

CONTROL OF INFECTIONS AND CONSTRUCTION

1. **PURPOSE**: To describe measures for the identification and protection of "at risk" patients, control of exposure, and to prevent the spread of infection(s) before, during and after construction, demolition, renovation, and repair projects at the Cheyenne VA Medical Center (VAMC).
2. **POLICY**: The following procedures represent the minimum standard procedures required to safeguard the health and well-being of all healthcare workers, patients, Community Living Center residents, and visitors in Cheyenne VAMC facilities. The Infection Preventionist shall be invited to attend all architectural construction planning sessions and construction progress meetings and will guide the designers and contractors in adherence to these procedures and regulatory requirements. Adherence to this Policy Memorandum will enable the Infection Preventionist to be proactively aware of projects and to anticipate infection control needs.
3. **PROCEDURES**:
 - a. **Infection Control Risk Assessment (Attachment A)**:
 - (1) Construction and remodeling are defined as activities that disturb the environment and where settled dust or dirt is found which may cause spores to become airborne. This includes demolition of existing ceilings or walls; exposure of ceiling spaces by removal of all or part of a ceiling; breaching of walls, ceilings, or floors; removal of uncovered debris from construction areas; and major disturbance of soil in which dust or dirt may become airborne.
 - (2) Definitions of Construction Activities: Construction activity types are defined by the amount of dust generated, the duration of the activity, and the amount of shared HVAC systems. Contact the Facility Management Services and the Infection Preventionist if any activity is questionable under these guidelines.

Type A Inspection Non-Invasive, minimal amount of dust, fumes, odors, noise, or vibration	Type B Small Scale Short Duration, moderate amount of dust, fumes, odors, noise, vibration	Type C Major/High Dust Demolition/removal of fixed building components or assemblies
Includes, but is not limited to: <ul style="list-style-type: none">• removal of ceiling tiles for visual inspection only, e.g., limited to 1 tile per 50 square feet.• painting (but not sanding)	Includes, but is not limited to: <ul style="list-style-type: none">• installation of telephone and computer cabling• access to chase spaces• cutting of walls or ceiling where dust migration can be controlled	Includes, but is not limited to: <ul style="list-style-type: none">• sanding of walls for painting or wall covering• removal of floor coverings, ceiling tiles and casework• new wall construction

<ul style="list-style-type: none"> • wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection 		<ul style="list-style-type: none"> • minor duct work or electrical work above ceilings • major cabling activities any activity which cannot be completed within a single work shift
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(3) Definitions of Patient Risk Groups:

Low Risk	Moderate Risk	High Risk
Unoccupied/fully sealed area Boiler/chiller plant/storage/shops Office areas Classrooms Meeting Rooms Atrium Elevators Warehouse CLC Laundry Area in basement Chapel Police Prosthetics Canteen Store Morgue Outbuildings Non-Patient Areas Computer/switch room	Computer/switch room On call sleeping rooms Physical Therapy & Rehab Services Primary Care Teams Eye Clinic Canteen, Kitchen, Vending Area Outpatient Mental Health Audiology Pharmacy	ICU Operating Room Suite, PACU Pharmacy SPS Emergency Department Logistics/Primary Storage Laboratory Acute Med Surg Cardiopulmonary Immuno-compromised patient room or Negative Isolation CLC Specialty Clinics Dental Clinic ENT Clinic Diabetic Clinic Nuclear Medicine Radiology/CT/MRI Endoscopy Laundry/Linen Area

(4) Infection Control Matrix: Class of Project determines the work type and the risk group for the construction project (refer to the table below). Follow the corresponding precautions for the Risk Class the project falls into.

Risk Level	Type A	Type B	Type C
Low Risk	I	II	II
Moderate Risk	I	II	III
High Risk	II	III	III

b. Performance Requirements:

(1) The most effective means of minimizing or eliminating the potential for infection is to control ventilation and dust transmission from construction areas to those areas occupied and used for patient care activities.

(2) A copy of the Cheyenne VAMC Construction Specifications document as well as a copy of this Policy Memorandum shall be provided to all contractors prior to submittal of bids and proposals. Cheyenne VAMC requires any contractor, subcontractor, materials supplier, vendor, VA employee, or agent to be bound by these same requirements. Before any construction on site begins, the Contractor's on-site management team shall attend a mandatory meeting held by the Cheyenne VAMC's Facilities Management personnel for instruction on precautions to be taken.

(3) The Cheyenne VAMC facility Safety and/or Infection Preventionist reserve the right to modify performance requirements for certain activities. Any modifications made by Cheyenne VAMC personnel will be documented on the Infection Control Risk Assessment (ICRA) and a copy provided to the contractor for posting in the construction area.

(4) Contamination: Airborne contaminant control is required in all hospital areas. Contamination activities are listed in the previously defined Construction Activity Types B and C (refer to Table 1, Type of Construction Project Activity). The contractor shall limit dissemination of airborne contaminants produced by construction-related activities, including dust, chalk, powders, aerosols, fumes, fibers and other similar materials into patient, staff, diagnostic operations, sensitive procedures or medical equipment areas. When required by the above risk classification, HEPA equipped air filtration machines shall provide airflow into construction area not less than 100 FPM (feet per minute) at barricade entrances with doors fully open. HEPA equipped air filtration machines shall be connected to normal power gauge to a single switch for emergency shutoff and shall run continuously. Proper air pressure will be monitored on a daily basis. Cheyenne VAMC Infection Prevention or Safety personnel may perform baseline and periodic air sampling during construction to monitor effectiveness of containment procedures.

(a) Vent devices to outside by removing existing windows and replacing them with plywood panels fitted for the exhaust hose.

(b) HEPA filters shall be changed as frequently as necessary for duration of work to maintain proper filtration.

(5) Barriers and Containment: Containment areas may include areas of construction, adjacent staging areas/passage areas for workers, supplies, and waste and ceiling spaces above and adjacent to the construction area. It may also be necessary to further protect areas connected to the construction area by mechanical systems, air intake, exhaust and ductwork. The contractor shall submit a description of temporary barriers and procedures

to be used to achieve and maintain control of the construction-related airborne contaminants.

- (a) A closed door with impervious tape applied over the frame and door joint is acceptable for projects that can be contained and fall into a Risk Class I, II, or III.
- (b) Construction, demolition or reconstruction projects that are not able to be contained within a single room must have the following barriers erected. All barriers must be fire retardant.
 - a. Provide dust-tight polyethylene covering sealed at the edges with impervious tape. Seal the barrier with impervious tape at wall seams, cracks around windows and doorframes, exhaust system ductwork, pipes, joints, etc.
 - b. Whenever openings are made into walls or ceilings in a Risk Class III or IV projects, provide portable enclosures, enclosing the ladder and sealing off the opening with a minimum of two foot flap overlap, fitted tightly to the ceiling and taped to the floor and ceiling. Extend barriers above ceiling as required to contain airborne contaminant.
- (c) Interior construction activities causing disturbance of existing dust must be conducted in tight enclosures eliminating flow of particulate matter into patient areas. Ceilings and walls in patient care areas must be secure at all times. Spray surfaces with water during dust-producing demolition activities. Hard surface floors in work areas, adjacent hallways and passage areas, and adjacent carpeted areas require cleanup with HEPA-filtered vacuum cleaners. Hard floors require frequent wet mopping during demolition and construction. Protect adjacent carpeted areas with plastic and plywood.
- (d) When exterior demolition is being done, water shall be applied whenever practical to settle and hold dust to a minimum, with special attention given during demolition and moving of materials. No chemical agent shall be used without consent of the Cheyenne VAMC representative.
- (e) The contractor, at barrier/barricade entrances and exits, shall provide adhesive walk-off mats, with a minimum size of 24 x 36 inches. The mats shall be changed as necessary, but not less than daily. Any dust tracked outside of the barrier shall be removed immediately either by HEPA-filtered vacuum or wet mopping.
- (6) Enforcement: Failure to maintain containment will result in the issuance of a warning. If the situation is not corrected within eight (8) hours of warning, Cheyenne VAMC will have cause to stop work as provided in the General Conditions of the Contract for Construction. Infection Control or Safety personnel will document each violation and maintain a log of all violations. Costs incurred by the Cheyenne VAMC due to the delay

may result in a deduction of those costs from the contract and may affect the ability of the contractor to bid for future work.

(7) Infection Control Permit: An Infection Control Permit is required for Class II or higher procedures and any activity in a High Risk Group. Refer to the shaded area on the Construction Activity / Infection Control Matrix.

4. RESPONSIBILITIES:

a. COR, Chief of Facilities Management and the Infection Preventionist will be responsible for development of an infection control risk assessment during the design phase, prior to any issuing of a contract that is anticipated to impact the control of infections.

5. REFERENCES:

- a. The Joint Commission current standards. <http://www.jointcommission.org/>
- b. Bartley JM, Olmsted, R. Construction & Renovation: A Toolkit for Professionals in Infection Prevention and Control, 3rd Edition. APIC, 2007.
- c. 2006 Guidelines for Design and Construction of Health Care Facilities. AIA.

6. RESCISSION: None.

7. ATTACHMENT:

Appendix A – ICRA Form

8. EXPIRATION DATE: May 2016

//ES//Original Signature on File
CYNTHIA MCCORMACK
Medical Center Director

Infection Control Risk Assessment (ICRA)				Cheyenne VA Medical Center																																																																	
Construction Location:			Bldg.#/section:		Project Start Date:																																																																
Project Title/#:					Est. Duration:																																																																
COR/Supervisor:		Signature:		Date:																																																																	
Infection Preventionist:		Signature:		Date:		Phone #:																																																															
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> TYPE A: Inspections and Non-Invasive Activities. Includes, but is not limited to, removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet, painting but not sanding wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection. </div> <div style="width: 45%;"> <input type="checkbox"/> GROUP 1: <ul style="list-style-type: none"> Non-patient Areas Outbuildings Office areas, Meeting Rooms Environmental Services Prosthetics Canteen store Computer server rooms </div> </div>				<input type="checkbox"/> GROUP 2: <ul style="list-style-type: none"> Chapel Morgue Elevators Atrium Warehouse Police Boiler plant/ shops 																																																																	
				<input type="checkbox"/> GROUP 3: <ul style="list-style-type: none"> CardioPulmonary Physical Therapy & Rehab Services Primary /Ambulatory Care Canteen Food Area Eye Clinic Audiology Mental Health 																																																																	
				<input type="checkbox"/> GROUP 4: <ul style="list-style-type: none"> Emergency Department Radiology / CT/ MRI Dental Clinic Nuclear Medicine Laboratory ENT Clinic Diabetes Clinic Nutrition/ Food Service Specialty Clinic CLC Offices in OR Laundry / Linen Area Logistics storage 																																																																	
				<input type="checkbox"/> TYPE B: Small scale, short duration activities which create minimal dust. Includes, but is not limited to, installation of telephone and computer cabling, access to chase spaces, cuffing of walls or ceiling where dust migration can be controlled.																																																																	
				<input type="checkbox"/> TYPE C: Any work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies. Includes, but is not limited to, sanding of wall for painting or wallcovering, removal of floorcoverings, ceiling tiles and casework, new wall construction, minor ductwork or electrical work above ceilings, major cabling activities, and any activity which cannot be completed within a single work shift.																																																																	
<input type="checkbox"/> TYPE D: Major demolition and construction projects. Includes, but is not limited to, activities which require consecutive work shifts, require heavy demolition or removal of a complete ceiling system, and new construction.				<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <td rowspan="2" style="width: 20%;">Risk Level "GROUP" →</td> <td colspan="4">1</td> <td colspan="2">2</td> <td colspan="2">3</td> <td colspan="2">4</td> </tr> <tr> <td colspan="10">CLASS</td> </tr> <tr> <td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">Construction Activity "TYPE" ↓</td> <td>A</td> <td>I</td> <td>I</td> <td>I</td> <td colspan="6">III</td> </tr> <tr> <td>B</td> <td>II</td> <td>II</td> <td>III</td> <td colspan="6">III / IV</td> </tr> <tr> <td>C</td> <td>II</td> <td>III</td> <td>III / IV</td> <td colspan="6">III / IV</td> </tr> <tr> <td>D</td> <td>III / IV</td> <td>IV</td> <td>IV</td> <td colspan="6">IV</td> </tr> </table>				Risk Level "GROUP" →	1				2		3		4		CLASS										Construction Activity "TYPE" ↓	A	I	I	I	III						B	II	II	III	III / IV						C	II	III	III / IV	III / IV						D	III / IV	IV	IV	IV					
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1. Execute work to minimize the rise of dust from construction operation. 2. Immediately replace any ceiling tile displaced for visual inspection.				<i>Involving minor demolition in maintenance or remodeling</i>				CLASS I																																																													
1. Provides active means to prevent air-borne dust from dispersing into the atmosphere. 2. Water mist work surface to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal duct vents. 5. Wipe surfaces with disinfectant.				6. Contain construction waste before transport in tightly covered containers. 7. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 8. Place dust mat at entrance and exit of work area. 9. Remove or isolate HVAC system in area where work is being performed.				CLASS II																																																													
1. Obtain infection control permit before construction begins. 2. Isolate HVAC system in area where work is being done to prevent contamination of the duct system. 3. Complete all critical barriers or implement control cube method before construction begins. 4. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 5. Remove or isolate HVAC systems in area where work is being performed.				6. Do not remove barriers from work site until complete & project is thoroughly cleaned by EMS. 7. Vacuum work with HEPA filtered vacuum. 8. Wet mop with disinfectant. 9. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 10. Contain construction waste before transport in tightly covered containers. 11. Cover transport receptacles or cart and tape covering.				CLASS III																																																													
12. Seal holes, pipes, conduits and penetrations appropriately. 13. Construct anteroom & require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving worksite or they can wear cloth or paper coveralls that are removed each time they leave the work site. 14. Wear shoe covers when within entering work site.				[same as Class III plus three more items.]				CLASS IV																																																													
Answer the questions on the reverse side of this form and define additional Requirements (attach additional sheets of paper if necessary):																																																																					
Permit requested by:			Date:		Permit authorized by:			Date:																																																													

ICRA Elements related to building design:

1. Numbers, location, and types of All (airborne infection isolation) and protective environment (PE) rooms
2. Location of special ventilation and filtration of HVAC serving such areas as emergency department waiting and intact areas.
3. Air handling and ventilation needs in surgical services, All and PE rooms, laboratories, local exhaust systems for hazardous agents/chemicals, and other areas with special needs.
4. Water systems to limit *Legionella* spp. and other waterborne opportunistic pathogens.
5. Finishes and surfaces: ceiling tiles, walls, counters, floor coverings.
6. Fixtures: sink numbers, types, placement, and operational controls (e.g., manual faucet handles).
 - a. Sink types: hand washing stations, instrument cleaning, clinical / flushing rim
 - b. Soap, lotion, paper towels dispensers placement
 - c. Alcohol-based hand hygiene dispensers: placement
7. Sharps and waste disposal placement
8. Utility rooms: soiled, clean, instrument processing, holding, or workrooms
9. Storage areas, including patient care supplies and personal protective equipment
10. Adjacency and flow of people, patient care-related items (e.g., food, medications, linens, supplies, equipment), laundry, and waste

ICRA elements related to building site areas affected by construction

1. Impact of disrupting essential services to patients and employees; unit closures, relocation of services, traffic patterns.
2. Determination of the specific hazards and protection levels for each.
3. Location of patients based on susceptibility to infection and definition of risks to each.
4. Impact of potential outages or emergencies and protection of patients during planned or unplanned outages, movement of debris, traffic flow, cleanup, and testing and certification.
5. Assessment of external and internal construction activities.
6. Location of known hazards.
7. Owner responsibilities before project start (e.g., removal of medical waste/sharps disposal containers, moveable equipment and supply storage, protection of fixed equipment, relocation of hazardous chemicals).
8. Tools and equipment management
 - a. Noise/vibration and minimal fumes (e.g., gas powered vs. electric or hand operated)
 - b. Use of wet methods (e.g., wet sanding, core drilling)
 - c. PPE (e.g., disposable cover suites, head/foot covers, mask or respirators)
 - d. Tacky mats: use, location, changing
 - e. Cleaning supplies and equipment (mops, cloths, bucket and designated sink for discharging mop water).
9. Construction containment barriers: type and seal (e.g., negative pressure for specific areas)
 - a. Separation of HVAC to and from the construction site
 - b. Supplemental HEPA filtration devices
 - c. Protection of air intakes from entrainment of contaminants
 - d. Prevention of infiltration (e.g., intact window seals, plugging penetrations) for external projects (e.g., excavation, backfilling, landscaping)
10. Construction materials: transfer and storage including protection from contamination and/or water damage
11. Waste /debris management and disposal, including removal of medical waste, placement of dumpsters and/or location of temporary waste chutes.