

Manual	Infection Prevention & Control Manual	POLICY
Section		
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Approved by	DIRECTOR, INFECTION PREVENTION & CONTROL	
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INFECTION PREVENTION & CONTROL DURING CONSTRUCTIONS & RENOVATIONS

Policy Statement

The Infection Prevention & Control program at Humber River Health will work collaboratively and in consultation with Planning & Development, and Johnson Control Inc. (JCI) to reduce the risk of transmission of infections during construction, renovation, and maintenance projects.

Construction-related Nosocomial Infections in Patients in Health Care Facilities: Decreasing the Risk of Aspergillus, Legionella and Other Infections¹ and the Canadian Standards Association (CSA)² will be used as the supporting documents for this policy.

Policy

NOTE: This policy will be cross-referenced with the **HRH Safety Regulations and Instructions for Contractors** (Planning).

Infection Prevention and Control Program staff will:

1. Attend initial and ongoing meetings for new construction and renovation projects as required.
2. Attend project update meetings as required.
3. Provide educational sessions to contractors and trades at the start of each appropriate project.
4. Review the risk assessment sheet (Appendix A) completed by JCI and/or Planning & Development.
5. Request a copy of the infection prevention and control plan for dust containment, debris removal etc. from the project manager prior to start of the project as required.
6. Do a walkthrough of the area prior to the start of the construction/renovation as required.
7. Visit the construction access points and adjacent areas regularly and complete inspection checklist (Appendix B).

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8. Participate in job completion rounds along with the project team using completion checklist (Appendix C) as required.

Accountability / Responsibility

- The Infection Prevention & Control staff is responsible to this policy. Environmental Services (EVS) will increase frequency of cleaning in areas adjacent to the construction zone while the project is underway. EVS will clean and disinfect the patient's room prior to turning the room over for maintenance work. EVS in collaboration with IPAC and Planning & Development will ensure that construction zone is thoroughly cleaned when construction is complete.

Definitions

Construction:	Major and minor facility activities that disturb or modify facility structures and systems. This includes demolition/replacement of existing structure and/or new construction project.
Maintenance Activities:	Day to day activities that include up keep of the facility, for example, ceiling tile replacement.
Adjacent areas:	All of the areas surrounding an area where construction, renovation, or maintenance work is occurring, including, where applicable, all part of the floors above and below.

Documentation

- Appendix A: Risk assessment matrix
- Appendix E: Inspection checklist, and Appendix F: Job Completion Checklist will be used for inspection and project completion rounds
- Completed checklists will be filed in the construction manual in Infection Prevention & Control Office.

Infection Prevention and Control Considerations

All patients will be cared for using Infection Prevention and Control Routine Practices and Additional Precautions as outlined in **Provincial Infectious Diseases Advisory Committee (PIDAC): Routine Practices and Additional Precautions**, Ministry of Health and Long-term Care, as per HRH policy. All staff will perform Hand Hygiene as per HRH guideline.

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[References](#)

Construction-related Nosocomial Infections in Patients in Health Care Facilities: Decreasing the Risk of *Aspergillus*, *Legionella* and Other Infections. July, 2001. Ottawa, Ont.

CSA-Z317.13-22: Infection Control during Construction, renovation and maintenance of health care facilities

HRH Contractor's Safety Guidelines

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APPENDIX A**INFECTION PREVENTION AND CONTROL RISK ASSESSMENT FORM**

This form must be completed for each maintenance, renovation and construction project undertaken by the hospital. Where the Construction Group and Risk Group Matrix is III or IV, a copy of the form must be submitted to Infection Prevention and Control.

Project Information:

Location of Construction:	Project Start Date:	Estimated Duration:
Project Manager: Name:	Contractor: Name:	Infection Control Coordinator: Name:
Phone:	Phone:	Phone:

Brief description of Construction Activity:

Activity Type: _____ (Refer to Types of Construction Activity)
(A,B,C,D)

Risk Group: _____ (Refer to Population and Geographic Risk Group)
(1,2,3,4)

Construction Activity and Risk Group Matrix: _____ (Refer to chart below)

Risk Group	Construction Activity			
	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

*Denotes where a lower level might be used in accordance with Clause 7.5 (Ceiling access for investigation and minor work) .

To use this table, refer Appendix B (population) and Appendix C (Type of Activity)

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Appendix B**Type of Construction Activity**

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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 define 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: <i>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 existing holes or penetrations observed above the ceiling.</i></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 (i.e., 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 chase spaces; b) cutting small opening in a contained space where dust migration can be controlled, e.g., cutting of walls or ceilings to provide 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 of up to three fixtures for a short duration (e.g., less than 1 h) or one fixture for 1 h or more</p>
Type C	<p>Activities that generates a moderate to high level of dust, cause a moderate service disruption, require demolition, require removal of a fixed facility components (e.g., a sink) or assembly (e.g., a countertop or cupboards), and can be completed in a single or contiguous work shifts. These include, but are not limited to,</p> <ul style="list-style-type: none"> a) activities that require sanding of walls in preparation for painting or wall covering; b) removal of floor coverings, ceiling tiles and casework; c) new wall construction; d) minor duct work; 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 (i.e., 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 h or more.</p>

Appendix C

Construction Activity Type

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<p>Group 1 Lowest Risk</p>	<ul style="list-style-type: none"> • Office areas (i.e., non-clinical) • Decanted patient care units (i.e., shell or decommissioned space) • Transient public areas (i.e., areas of pass through) not intersecting a patient care area • Laundry and soiled linen sorting or storage areas • Loading dock (main area) • Physical plant workshops • Housekeeping rooms and closets
<p>Group 2 Medium Risk</p>	<ul style="list-style-type: none"> • All other patient care areas, unless stated in Group 3 or 4 • Outpatient clinics (except for oncology & surgery) • Unoccupied patient care units (e.g., ambulatory care units during off-hours, decanted spaces that still house equipment in use) • Admission/discharge units • Autopsy and morgue • Occupational therapy and physical therapy areas remote from patient care areas
<p>Group 3 Medium to High Risk</p>	<ul style="list-style-type: none"> • Emergency Room (except trauma rooms) • Medical/Diagnostic Imaging • Labour and delivery (without operating room capability) • Nurseries for Healthy newborns • Day surgery • Nuclear medicine • Hydrotherapy • Echocardiography • Hydrotherapy • 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, serving, and dining areas • Respiratory therapy • Clean linen handling and storage areas • Supply/material management handling and storage (i.e. Central Stores)

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<p>Group 4 Highest Risk</p>	<ul style="list-style-type: none"> • Intensive care units (ICU, PICU, NICU, etc.) • Operating rooms (including prep, induction, post-anaesthetic care unit (PACU), and scrub areas) • Anesthesia 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 • 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 & angiography • Interventional radiology • Endoscopy • Bronchoscopy • Cystoscopy • Cardiovascular and cardiac patient areas • Pharmacy admixture rooms • Medical device reprocessing areas (including sterile supply storages) • Clean and sterile storage located in patient care areas • Burn care units • Trauma rooms • Animal rooms • Protective Isolation rooms • Tissue culture laboratories • Pacemaker insertion rooms
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APPENDIX D**Specifications for Infection Prevention and Control Measures**

Class I	
Date:	Engineer/Maintenance Staff & Contractors
Initials:	<p>(a) <i>Construction/Renovation Activities</i> Dust Control*</p> <ul style="list-style-type: none"> • Immediately replace tiles displaced for visual inspection • Use methods to minimize dust generation (i.e., HEPA vacuums, HEPA drills etc.). • HEPA vacuum and/or wet mop work areas as necessary. <p>(b) <i>Plumbing Activities</i></p> <ul style="list-style-type: none"> • Schedule water interruptions during low activity (e.g., evenings if at all possible). • Flush water lines prior to reuse. • Observe for discoloured water. • Ensure water temperature meets the hospital's standard. • Ensure gaskets and items made of materials that support the growth of <i>Legionella</i> are not being used. • Ensure faucet aerators are not installed or used. • Maintain as dry an environment as possible. Report any water leaks that occur to walls and substructures to Planning & Redevelopment. <p>Environmental Services</p> <p>(a) <i>Plumbing Activities</i></p> <ul style="list-style-type: none"> • Report discoloured water and water leaks to Planning & Redevelopment and Infection Prevention & Control. <p>(b) Perform terminal clean of the space before work begins.</p> <p>(c) Perform terminal clean of the space after work is completed.</p> <p>Medical/Nursing Staff</p> <p>(a) <i>Construction/Renovation Activities</i> Risk reduction</p> <ul style="list-style-type: none"> • Minimize patients' exposure to construction/renovation area. • Patient care equipment and supplies have been removed or protected. <p>(b) <i>Plumbing Activities</i></p> <ul style="list-style-type: none"> • Report discoloured water and water leaks to Building Services.

Note: Class II specifications must be followed if dust should be created during the Type A construction activity.

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<p>Specifications for Infection Prevention and Control Measures – cont. Class II Cont.</p>	<p>Medical/Nursing Staff</p> <p>(a) <i>Construction/Renovation Activities</i></p> <p>Risk Reduction</p> <ul style="list-style-type: none"> • Identify high risk patients who may need to be temporarily moved away from the construction zone. • Remove portable patient care equipment and supplies from the construction zone. • Any patient equipment or supplies that cannot be removed must be protected.
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Note: The above specifications are to be considered in addition to those listed in Class I

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Class III	The following specifications are to be considered in addition to Class I and II
Date:	Engineer/Maintenance Staff & Contractors
Initials:	<p>(a) Construction/Renovation Activities</p> <p>1) Risk Reduction</p> <ul style="list-style-type: none"> • Before project begins, Multi-disciplinary team meetings have been set up. • Ensure that IPAC consultation has been completed and infection prevention and control measures have been approved. • Process is in place to ensure any changes to the project scope are reviewed with IPAC/MDT. <p>2) Dust Control</p> <ul style="list-style-type: none"> • Erect impermeable dust barrier from floor to true ceiling (includes areas above false ceilings) consisting of 2 layers of 6 mil polyethylene or Sheetrock. • Anteroom (when required), large enough to enable materials to be moved through without having to open both doors at the same time • Barrier extends above false ceiling (either entrance or exit wall of the anteroom should be extended to the underside of the deck and any opening sealed). • Negative pressure: at least 2.5 Pascals in anteroom relative to hospital zone. • Walk off tack mats at the entry to the anteroom and inside anteroom. • Ensure all seams/penetrations to work area are sealed (e.g., windows, doors, plumbing penetrations, electrical outlets and intake/exhaust vents, screw heads etc.) including those above false ceiling are properly sealed with plastic and duct taped within the construction/renovation area. • Vacuum air ducts and spaces above ceilings if necessary. • Ensure that construction workers wear protective clothing that is removed each time they leave the construction site before going into patient care areas. • Do not remove dust barrier until the project is complete and the area has been cleaned thoroughly and inspected. • Remove dust barrier carefully to minimize spreading dust and other debris particles associated with the construction project. <p>3) Ventilation</p> <ul style="list-style-type: none"> • Maintain negative pressure within construction zone by using portable HEPA equipped air filtration units (minimum 7.5 Pascals differential). • Differential pressure monitoring device in place and data logged. • Device alarmed when deemed necessary by the MDT. • Ensure air is exhausted directly outside and away from intake vents or filtered through a HEPA filter before being recirculated (as approved by MDT). • HEPA filtration-performance leak tested on site prior to project start or within last 12 months (min) with documentation. • Filters are changed as needed. • Ensure ventilation system is functioning properly and is cleaned if contaminated by soil or dust after construction or renovation project is complete.

4) Debris Removal & Cleanup

- Remove debris at the end of the work day.
- Erect an external chute if the construction is not taking place on ground level.
- Vacuum work area with HEPA filtered vacuums as needed.
- Construction clean completed at the end of the project.

(b) *Plumbing Activities*

- Flush water lines (min 10 minutes) at construction or renovation site and adjacent patient care areas before patients are readmitted.
- Disinfection procedures completed on water systems affected by major plumbing activities (e.g., flushing, superheating, hyperchlorination).

Environmental Services(a) *Construction/Renovation Activities*

- Increase frequency of cleaning in areas adjacent to the construction zone while the project is underway.
- In collaboration with IPAC ensure that construction zone is terminally cleaned when construction is complete.

Infection Prevention and Control Personnel(a) *Construction/Renovation Activities*

1) Risk Reduction

- Move high risk patients in or adjacent to the construction area.
- In collaboration with environmental services ensure that construction zone is thoroughly cleaned when work is complete
- Inspect dust barriers.

2) Traffic Control

- In collaboration with the facility project manager designate a traffic pattern for construction workers that avoids patient care areas and a traffic pattern for clean or sterile supplies and equipment that avoids the construction area.

(b) *Plumbing Activities*

- Consider hyperchlorinating or superheating stagnant potable water (especially if *Legionella* is already present in potable water supply).

Medical/Nursing Staff(a) *Construction/Renovation Activities*

Risk Reduction

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	<p>Move any high risk patients in or adjacent to the construction area in collaboration with environmental services and IPAC ensure that construction zone is thoroughly cleaned when work is complete.</p> <ul style="list-style-type: none"> • Remove and/or protect any patient care supplies and equipment.

Note: The above specifications are in addition to those listed in Class I and II.
Specifications for Infection Prevention and Control Measures – cont.

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Class IV	The following specifications are to be considered in addition to those in Class I, II, and III
Date:	Engineer/Maintenance Staff & Contractors
Initials:	<p>(a) <i>Construction/Renovation Activities</i></p> <ol style="list-style-type: none"> 1) Dust Control <ul style="list-style-type: none"> • Before starting the construction project erect an impermeable dust barrier that also has an anteroom. • Place a walk-off mat outside the anteroom in patient care areas and inside the anteroom to trap dust from the workers' shoes, equipment and debris that leaves the construction zone. • Ensure that construction workers leave the construction zone through the anteroom so they can be vacuumed with a HEPA filtered vacuum cleaner before leaving the work site; or that they wear cloth or paper coveralls that are removed each time they leave the work site. • Direct all personnel entering the construction zone to wear shoe covers. • Ensure that construction workers change the shoe covers each time they leave the work site. • Repair holes in walls within 8 hours or seal them temporarily. 2) Ventilation <ul style="list-style-type: none"> • Ensure negative pressure is maintained within the anteroom and construction zone. • Ensure ventilation systems are working properly in adjacent areas. • Review ventilation system requirements in the construction area with IPAC to ensure system is appropriate and is functioning properly. 3) Evaluation <ul style="list-style-type: none"> • Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project. <p>(b) <i>Plumbing Activities</i></p> <ul style="list-style-type: none"> • Hyperchlorinate or superheat stagnant potable water and flush all distal sites before restoring or repressurizing the water system.

Specifications for Infection Prevention and Control Measures – cont.

Environmental Services*(a) Construction/Renovation Activities*

Evaluation

- Review infection prevention and control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project.

Infection Prevention and Control Personnel*(a) Construction/Renovation Activities*

1) Risk Reduction

- Regularly visit the construction site to ensure that preventive measures are being followed. Wear coveralls and shoe covers when visiting the site.

2) Evaluation

- Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness at the end of the construction project.

(b) Plumbing Activities

- If there are concerns about *Legionella*, consider hyperchlorinating stagnant potable water or superheating and flushing all distal sites before restoring or repressurizing the water system.

Medical/Nursing Staff

Staff are not allowed to visit the construction site.

(a) Construction/Renovation Activities

Evaluation

- Review infection control measures with other members of the planning team or delegate to evaluate their effectiveness and identify problems at the end of the construction project.

(b) Plumbing Activities

- Consider using another source of potable water for patients who are at greatest risk until potable water has been cleared for signs of *Legionella* after plumbing installation/repairs.

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Note: The above specification are to be considered in addition to those listed in Class I, II and III.

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APPENDIX E**INSPECTION CHECKLIST**

Infection Prevention and Control Compliance Inspection Checklist (During Construction)	
Project Title:	Date:
Project No.	Time:
Location:	
Contractor:	Inspector:
Activity Type: A, B, C, D Risk Group: 1, 2, 3, 4 Class: I, II, III, IV	Redevelopment & Planning contact:

	YES	NO	COMMENTS
Site Isolation			
Barriers intact, no penetrations (floor to deck isolation)			
HVAC system isolated (shut down or cut and capped)			
Dust mats in place and clean			
Closures and gasketing present on site access doors			
Proper signs posted			
Windows and doors sealed to exterior and adjacent areas			
Any equipment/supplies that cannot be removed is covered			
Negative Air Pressure			
Differential pressure monitor functional			
Negative air units operational			
Negative air units filters clean			
Negative air unit discharge ducting intact			
Jobsite			
Project area clean, debris removed frequently			
Debris transported in suitable containers			
Personnel and debris transported along designated route			
Debris transported at specified time			
Water leaks cleaned up promptly			
Necessary equipment present (Coveralls/HEPA vacuum)			
Personnel following specified procedures			
Adjacent Areas			
Adjacent areas visibly clean			
Windows and doors closed			
Sterile supplies removed from adjacent areas			
Additional Comments (Include details of air monitoring if any):			

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APPENDIX F**JOB COMPLETION CHECKLIST**

Infection Prevention and Control Compliance Inspection Job Completion Checklist	
Project Title:	Date:
Project No.:	Time:
Location:	
Contractor:	Inspector:

	YES	NO	COMMENTS
Contractor Final Cleanup			
Specified disinfectants used during cleanup			
All bulk debris and construction materials removed from site			
Horizontal surfaces free of residual construction dust			
Installed equipment and cabinets properly cleaned			
Site isolation removed			
HVAC System			
HVAC systems cleaned			
Proper filtration systems in place and operational			
HVAC system balanced as specified			
Plumbing system			
Leaks			
Plumbing system flushed within 24 hours prior to occupancy			
Sinks functional			
Aerators removed (esp. for immuno-compromised patients.)			
Equipment			
Soap/towel dispensers/hand sanitizers installed and filled			
Specified surfaces installed: counters, sinks, taps, materials, paints, caulking, flooring (seamless)			
Sharps containers			
Medication prep areas >3 feet from sink			
Refrigerators/Ice machines (checklist for temp. control)			
Appropriate clean/soiled utility/storage space			
Final Clean			
Environmental Services final clean completed			
Additional Comments:			