

CONSTRUCTION AND RENOVATION INFECTION CONTROL PRECAUTIONS

1. PURPOSE: The Infection Control risk assessment (ICRA) is established to prevent hazardous risks to patients, healthcare workers (HCWs), and visitors during design and construction project phases, whether on a small or large scale.

2. POLICY: Planning for new construction or major renovation will require early consultation among Infection Prevention and Control Practitioners (IPCPs), staff epidemiologist, architects, safety manager and engineers to ensure that design of specific structures facilitates desired infection control practices. An essential first step in the planning process is an ICRA, followed by interventions, monitoring, and continuous assessment and improvement at a broad, organizational program level and during operational projects.

a. Definitions of Construction Activity types:

(1) 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. Small scale, short duration activities that create minimal dust, includes, but is not limited to, installation of telephone and computer cabling, access to chase spaces, cutting of walls or ceiling where dust migration can be controlled by closing doors. Activities where all work can be completed in a single work shift.

(2) 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, cutting of walls or ceiling where dust migration can be controlled.

(3) Type C: Any work which 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 wall covering, removal of floor coverings, 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.

(4) Type D: Major demolition and construction projects. Includes but is not limited to activities which require consecutive work shifts, heavy demolition or removal of a complete ceiling system and new construction.

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b. Definitions of Infection Control Risk Groups:

GROUP 1: LOWEST	GROUP 2: MEDIUM	GROUP 3: MEDIUM-HIGH	GROUP 4: HIGHEST
<ul style="list-style-type: none"> ♦ Administrative areas ♦ Biomedical ♦ Conference rooms ♦ Engineering ♦ Environmental Management ♦ Green house ♦ Information Systems ♦ Laundry services ♦ Library ♦ Lodging areas ♦ Maintenance ♦ Medical information ♦ Office areas ♦ Outside construction (unless adjacent to building intake vents) ♦ Prosthetic Service ♦ Warehouse 	<ul style="list-style-type: none"> ♦ Patient care units (i.e. 4C, and 4D) ♦ Ancillary patient care areas (ie: PM&RS) ♦ Clinics ♦ Research 	<ul style="list-style-type: none"> ♦ Radiology ♦ MRI ♦ Emergency Department ♦ Nuclear Medicine ♦ Admission area ♦ Canteen/N&FS ♦ PT-tank areas ♦ Lab ♦ CCU ♦ MICU ♦ SICU 	<ul style="list-style-type: none"> ♦ Operating Room ♦ Sterile Processing ♦ Sterile supply ♦ Cardiovascular recovery ♦ Cardiac catheterization & angiography areas ♦ Outpatient areas ♦ Dialysis and transplant units ♦ Oncology ♦ Cardiology ♦ Anesthesia and pump areas ♦ All endoscopy areas ♦ Pharmacy admixture

3. RESPONSIBILITIES:

a. Infection Control Subcommittee will review policy annually. Revisions will be documented no less than every three years and sent for approval by Executive Safety Committee.

b. Engineering Service will screen future construction/renovation projects for construction activity types defined by the amount of dust that is generated, the duration and extent of the activity, and the amount of shared heating and air conditioning systems. Jobs determined to be in the “medium” or “high” risk group (based on where the activity takes place) and for type “B” and “C” activities (based on the potential to generate dust) are reviewed with Infection Control for a risk assessment of the job. Infection Control will be notified of meetings when infection control construction related issues are discussed (i.e., preconstruction meetings).

c. Infection Control Practitioners will assist in making recommendations for implementation of safety/infection control practices for the duration of the job. Precautions taken in specific settings will be agreed upon after corroboration between Infection Control, Engineering Service and the director of the service area and will be

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overseen and monitored by the job supervisor/foreman/Contracting Officer Technical Representative (COTR). IPCPs will periodically check for appropriate barrier precautions and dust control until the project is completed and will review/approve all construction plans to ensure infection control-related issues are addressed before the plans are issued for construction.

d. The Safety office and Infection Control will provide Central Arkansas Veterans Healthcare System (CAVHS) staff involved in construction with annual infection control and safety training. Contractors will be provided infection control and safety education prior to start of project.

e. Environmental Management Service (EMS) will have an integral part in cleaning of the areas immediately adjacent to the site and in certain cases within the work site itself. EMS will thoroughly clean project area between each phase of the project and at completion. EMS will provide additional walk-off mats and exchange when dirty.

f. In immunocompromised patient-care areas, both the construction team and healthcare staff should be educated regarding airborne infection risks associated with construction projects.

g. Engineering, Infection Control and a Safety Officer will conduct an assessment of construction area prior to any contracted construction performed in the facility. The assessment will include but is not limited to barrier and dust control precautions. Infection Control will post the ICRA on job site.

h. Engineering/Safety, Infection Control, EMS and/or the construction team should be contacted if any regulation is questionable under these guidelines. The COTR will monitor for compliance of the Infection Control measures as outlined in the Infection Control Risk Assessment (Attachment A). Compliance will be monitored at a minimum of weekly. If non-compliance is identified it will be brought to the attention of Infection Control.

g. Engineering/Safety and Infection Control will provide proactive preventive oversight in accordance with measures noted on Attachment A.

h. If Type B or C work is to be performed near immunocompromised patients, active surveillance monitors for airborne infection (aspergillosis) will be implemented. This surveillance is a category 1B of the Environmental Infection Control in Healthcare Facilities Guideline.

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4. PROCEDURES:

a. Construction Activity/Infection Control matrix: Determine the level of infection control procedures necessary for the work by matching the construction activity with the risk group of the work area in the following Matrix:

CONSTRUCTION ACTIVITY TYPE				
RISK LEVEL	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	III	III/IV	III/IV	IV

The specific measures to be implemented for the job will be based on the below recommendations, but will carefully be applied to each situation and designated on the Risk Assessment form (Attachment A-1).

b. Responsibilities by class for levels of precaution:

(1) Class I:

(a) Execute work by methods to minimize raising dust from construction operations.

(b) Immediately replace any ceiling tile displaced for visual inspection.

(c) Place walk-off mat at entrance and exit of work area.

(d) Contain construction waste before transport in properly covered containers or carts.

(e) Clean up and dispose of waste in accordance with defined procedures on transport and disposal as designated on Risk Assessment form (Attachment A-1).

(2) Class II (Begin with Class 1 responsibilities and add the following responsibilities):

(a) Provide active means to prevent airborne dust from dispersing into atmosphere.

(b) Water mist work surfaces to control dust while cutting.

(c) Seal unused doors.

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- (d) Block off and seal unused air vents.
 - (e) Place dust mat or sticky mat at entrance and exit of work area and monitor for need to clean/change mat.
 - (f) Remove or isolate Heating, Ventilation, and Air-Conditioning (HVAC) system in areas where work is being performed.
 - (g) Contain construction waste before transport in properly covered containers or carts. Wrap large waste items that contain dust and debris in a barrier material before transport from construction site.
 - (h) Wipe work surfaces with disinfectant.
 - (i) Contain construction waste before transport in tightly covered containers.
 - (j) Wet mop and/or vacuum with high efficiency particulate air (HEPA) filtered vacuum before leaving work area.
 - (k) Remove isolation of HVAC system in areas when work is complete.
- (3) Class III (Begin with Class 1 and 2 responsibilities and add the following responsibilities):
- (a) Complete all critical barriers before construction begins i.e. sheetrock, plywood, and plastic, to seal area from non-work areas or implement control cube method.
 - (b) Maintain negative air pressure within work site. HEPA equip air filtration units to be used if exhausting within 25' of air intakes
 - (c) Construct anteroom and require all personnel to pass through room before leaving site.
 - (d) Seal holes, pipes, conduits, and punctures between work site and adjacent areas appropriately.
 - (e) Monitor barriers and ensure integrity of the construction barriers; repair gaps or breaks in barrier joints. Do not remove barriers from work area until complete project is thoroughly cleaned.
 - (f) Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.
 - (g) Clean all work surfaces and grills at project completion.

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(h) When entering or passing through a sterile area, all personnel are required to wear appropriate attire and shoe covers. Attire, hospital provided scrubs and shoe covers must be changed each time the worker exits the actual work area.

(i) If workers enter or exit through a sterile area, 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.

(4) Class IV (Begin with class I, II and II responsibilities and add the following responsibilities.

All entering work site are required to wear shoe covers during demo, changed each time the worker exits the work area.

5. REFERENCES:

a. Association for Professionals in Infection Control and Epidemiology. Tool Kit- Infection Control During Construction and Renovation 3rd edition. Washington, DC: APIC, 2007.

b. Association for Professionals in Infection Control and Epidemiology Text. Construction and Renovation. Washington, DC: Chapter 108;1-16, 2005.

c. American Institute of Architects. Guidelines for Design and Construction of Hospital and Healthcare Facilities. Washington, DC: AIA Press: 2001.

d. Centers for Disease Control and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Guidelines for Environmental Infection Control in Healthcare Facilities. Atlanta, GA: June 6, 2003/52(RR10);1-42.

6. RESCISSION: Medical Center Memorandum No. 11-89, dated May 5, 2004.

7. REVIEW: Infection Control (111E), Engineering Service (138), Environmental Management Service (137), Administrative Executive Board.

8. UPDATE: 2016

/s/

MICHAEL R. WINN
Medical Center Director

Attachment

MEMORANDUM NO. 11-89 – ATTACHMENT A

Infection Control Construction Worksheet No:					
Location of Construction:			Project Start Date:		
Construction Foreman:			Estimated Duration:		
Contractor Performing Work:			Completion Date:		
Supervisor:			Telephone:		
YES	NO	CONSTRUCTION ACTIVITY	YES	NO	INFECTION CONTROL RISK GROUP
		TYPE A: Inspection, non-invasive activity			GROUP 1: Low Risk
		TYPE B: Small scale, short duration activities which create minimal dust.			GROUP 2: Medium Risk
		TYPE C: Work that generates moderate to high levels of dust, requires demolition or removal of any fixed building components or assemblies; greater than 1 work shift for completion.			GROUP 3: Medium/High Risk
		TYPE D: Major demolition and construction projects; requires consecutive work shifts.			GROUP 4: Highest Risk
CLASS I		1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace any ceiling tile displaced for visual inspection. 3. Minor Demolition for Remodeling.	4. Contain construction waste before transport in properly covered containers or carts. 5. Place walk-off mat at entrance and exit of work area.		
CLASS II		1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Place walk-off mat at entrance and exit of work area. 3. Water mist work surfaces to control dust while cutting. 4. Seal unused doors. 5. Block off and seal unused air vents. 6. Place dust mat at entrance and exit of work area	7. Remove or isolate HVAC system in areas where work is being performed. 8. Wipe work surfaces with disinfectant. 9. Contain construction waste before transport in tightly covered containers. 10. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 11. Remove isolation of HVAC system in area when work is complete.		

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CLASS III	<ol style="list-style-type: none"> 1. Remove or isolate HVAC system in areas when work is complete. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work areas 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. HEPA equip air filtration units to be used if exhausting within 25' of air intakes. 4. Contain construction waste before transport in tightly covered containers. 5. Place walk-off mat at entrance and exit of work area. 	<ol style="list-style-type: none"> 6. Construct anteroom and require all personnel to pass through room and be HEPA vacuumed before leaving work site, or wear cloth or paper coveralls that are removed when leaving work site. 7. Cover transport receptacles or carts. Tape covering unless solid lid. 8. Do not remove barriers from work area until project completed and area is cleaned. 9. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 10. Vacuum work area with HEPA filtered vacuums. 11. Terminal cleaning including work surfaces and grills. 12. Remove isolation of HVAC system in area when work is complete.
CLASS IV	1. Remove or isolate HVAC system in areas where	7. Do not remove barriers from work area until project completed.
Date:	work is being performed.	
Initial	<ol style="list-style-type: none"> 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. HEPA equip air filtration units to be used if exhausting within 25' of air intakes. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this room before leaving work site. 6. Place walk-off mat at entrance and exit of work area. 	<ol style="list-style-type: none"> 8. Remove barrier material carefully minimize spreading of dirt and debris associated with construction. 9. Contain construction waste before transport in tightly covered containers. 10. Cover transport receptacles or carts. Tape covering unless solid lid. 11. Vacuum work area with HEPA filtered vacuums. 12. Terminal cleaning including work surfaces and grills. 13. Remove isolation of HVAC system in areas when work is complete.

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Matrix - Class of Precautions: Construction Project by Patient Risk				
	Construction Project Type			
Patient Risk Group	TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
MEDIUM/HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	<u>IV</u>

Note Infection Control approval will be required when the Construction Activity and Risk Level indicate that **Class III** or **Class IV** control procedures are necessary.

Areas surrounding the project area, assessing potential impact

Unit Below	Unit Above	Lateral	Lateral	Behind	Front
Risk Group-NA	Risk Group-NA	Risk Group-High	Risk Group	Risk Group-NA	Risk Group-High

NOTE:
General Requirements:

- Vacuum off dust, construction dust, drywall dust and mud, etc. before leaving Class II, III, or IV Containment.
- Do not use dry dust mop. Use damp mop, dust control spray, or dust control sweeping compound.
- Use walk-off mats in Class II, III, or IV Containment.

NOISE AND VIBRATION:

Controls:

Site inspection and detail of plan:

Date:	
Infection Control:	Engineering:
Safety:	

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Observed by:	Review Date:		
STANDARDS	Yes	NO	N/A
Appropriate barriers in place and airflow from clean to dirty.			
HVAC alterations in places to provide negative air flow.			
Dust Control mats? Walk-Off Mats clean & adequate to contain construction dust.			
Construction entry and adjacent areas free of construction dust & debris.			
Transport of waste handled as required.			
Doors closed to construction site and properly signed (including ICRA).			
Area secured to prevent patients, employees, and/or visitors from accidental entry of construction area.			
Area clear of trash (soda cans, food, etc)			
Infection Control Risk Assessment posted in construction area?			
Comments:			
Actions taken:			