

INFECTION CONTROL DURING CONSTRUCTION

1. PURPOSE. Establish an Infection Control program to reduce the risk of facility-associated infections among staff, patients and visitors related to construction activities.

2. POLICY.

A. It is the policy of the Charlie Norwood VA Medical Center (CNVAMC) to proactively reduce the potential for exposure to infectious materials during construction activities.

B. Infection Control staff are to be involved in the planning, design and operational phases for all construction projects.

C. The Hospital Epidemiologist and Infection Control Practitioner(s) (ICP) have the responsibility and authority to stop construction activities whenever a potential or actual hazardous infection control deficiency exists. A shutdown of the construction project, if needed, will be coordinated with the Chief of Engineering Service, Chief of Construction Management, Project Engineer (Contracting Officer's Representative), Contracting Officer, and Chief of Safety Service (CNVAMC Safety Officer).

3. DELEGATION OF AUTHORITY AND RESPONSIBILITY.

A. Engineering Service responsibilities:

1) Assure all project CORs and Engineers apprise the Infection Control Department of plan for all projects involving construction and/or renovation of clinical and non-clinical areas in our facilities.

2) The Chief of Engineering Service or designee will notify Infection Control in writing of planning meetings related to construction and renovation projects.

3) Performing and completing infection control risk assessments (ICRA).

4) Coordinating the issuance of infection control permits.

5) Monitoring compliance by contractors and VA employees.

6) Notifying affected departments, coordinating the relocation of patients, and changing pedestrian traffic routes, as needed.

7) Coordinating the preparation of the project area, including the removal of medical supplies, waste, furniture, and equipment, prior to starting a construction project.

8) Providing infection control educational material to contractors.

9) Environmental monitoring as appropriate for the project.

B. Contracting officers and CORs are responsible for ensuring that the contents of this policy and the requirement for the supplies necessary to comply with the ICRA are included in construction contract bid specifications.

C. The Infection Control Department is responsible for reviewing construction plans and designs, reviewing and issuing Infection Control Risk Assessment (ICRA) permits, verifying ICRA compliance by contractors via site inspection, and providing consultation on construction activities.

D. Engineering, Infection Control and contractors will work as a team; planning and attending meetings and rounds to discuss, review and follow-up on projects.

4. ACTIONS/PROCEDURES.

A. Definition: The term "construction" includes new construction, renovations, replacements, additions and remodeling performed inside or outside of the facility building by either VA employees, contractors or others.

B. An ICRA is to be implemented, documented, and a copy of the document provided to the Infection Control Department prior to beginning any construction/ renovation activity. After review and approval by the Infection Control Department, a copy of the signed ICRA should be posted at the construction site.

C. Infection control construction precautions to reduce transmission risks during construction are to be integrated into construction contract specifications. A description of required infection control construction precautions by construction classification type is located with the ICRA and in the Infection Control Permit (Attachment B and C).

D. An infection control construction permit that is classified as a Class III or Class IV (Attachment C) requires signatures by the contractor and the ICP.

E. Active measures as outlined in the ICRA to limit the spread of dust, dirt, and nosocomial pathogens are to be utilized during all construction activities.

F. Construction Barriers. Construction activities that cause disturbances of

existing dust or create new dust will be conducted in tight enclosures that cut off the flow of particles into adjacent areas according to the ICRA.

1) Project border barriers should extend from the floor to the ceiling or ceiling deck and when possible, horizontally to a wall surface. If for any reason, a border barrier cannot be placed extending up to the deck, a plastic lining should be placed below the ceiling tiles in the space adjacent to the construction to prevent demolition dust and debris particles passing through to patients and staff. Vibration from drilling and other sources have potential to dislodge dust collected above suspended or false ceilings. The integrity of the barrier walls must assure a complete seal of the construction area from adjacent areas.

2) The following barriers are to be used, as applicable:

a. Closed door. Apply a well-secured plastic barrier over the frame and door to prevent contaminated air escaping into adjacent areas.

b. Plastic barrier. Seal seams with duct tape. The plastic sheeting is to be fire retardant polyethylene, 6-mil thickness.

c. Dry wall barrier. Cover, paint, or seal seams or joints. Entrances into the area should have door and frame assemblies equipped with dust gaskets and self-closing latching hardware. The active construction area must be secured with lockable doors by the contractors and a key to this area should always be on file with VHA security. This area must remain locked.

d. Anteroom or double entrance openings. Per the ICRA, it may be required to maintain negative airflow and provide an area for workers to remove protective clothing or vacuum existing clothing.

e. Portable dust containment units. Pull the plastic sheeting tight against the floor and ceiling.

3) All penetrations of existing perimeter walls are to be sealed.

4) Pedestrian traffic should be directed away (signage) from the construction area in order to limit opening and closing of doors (or other barriers) that may cause dust dispersion or tracking of dust to patient areas.

5) Construction barriers are to be removed outside of contractor work hours, when area will be occupied by patients or staff during contractor's off hours. Prior to removal of the barrier, the project area is to be vacuumed and damp mopped. The area is to be

vacuumed again after removal of the barrier. A terminal clean will be required for areas that will be occupied by patients or sterile instruments and/or procedures.

G. Ventilation Control. Negative air pressure is to be maintained within the construction area at all times if required by the ICRA.

1) The central heating, ventilation and air conditioning (HVAC) system will be isolated in the area where construction work is being done to prevent contamination of the duct system. Supply ducts are to be blocked off and return air ducts are to be covered with high-efficiency particulate air (HEPA) filters. There should be no recirculation of air from the construction area and ventilation filters will be changed as needed.

2) HEPA filtered ventilation units and/or exhaust fans with flexible ducts to the exterior are to be used with no recirculation if possible. The HEPA units and fans are to run continuously for the duration of the project maintaining constant negative pressure within the zone that is monitored with an alarmed device, which must be maintained and monitored by construction personnel. A log must be maintained and stored on each HEPA filtered vent unit. The log will provide daily verification the unit is on, functioning properly, and necessary HEPA filter changes are taking place. Active demolition phases will typically require more frequent HEPA filter changes than during later construction phases.

3) As outlined per the ICRA, an anteroom may be necessary to maintain airflow from the clean area into the work area.

H. Housekeeping.

1) Adhesive walk-off mats will be used at exits and entrances to the work area. The minimum size for walk-off mats is 24 inches x 36 inches. Adhesive mats are to be changed daily, or more frequently as needed, to maintain adhesive surfaces.

2) Any dust tracked outside of the construction barrier is to be removed immediately by the contractor using a clean wet mop with disinfectant.

3) The construction site will be HEPA filter vacuumed or damp-mopped at least at the end of each work shift. Vacuum cleaners are to be outfitted with HEPA filters. No standing water is to remain in mop buckets at the end of each shift.

4) The hospital-approved disinfectant will be used, when needed.

I. Debris management.

1) Consult ICP for a specified route to transport debris carts and supplies. Do not transport construction debris through patient care areas unless an alternate route is not available.

2) The optimum method for removal of construction debris is via an exterior type chute and should be used when feasible. When using demolition chutes, chute opening must be closed when not in use. The chute and damper should be sprayed with water, as necessary, to maintain dust control.

3) Containers used to transport construction debris are to be equipped with tight fitting lids or debris is to be covered with damp sheeting prior to exit from the construction site.

4) Debris should not be allowed to accumulate. It should be removed daily from the construction site.

J. Protective Clothing & Personnel Requirements.

1) Construction workers should report for their work tour of duty in clean clothing and shoes.

2) Disposable shoe covers and Tyvek™ suits (or equivalent) and respiratory protection may be required during demolition, dependent upon hazardous contaminants that may exist. The Facility Industrial Hygienist, Infection Control Practitioner, and Safety Officer will confer and evaluate requirements. Protective clothing is to be removed any time the worker leaves the immediate work area and travels through the hospital. A HEPA filtered vacuum is to be used to remove any excess soil and debris from the worker prior to exit from the construction site into the hospital.

3) Used coveralls and shoe covers should be placed in a plastic bag prior to removal from the work area.

4) Personnel entering sterile/invasive procedure areas will be provided with the appropriate clothing per hospital policy and clothing will be removed prior to exiting the work area.

5) Tools and equipment must be damp-wiped with disinfectant cloths prior to entry and exit from sterile and invasive procedure areas.

K. Completion Phase

1) After completion of construction, ventilation will meet specifications as mandated by VHA guidelines and regulatory bodies.

2) The area will be terminally cleaned and disinfected before being placed into service.

3) Water supply lines will be flushed before placing newly renovated or constructed areas into service. Vibrations loosen corrosion within water pipes. Infection control will be notified prior to the scheduled date for the flushing procedure.

5. REFERENCES.

A. Bartley J., et al: State of the Art Report: The Role of Infection Control during Construction in Health Care Facilities. *American Journal of Infection Control*. 28:156-69, April 2000.

B. Carter C.D. and Barr B.A.: Infection Control Issues in Construction and Renovation. *Infection Control Hospital Epidemiology*. 18:587-96, 1997.

C. Hansen, W., contr.ed.: *Infection Control During Construction: A Guide to Prevention and JCAHO Compliance*. Opus Communications, 2002.

D. Center for Disease Control and Prevention (CDC). Healthcare Infection Control Practice Advisory Committee (HICPAC). *Guideline for Environmental Infection Control in Healthcare Facilities*, 2003.

E. Association for Professionals In Infection Control And Epidemiology, Inc.; Construction & Renovation: A toolkit for professionals in infection prevention and control. 3rd Edition. 2007.

F. VHA Center for Engineering & Occupational Safety and Health (CEOSH). Construction Safety Guidebook.
vaww.ceosh.med.va.gov/01hp/02hp_Guidebooks/03_Collections/04hp_ConstructionSafety/NetHelp/ConSafety2012.htm March 2012

6. RESCISSIONS. Medical Center Policy Memorandum 235-14, Infection Control During Construction, dated 3/2010.



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Director

Attachments: 3

INFECTION CONTROL RISK ASSESSMENT (ICRA)

Step 1: Construction Activity Type. Use the following descriptions to identify the type of construction to be performed.

Type A	Inspection and Non-Invasive Activities Includes, but is not limited to: <ul style="list-style-type: none"> • 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 that do not generate dust or require cutting of wall or access to ceilings for other than visual inspection.
Type B	Small scale, short duration activities which create minimal dust 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.
Type C	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: <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. • Minor ductwork or electrical work above ceilings. • Major cabling activities. • Any activity that cannot be completed within a single work shift.
Type D	Major demolition and construction projects Includes, but is not limited to: <ul style="list-style-type: none"> • Activities that require consecutive work shifts. • Requires heavy demolition or removal of a complete cabling system. • New construction.

Step 2: Patient Risk Group. Use the following lists to identify the group or area that will be affected. If more than one risk group will be affected, select the higher risk group.

Low Risk	Medium Risk	High Risk	Highest Risk
<ul style="list-style-type: none"> • Non-patient care areas 	<ul style="list-style-type: none"> • Cardiology • Clinic areas • Cystology • Echocardiography • Endoscopy • Food Services • Nuclear Medicine • Physical/Occupational Therapy • Radiology/MRI • Respiratory Therapy 	<ul style="list-style-type: none"> • Ambulatory Surgery • Dialysis • Laboratories (specimens) • Patient Care Units • Post-Anesthesia Care • Urgent Care • Pharmacy 	<ul style="list-style-type: none"> • Cardiac Cath Lab • Central Sterile Supply • Intensive Care Units • Negative Pressure Isolation Rooms • Oncology • Operating Rooms • Any area caring for immunocompromised patients

Step 3: Class of Precautions. Use the following table to match the **Patient Risk Group** with the planned **Construction Activity Type**. The **Class of Precautions** reflects the level of Infection Control activities required.

CHARLIE NORWOOD VETERANS AFFAIRS
 MEDICAL CENTER
 AUGUSTA, GEORGIA

MEDICAL CENTER POLICY
 MEMORANDUM NO. 235-14-14
 AUGUST 25, 2014
 ATTACHMENT A

Patient Risk Group	Construction Activity Type			
	Type A	Type B	Type C	Type D
LOW Risk	I	II	II	III/IV
MEDIUM Risk	I	II	III	IV
HIGH Risk	I	II	III/IV	IV
HIGHEST Risk	II	III/IV	III/IV	IV

Note: Infection Control approval is required when the Construction Activity and Risk Level indicates that **Class III** or **Class IV** control procedures are necessary. See the **Infection Control Construction Permit** for requirements.

Description of Required Infection Control Precautions by Class of Construction Activity

	During Construction Project	Upon Completion of Project
Class I	<ol style="list-style-type: none"> 1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection. 	<ol style="list-style-type: none"> 1. Clean work area upon completion of task.
Class II	<ol style="list-style-type: none"> 1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area. 6. Remove or isolate HVAC system in areas where work is being performed. 	<ol style="list-style-type: none"> 1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in areas where work is being performed.
Class III	<ol style="list-style-type: none"> 1. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid. 	<ol style="list-style-type: none"> 1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the Environmental Services Department. 2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 3. Vacuum work area with HEPA filtered vacuums. 4. Wet mop area with disinfectant. 5. Remove isolation of HVAC system in areas where work is being performed.
CLASS IV	<ol style="list-style-type: none"> 1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can cloth or paper coveralls that are removed each time they leave the work site. 6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area. 7. Do not remove barriers from work area until completed project is inspected by the Safety Department and Infection Control Department and thoroughly cleaned by the Environmental Services Department. 	<ol style="list-style-type: none"> 1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 2. Contain construction waste before transport in tightly covered containers. 3. Cover transport receptacles or carts. Tape covering unless solid lid. 4. Vacuum work area with HEPA filtered vacuums. 5. Wet mop area with disinfectant. 6. Remove isolation of HVAC system in areas where work is being performed.

Step 4. Identify the areas surrounding the project area, assessing potential impact.

Unit Below	Unit Above	Lateral	Lateral	Behind	Front
Risk Group:	Risk Group:	Risk Group:	Risk Group:	Risk Group:	Risk Group:

Step 5. Identify specific site of activity eg. patient rooms, medication room, etc.

Step 6. Identify issues related to ventilation, plumbing, electrical in terms of the occurrence of probable outages.

Step 7. Identify containment measures, using prior assessment. What types of barrier? (eg, solid wall barriers); Will HEPA filtration be required?

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(Note: Renovation/construction area shall be isolated from the occupied areas during construction and shall be negative with respect to surrounding areas)

Step 8. Consider potential risk of water damage. Is there risk due to compromising structural integrity?
(eg. wall, ceiling, roof)

Step 9. Work hours: Can or will work be done during non-patient care hours?

Step 10. Do plans allow for adequate number of isolation/negative airflow rooms?

Step 11. Do the plans allow for the required number and type of handwashing sinks?

Step 12. Does the infection control staff agree with the minimum number of sinks for this project? NA
(Verify against AIA Guidelines for type and area)

Step 13. Does the infection control staff agree with the plans relative to clean and soiled utility room?

Step 14. Plan to discuss the following containment issues with the project team.
(eg. Traffic flow, housekeeping, and debris removal of how and when),

Step 15. ☐ YES ☐ NO 2-step tuberculosis skin testing (TST) documentation is required for this project involving occupied rooms.

☐ YES ☐ NO N-95 respirator fit-testing documentation is required for projects involving occupied airborne isolation rooms.

TB risk assessment: Per CDC criteria, Charlie Norwood VAMC is a low risk facility for TB and although not required (except as listed above), all construction workers are encouraged to have 2-step tuberculosis skin testing (TST).

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ATTACHMENT C

INFECTION CONTROL CONSTRUCTION PERMIT

Location of Construction: _____ Start date: _____
Project Coordinator: _____ Duration: _____
Contractor Performing Work: _____ Permit expires: _____
Supervisor: _____ Phone: _____

YES	Construction Activity	YES	Infection Control Risk Group
	TYPE A: Inspection, non-invasive activity		LOW Risk:
	TYPE B: Small scale, short duration, minimum dust		MEDIUM Risk:
	TYPE C: Generates moderate to high levels of dust, requires greater than 1 work shift to complete		HIGH Risk:
	TYPE D: Major demolition and construction projects		HIGHEST Risk
Class I	1. Execute work by methods to minimize raising dust. 2. Immediately replace ceiling tiles. 3. Vacuum work area upon completion		
Class II	1. Provide active means to prevent air-borne dust from dispensing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air 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 the work area. Do not dry sweep work area. 8. Place dust mat at entrance and exit of work area. 9. Remove or isolate HVAC system in areas where work is being performed.		
Class III	Adhere to all of the above as well as items listed below. 1. Obtain Infection Control Permit before construction begins. 2. Complete all critical barriers or implement control cube method before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Do not remove barriers from work area until thoroughly cleaned by Environmental Services. 5. Vacuum work area with HEPA filtered vacuum cleaner. Wet mop with disinfectant. 6. Remove barrier materials carefully to minimize spreading of dust and dirt.		
Class IV	Adhere to all of the above as well as items listed below. 1. Obtain Infection Control Permit before construction begins. 2. Seal holes, pipes, conduits, and punctures appropriately. 3. Construct anteroom if space allows and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 4. All personnel are required to wear shoe covers when entering work area and remove when leaving work area.		
Additional Requirements:			
Construction material brought in via: _____			
Waste/Debris removed via: _____		Date	Initials

____ Exceptions/Additions to this permit are noted by attached memoranda

Permit Requested By: _____
Permit Authorized By: _____

Date: _____
Date: _____