems are working properly in adjacent areas. [CSA 7.3.4.3(f)]	Project Manager/ Contractors/ FME	
Plumbing					
2.38.	All	☐	Use gasket material that is smooth and does not promote buildup of biofilm and scale and replace gaskets if worn or rough. [CSA:7.3.1.2]	Project Manager/ Contractors/ FME	
2.39.	All	☐	Ensure that faucet aerators are not installed or used. [CSA:7.3.1.2]	Project Manager/ Contractors/ FME	
2.40.	All	☐	Schedule water interruptions in advance and receive approval before starting. [CSA:7.3.1.2]	Project Manager/ Contractors/ FME	
2.41.	All	☐	Maintain a dry work environment and report any water leaks through walls or substructures. [CSA:7.3.1.2]	Project Manager/ Contractors/ FME	
2.42.	All	☐	Perform work during periods of low user activity (e.g., evenings). [CSA 7.3.1.3]	Project Manager/ Contractors/ FME	
2.43.	II-IV	☐	Avoid using collection tanks and long pipes (which allow water to stagnate). [CSA 7.3.2.4]	Project Manager/ Contractors/ FME	
2.44.	II-IV	☐	After construction and immediately before occupancy, disinfect water systems, in accordance with CSA Z317.13-17 and CSA Z317.1-16, as determined by the scope of work and the MDT. [CSA 6.8.1; CSA 6.7.10]	Project Manager/ Contractors/ FME	
2.45.	IV	☐	Plumbing and HVAC systems shall be supplied, installed, and commissioned in accordance with CAN/CSA-Z317.1, CAN/CSA-Z317.2, and CAN/CSA-Z8001. [CSA 7.3.4.10]	Project Manager/ Contractors/ FME	

Item	Level	☒	2.0 Preventive Measures - During Construction	Responsibility	Comments
Site maintenance					
2.46.	All	☐	Report discoloured water and water leaks to maintenance and infection prevention and control personnel. [CSA 7.3.1.5; 7.3.3.9]	Environmental Services/ Healthcare Staff	
2.47.	II-IV	☐	Place supplies and equipment in covered containers during transportation through the healthcare facility to prevent contamination in other areas. [CSA 7.3.2.5.1(c)] Wipe the wheels of mobile equipment, transport carts, and bins before entering occupied areas. [CSA 7.3.2.5.1(d)]. Equipment, carts, and bins should be clean before entering occupied areas.	Project Manager/ Contractors/ FME	
2.48.	II-IV	☐	Remove the debris in the evening when patients are in their rooms and visitors have left. If this is not possible, debris should be removed at the end of the workday. Exposure of the occupants of the healthcare facility to debris shall be minimized. [CSA 7.3.2.5.2]	Project Manager/ Contractors/ FME	
2.49.	II-IV	☐	Place debris in covered containers or cover it with a moistened sheet before transporting it for disposal [CSA 7.3.2.5.1(b)]. Containers should be clean before entering occupied areas.	Project Manager/ Contractors/ FME	
2.50.	II-IV	☐	Clean the construction area with a HEPA filter-equipped vacuum cleaner, a wet mop, or both, as necessary. [CSA 7.3.2.5.1(a)]	Project Manager/ Contractors/ FME	
2.51.	III-IV	☐	MDT shall be responsible for collaboration with the environmental services staff to ensure that the construction area is thoroughly cleaned when work is complete. [CSA 7.3.3.8]	Project Manager MDT	
2.52.	III-IV	☐	Environmental services staff shall: a. increase the frequency of cleaning in areas adjacent to the construction area while the project is underway; b. wet mop and vacuum the area with a HEPA filter-equipped vacuum cleaner as necessary and when the work is complete (See Item 3.5 for Return to Service Cleaning); c. wipe exposed surfaces with a hospital-grade disinfectant. [CSA 7.3.3.7.2]	Project Manager/ MDT/ Environmental Services	
2.53.	III-IV	☐	The MDT shall designate responsibility for maintaining cleanliness outside the work area. A HEPA filter-equipped vacuum cleaner shall be used every day or more frequently if necessary. [CSA 7.3.3.7.1]	Project Manager/ Contractors/ FME	
2.54.	III-IV	☐	A designated member of the MDT shall regularly visit (frequency determined by the MDT) the construction area to confirm preventive measures are being followed, including inspecting the integrity of dust barriers, and document findings. Review at the regular meetings of the MDT(Refer to Form 5). [CSA: 7.3.3.8, 7.3.4.7, 7.3.4.8]	Project Manager/ Contractors/ FME MDT	
2.55.	III-IV	☐	Ensure patients, staff, and visitors do not go into or through the construction area. [CSA 7.3.3.9]	Healthcare Staff	

Item	Level	☒	3.0 Preventive Measures - After Construction	Responsibility	Comments
3.1.	All	☐	Environmental Services and healthcare staff shall report discoloured water and water leaks to the maintenance and infection prevention and control departments. [CSA 7.4.2.2(b)]	Environmental Services/ Healthcare Staff	
3.2.	All	☐	The MDT shall review the preventive measures that were undertaken and assess their effectiveness.	Project Manager MDT	
3.3.	II-IV	☐	The MDT shall conduct a final inspection to ensure that the ventilation system is functioning properly in the construction area and adjacent areas. [CSA: 7.4.2.1]	Project Manager MDT	
3.4.	II-IV	☐	The constructor shall ensure that the construction area has been cleaned with a HEPA filter-equipped vacuum cleaner, a wet mop, or both, as necessary, and that horizontal work surfaces have been cleaned. [CSA 7.4.2.2 (a)]. For new construction projects, this is completed before hoarding is removed [8.3.5.1.5]. The need for additional facility environmental services pre-hoarding removal cleaning will be determined by the MDT.	Environmental Services/ Healthcare Staff	
3.5.	II-IV	☐	MDT shall ensure that the construction area has undergone "Return to Service Cleaning" before building occupants are allowed to occupy the new space. The cleaning shall be performed by the facility's environmental services department or designated alternative cleaning contractor using a cleaning procedure approved by the MDT. [CSA 7.4.2.3]	Project Manager MDT	
3.6.	IV	☐	Before patient or staff occupancy of the construction project work area is permitted, a project infection control work plan completion debrief shall be completed. If the commissioning process identifies any uncompleted work from the infection control plan, this shall be listed as a project deficiency. [CSA: 7.3.4.11]	Project Manager/ Contractors/ FME	
3.7.	IV	☐	The engineering or operations and maintenance staff or constructors shall ensure that the construction area is free of equipment and debris.	Project Manager/ Contractors/ FME	
3.8.	IV	☐	Before the completed construction area is occupied, any parts of the infection control plan still in effect shall be reviewed by the MDT. If necessary, such parts shall be incorporated into the healthcare facility's ongoing operating policies and procedures. [CSA 7.4.3]	Project Manager MDT	
3.9.	IV	☐	Complete the post construction checklist (See Form 6).	Project Manager MDT	

Additional comments:

Approval (print name and sign)	Date
Project Manager:	
Facilities Maintenance & Engineering:	
Contractor:	
Infection Control Professional:	
Clinical Representative:	
Other:	
Other:	

Form 5: Infection Prevention and Control Construction Site Monitoring Tool

This form is used for compliance and quality monitoring by the infection control professional or other member of the multidisciplinary team to monitor preventive measures required during construction/renovation activities.

Project:	**Date/Time:**

N/A means not applicable or not observed

Preventive Measure	Compliance	Comments
Barriers		
ICRA is posted for the area	☐ Yes ☐ No ☐ N/A	
Construction signs posted for the area	☐ Yes ☐ No ☐ N/A	
Doors properly closed and sealed	☐ Yes ☐ No ☐ N/A	
Floor area clean, no dust tracked	☐ Yes ☐ No ☐ N/A	
Walk-off mats clean/free of debris	☐ Yes ☐ No ☐ N/A	
Tape adhering to surface	☐ Yes ☐ No ☐ N/A	
Hoarding Intact	☐ Yes ☐ No ☐ N/A	
Air handling		
All windows closed behind barrier	☐ Yes ☐ No ☐ N/A	
Negative air monitored at entrance (7.5 Pascal)	☐ Yes ☐ No ☐ N/A	
Construction Air Handling Unit running	☐ Yes ☐ No ☐ N/A	
Current maintenance label visible	☐ Yes ☐ No ☐ N/A	
Air exhausted to appropriate area/outside	☐ Yes ☐ No ☐ N/A	
Project area		
HEPA-filtered vacuum on job site	☐ Yes ☐ No ☐ N/A	
Debris removed in covered container daily	☐ Yes ☐ No ☐ N/A	
Designated construction route/map posted	☐ Yes ☐ No ☐ N/A	
Trash in appropriate container	☐ Yes ☐ No ☐ N/A	
Routine cleaning done on job site	☐ Yes ☐ No ☐ N/A	
Air vents sealed/duct work capped	☐ Yes ☐ No ☐ N/A	
Traffic control		
Restricted to construction workers and necessary staff only	☐ Yes ☐ No ☐ N/A	
All doors and exits free of debris	☐ Yes ☐ No ☐ N/A	
Dress code		
Is appropriate for the area (OR, MDRD, L&D, etc.)	☐ Yes ☐ No ☐ N/A	
Protective clothing worn when required	☐ Yes ☐ No ☐ N/A	
Workers clothing clean on exiting work space	☐ Yes ☐ No ☐ N/A	

Reported to:	**Signature:**
Reported to contractor:	**Contractor signature:**

Form 6: Infection Prevention and Control Post Construction Checklist

This form is used by Infection Control Professional or their Designate to ensure the post construction area is ready for patient/ staff occupancy.

Project Name:	**Location:**
Date:	**Preventive Measures Required:**

Item/Action	All work is completed:			List deficiencies or comments:	Date Completed
	Yes	No	N/A		
Post construction cleaning					
Before hoarding removal, job site is clear of dust, construction debris/ equipment. Area has been cleaned, including HEPA vacuuming and/or wipe down of surfaces including hoarding to remove dust.	☐	☐	☐		
Facility based cleaning (e.g. environmental services) performed prior to hoarding removal (if required by the MDT).	☐	☐	☐		
After removal of hoarding, contractor completes final construction cleaning followed by facility based Return to Service cleaning.	☐	☐	☐		
Where required, HVAC ductwork cleaning has been performed	☐	☐	☐		
Finishes					
Area is dust free (all horizontal surfaces, headwalls, ledges, inside of cabinets, drawers, tops of clocks etc.).	☐	☐	☐		
Hand hygiene dispensers filled and functioning and properly located.	☐	☐	☐		
Hand drying paper towels available and properly located.	☐	☐	☐		
Provisions for sharps and proper personal protective equipment supplies	☐	☐	☐		
Integrity of walls/ceiling tiles are maintained e.g. not stained or damaged.	☐	☐	☐		
Surfaces in patient care/procedure/service areas are appropriate (e.g. smooth, nonporous, water resistant)	☐	☐	☐		
Area surfaces are free of fissures or open joints and crevices that retain or permit collection of debris or facilitate bacterial and fungal growth.	☐	☐	☐		
Infrastructure					
If plumbing has been affected/shutdown plumbing has been flushed, superheated or hyperchlorinated, as determined by the MDT. Verified by: **(name and position, required if applicable)**	☐	☐	☐		
Plumbing if affected has been checked for leaks. Verified by **(name and position, required if applicable)**	☐	☐	☐		
Correct hand washing sinks/faucets present, properly located, and functioning	☐	☐	☐		
Faucet aerators are NOT present in patient care areas.	☐	☐	☐		
Ceiling tiles are in place, well approximated and not stained.	☐	☐	☐		
HVAC systems are clean, function restored, balanced and verified. Verified by : **(name and position required if applicable)**	☐	☐	☐		
Correct room pressurization (negative or positive) Verified by: **(name and position required if applicable)**	☐	☐	☐		
All mechanical spaces, including ceiling space should be cleaned of dust and debris.	☐	☐	☐		
Other:	☐	☐	☐		

Appendix A

Sample table of contents for an infection control plan [CSA Z317.13-17, Annex D]

Appendix B
Stop Work Order Protocol

Monitoring of construction activity is a shared responsibility between all members of the project multidisciplinary team. A written protocol for a Stop Work Order shall be identified before beginning construction. Stop Work Order may be used when unresolved non-compliance to preventive measures is identified by a member of the project MDT.

Who issues a Stop Work Order?

Stop work orders are issued by the Project Manager, Project Coordinator or FME Designate.

Process for issuing a Stop Work Order:

In the event of a breach, follow the instructions for emergency notification of the Project Leads as identified on the Emergency contact sheet (for both during business hours and outside of business hours) posted on the outside of the hoarding.

- ☐ Notify the on-site Contractor/FME worker that you have identified a breach and are issuing a Stop Work Order.
- ☐ Complete a Monitoring Tool identifying the exact nature of the breach.
- ☐ Notify Project Manager/FME site lead as soon as possible.
- ☐ The Project Manager/FME site lead will investigate the breach and ensure that remediation is complete prior to authorizing resumption of activity.
- ☐ All breaches and Stop Work Orders will be reviewed at the next regular construction team meeting.

Minor breaches in preventive measures that can be rectified immediately (e.g., ECU door left open, scant amount of debris/dust visible outside of ECU, absence of covered container for disposal of materials) **do not** require a Stop Work Order.

Major breaches in preventive measures (e.g., ECU not in place, moderate/ large amount of debris/dust visible outside of ECU, HEPA-filter vacuum or damp mop not present, patient in room, appropriate dress code not being followed) or situations that pose a safety risk to persons in the building **do** require a Stop Work Order.

Appendix C: Plenum Box Position Statement

Healthcare Facility Design and Preventative Measures Working Group Position Statement on Use of Plenum Boxes

Background and Current Situation

The current CSA Z317.13-17 Guidelines for 'Infection control during construction, renovation, and *maintenance of healthcare facilities'* stipulate that construction air may be exhausted using one of the following method, listed in order of preference:

1. Exhaust HEPA filtered air directly outside and away from intake vents (i.e. the gold standard)
2. Exhaust air may be temporarily ducted to the building exhaust system provided approval is given by a qualified engineer and the multi-disciplinary project team (MDT)
3. Air may be recirculated into areas of the building occupied by Risk Group 1 or 2

Although the CSA Z317.13-17 provides several options for exhausting construction air, numerous healthcare facilities throughout the province of Alberta have found consistently meeting these guidelines, both logistically and financially restrictive. Challenges are most commonly identified within 'high risk' areas located within the building core (e.g. operating rooms, medical device reprocessing) where air cannot be exhausted directly outside, or temporarily ducted into the building exhaust system. Air filtration boxes, commonly referred to as plenum boxes have been identified as an alternate strategy for venting air from construction spaces when implementation of CSA recommendations are not considered feasible by the MDT. Deviations from the guidelines are not necessarily endorsed by CSA; however, the CSA does acknowledge that the MDT may need to consider alternatives to the standard IPC preventative measures when all other options have been deemed unachievable. CSA has been approached about endorsement of plenum boxes, however are not actively pursuing inclusion in the guidelines at this time due to the absence of a clearly defined certification program.

Plenum boxes are generally constructed of plywood and/or plexiglass with a HEPA filtered discharge side and an intake port connected to the Construction Air Handling Unit (CAHU) with tubing. The entire box is secured with fire rated white polyethylene. The intent of the plenum box is to baffle the air discharged from a CAHU, reducing the channeled air from turbulent to laminar flow, while also providing additional HEPA filtration. Plenum boxes have been used in several AHS construction projects to date, with no associated adverse patient outcomes identified. The AHS IPC HCF Design and Preventative Measures Working Group support the use of plenum boxes as a viable and necessary alternative when all the following parameters have been met.

1. Use of the plenum box as an exhausting option would only be utilized as a last resort when all other options outlined in the CSA Z317.13-17 have been deemed unachievable, and has been documented and agreed upon by the MDT.
2. Materials used in the construction of plenum boxes shall be easy to clean/ disinfect (i.e. smooth and non-porous) and able to withstand frequent disinfection with hospital grade cleaning/disinfection products. Current contractor plenum box designs have utilized a plywood structure, wrapped in fire retardant poly. This design would impede the cleanability of this structure. Going forward, direction would be provided to ensure that the box will be cleaned between uses, that all materials used are smooth/non-porous, and that designs would allow for filter change out as necessary.
3. The following are additional recommended minimum requirements for plenum boxes:

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Alberta Health Services
Infection Prevention & Control

a. If a plenum box is deemed to be the venting solution for a specific project, then the design and placement shall be according to the requirements and design of the engineer of record.
b. Calculations by HVAC Engineer to dampen turbulent air depending on the size of the CAHU, or series of CAHUs to avoid filter breakthrough
    - Must have a means of detecting filter overload, filter efficiency, and leak testing according to applicable engineering standards and standards set out in CSA Z317.13-17 for CAHU leak testing, and inspection.
c. Plenum Box shall be visually inspected daily and their condition documented.
d. A Documented process for changing of the HEPA filter – Similar to that of the CAHU
    - Storage and maintenance for the plenum box shall be in accordance with the CSA Z317.13-17 guidelines set out for CAHUs.

References

1. Canadian Standards Association (CSA). Z317.2-15; Special requirements for heating, ventilation, air conditioning (HVAC) systems in health care facilities. Mississauga Canadian Standards Association, 2015.
2. Centres for Disease Control (CDC). Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Healthcare Settings. MMWR 2005 55: 60-69.
3. Public Health Agency of Canada. Canadian Tuberculosis Standards 7th Edition (2013).
4. ANSI/ASHRAE /ASHE Standard 170-2013. Ventilation of Health Care Facilities.

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Glossary

Adjacent areas: all of the areas surrounding an area where construction, renovation, or maintenance work is occurring, including, where applicable, all or part of the floors above and below.

Anteroom: a small room that is immediately adjacent to or within a construction area and is intended to be used by constructors for purposes such as storage or removal of protective clothing, cleaning of debris-removal containers, and/or removal of contaminants from footwear.

Commissioning (commissioning process): a systematic verification, documentation, and training process applied to all activities during the design, construction, static verification, start-up, and functional performance testing of equipment and systems in a facility to ensure that the facility operates in conformity with the owner's project requirements and the basis of design in accordance with the contract documents.

Construction: major and minor facility activities that disturb or modify facility structures and systems, the term includes not only construction but also renovation, maintenance, and repair work.

New construction: construction to produce all or part of an HCF that did not exist before the project.

Renovation: construction to modify or upgrade an existing HCF to be used for similar purposes.

Construction air handling unit (CAHU): a machine used to move HEPA-filtered air into or out of a construction site.

Construction clean: cleaning performed at the end of a workday by construction workers that removes gross soil and dirt, construction materials, and workplace hazards.

Note: Cleaning to the “construction clean” level may include sweeping and vacuuming, but usually does not address horizontal surfaces or areas adjacent to the job site.

Constructor: a person who undertakes a construction or renovation project for an owner. A constructor can be a contractor, subcontractor, construction manager, construction worker, or tradesperson. The term also includes an owner who personally undertakes all or part of a construction or renovation project.

Continuing care: a range of services that support the health and wellbeing of individuals living in their own home, a supportive living or long-term care setting. Continuing care clients are defined by their need for care, not by their age or diagnosis or the length of time they may require service.

Critical care area: a patient care area where the induction and maintenance of general anaesthesia routinely occurs in connection with the examination or treatment of patients, or where contact between patients and medical electrical equipment is frequent or normal.

Environmental services: HCF services (e.g., general housekeeping, waste management, pest control, and hazardous material cleanup).

HEPA (high-efficiency particulate air) filter: an air filter with an efficiency of 99.97% in the removal of airborne particles 0.3 µm or larger in diameter.

Infection control risk assessment (ICRA): a process used to identify design elements that increase the risk of microbial transmission in the environment.

Note: An ICRA considers the facility’s patient population and clinical programs, and the potential effects of disruptions to essential services (e.g., water, ventilation, electricity) that could affect patient placement or necessitate relocation of patients.

Inpatient: an HCF patient who occupies a bed for at least one night in the course of treatment, examination, or observation.

Inpatient area: an area in the HCF specifically intended for the accommodation of inpatients.

Note: Examples of inpatient areas: critical care, maternal and newborn, medical-surgical inpatient, mental health services, pediatric and adolescent inpatient, and rehabilitation care.

Maintenance: a type of construction activity conducted to preserve the condition and functionality of a physical element of a health care facility. See Construction

Note:

1) Maintenance can be performed by an equipment supplier, contractor, or facility-based operation and maintenance staff.

2) The term “maintenance” also covers repairs.

Multidisciplinary team (MDT): a group comprising representatives from various disciplines in the health care facility that works with the project management team and others to ensure that the appropriate infection prevention and control measures are followed during construction activities.

New construction: a project intended to produce a complete health care facility, or a new section of an existing facility, that did not exist prior to the project.

Patient: a person who is waiting for or undergoing medical investigation, care, or treatment.

Note: This Standard uses “patient” as a global term applying to all HCFs. Some HCFs prefer to use alternative terms such as client, resident, or occupant.

Patient care area: an area used primarily for the provision of diagnosis, therapy, or treatment.

Personal protective equipment: items that when worn correctly form a barrier or shield against hazardous materials.

Plumbing dead leg: a pipe or other plumbing component or system that has contained, contains, or likely will contain stagnant water.

Plenum box: an air distribution box designed with the intent to baffle the air discharged from a CAHU, reducing channeled air from turbulent to laminar flow, while providing additional HEPA filtration.

Preventive measure: a system involving precautionary actions, equipment, and barriers at each phase of a project to decrease the spread of contaminants during construction, renovation, or maintenance of a health care facility.

Preventive measures analysis: the process of evaluating construction-related risks to patients and staff and determining the preventive measures that will be necessary to mitigate those risks.

Renovation: see **Construction**.

Return to Service Cleaning: the thorough cleaning of a clinical space following construction and before the space is used for patient care, medical equipment, or the storage of clean or sterile supplies, in order to remove contaminating micro-organisms that could be acquired by subsequent occupants or staff.

Unoccupied space: an area where there are no patients or patient-related activities and that is absent of any medical supplies or equipment. Unoccupied spaces may include vacant wards, basements, shelled spaces for future development, or spaces only accessed for equipment servicing. Patient care areas that are intermittently unoccupied due to designated working hours are not considered unoccupied spaces.

User: person occupying or performing an activity in a building, area, or room intended for that purpose (e.g., diagnosis, treatment, waiting, dining, etc.).

Walk-off mat: a specially designed mat that is placed outside a construction area or in an anteroom and is intended for removal of contaminants from the footwear of workers.

Note: Walk-off mats include, for example:

a) mats for removal of sand and winter road salt;
b) mats with a sticky surface;
c) sections of carpet made with synthetic fibers; or
d) antibacterial mats that include a frame allowing for placement of antibacterial solutions.

References

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