

INFECTION CONTROL CONSTRUCTION PROJECT COMPLIANCE

I. SCOPE/EFFECT: This Medical Center Policy affects all employees (including Allentown, Sayre, Tobyhanna, Williamsport, and Northampton County clinics), patients, and visitors to our medical center.

II. PURPOSE: This medical center establishes policy for maintaining a safe and healthy environment of care for patients, and a safe and healthy worksite for staff, volunteers, visitors, contractors, and the general public during construction, renovation, and maintenance related activities. The goal is to minimize the risk of acquisition of Healthcare Associated Infections (HAI) which may result when fungi or bacteria are dispersed into the air via dust or water aerosolization.

III. POLICY: It is the policy of this medical center that construction, renovation, and maintenance activities on VA owned property and VA-leased property be conducted in such a way to protect the health and safety of VA patients, employees, contracted staff and the public. It is the policy of this medical center to design projects that comply with VA Construction Standards, National Fire Protection Association Codes (NFPA), Guidelines for design and construction of hospitals and healthcare facilities, 2014 ed., published by the American Institute of Architects (AIA), and Guidelines for Environmental Infection Control in Healthcare Facilities. Compliance to codes and an Infection Control Risk Assessment shall be documented during design and construction phases.

A. A multidisciplinary team with representatives from the following program areas: Infection Prevention, Patient Safety, Safety, VA Police, Facilities Management Service, Projects Management, Green Environmental Management System (GEMS) and Contracting. These team members are responsible to integrate infection prevention and environmental control principles, outlined in this guide, throughout the planning, managing, active phase, through to the completion of each project. This process is identified as the Infection Control Risk Assessment (ICRA).

B. An Infection Control Risk Assessment (ICRA)(Attachment A) will be required for every renovation and new construction project. The ICRA will be performed by a multidisciplinary team with expertise in infection control, facility design, construction, ventilation and safety. The team will provide documentation of the risk assessment during initial planning and in subsequent construction phases. ICRA requirements are noted on the construction drawings and specification documents. For facility maintenance activities performed by FMS staff an ICRA will be completed in conjunction with Infection Prevention Coordinator.

1. The type of Construction Activity, ATTACHMENT A, areas will be assessed for environmental risks for airborne and waterborne disease and measures to contain dust and moisture by appropriate barriers and other means. Adjacent patient care areas, supply storage and areas on levels above and below the proposed project will also be assessed for effects when appropriate.

2. Based on the ICRA an Infection Control permit, ATTACHMENT B, will be issued for each project.

C. All construction workers, including subcontractors and Facility Management Service employees shall follow the Infection Control procedures as identified in the permit, ATTACHMENT B.

D. Infection Prevention Coordinator, Safety Officer, and the project Contracting Officer Technical Representative (COTR) will participate in meetings and area walk through inspections which will be conducted according to the risk assessment. Frequency of area walk through inspections will be conducted on the basis of risk category and will be assigned for each individual project. Refer to ATTACHMENT C.

E. Any employee responsible for purchasing equipment which will require installation is responsible for notifying Infection Prevention Coordinator who will assist with completion of Attachment A.

F. An Infection Prevention educational handout will be provided by project manager to the contract workers prior to the start of the project. ATTACHMENT D.

G. Education to FMS Maintenance Staff related to Infection Prevention Risk Assessment will be provided.

IV. PROCEDURE:

A. The multidisciplinary team will ensure compliance with this policy and all applicable codes.

B. Planning Phases:

1. Infection Prevention Coordinator will participate in preliminary design meetings and all planning phases for new construction project specific to the following major components:

- a. Number and placement of isolation rooms with anterooms as required
- b. Staff and patient traffic patterns
- c. Decisions regarding locations for patient care areas, storage and supply areas, etc.
- d. Water supply and plumbing to insure re-circulating lines
- e. Construction waste containment, transport and disposal
- f. Selection and installation of medical equipment as it relates to infection control
- g. Accommodation of personal protective equipment (accessibility, security, sanitation, etc.)

- h. Location of sinks and hand washing products dispensers and automatic devices for sinks, toilets
- i. Air handling systems engineered for optimal performance and easy maintenance and repair
- j. Air changes per hour and pressure differentials to accommodate special patient care areas
- k. Location of fixed sharps containers
- l. Types of surface finishes nonporous versus porous
- m. Appropriate location and type of ice machines
- n. Appropriate flooring (e.g., seamless floors in dialysis units)
- o. Sensible use of carpeting
- p. Properly engineered areas for linen services and solid waste management
- q. Convenient location of soiled utility rooms

2. Environmental Control:

- a. Negative air pressure must be maintained within the construction area
- b. Demolition debris is removed in tightly fitted covered carts - use specified traffic patterns
- c. Sticky or walk-off mats are placed immediately outside the construction zone and changed whenever necessary to control the spread of dust and dirt
- d. Exterior- If demolition chutes are used, they must be sealed when not in use; the chute and damper should be sprayed with water, as necessary to maintain dust control
- e. Control, collection and disposal must be provided for any drain liquid or sludge found when demolishing plumbing

3. Traffic Control:

- a. Use designated entry and exit procedures
- b. Keep all egress pathways free of debris
- c. No unauthorized personnel should be allowed to enter construction areas
- d. Use designated elevators only

4. Cleaning:

- a. Keep the construction area clean on a daily basis
- b. Dust and dirt must be kept to a minimum

5. Requirements for Construction Workers and FMS Maintenance Staff:

- a. Clothing must be free of loose soil and debris when exiting the construction area
- b. Use personal protective equipment (PPE) as indicated for the task at hand
- c. Hand washing is the best method of reducing the transmission of infection: Always wash your hands with soap and water after visiting the restroom, before eating, when leaving the construction site.
- d. Construction workers will receive an educational handout for general infection control practices (Attachment D) and a card with construction safety and infection control requirements to be worn with company identification.

6. Surveillance During Construction - the Infection Prevention Coordinator evaluates the protection of patients, visitors, and employees from injury and illness, as well as occupational and facility-associated infections through surveillance activities.

V. RESPONSIBILITY:

A. FMS Project Supervisor or designee will assure that all project COTRs, Infection Prevention Coordinator and the Safety officer are apprised of plans involving construction or renovation of clinical and administrative areas of the medical center.

B. FMS Project Supervisor or designee will notify the Infection Prevention Coordinator and Safety Officer by electronic email of planning meetings related to construction.

C. Maintenance Supervisor will notify the Infection Prevention Coordinator of maintenance activities.

D. Infection Prevention Coordinator will respond to requests and provide infection prevention and control related recommendations for project development and maintenance of areas during construction, renovation and maintenance projects.

E. The Safety Officer will respond to requests and provide safety and health related recommendations for project development and maintenance of areas during construction and renovation projects.

F. The multi-disciplinary team: Safety Officer, Infection Prevention Coordinator and Project Engineer, will complete the Infection Control Risk Assessment and the inspection check list and a copy will be maintained in the project document file and the Infection Prevention & Control office.

VI. CUSTOMER SATISFACTION: Customer satisfaction issues were considered in developing this policy.

VII. REFERENCES: APIC Infection Control Tool Kit Series: Construction and Renovation, available from the Association of Professional Infection Control Practitioners and Epidemiologists.
Guidelines for Design and Construction of Hospital and Health Care Facilities, Facility Guidelines Institute 2014
CDC's Guideline for Environmental Infection Control in Healthcare Facilities, 2003.
VHA Directive 2011-036 Safety and Health During Construction Activities.
Medical Center Policy 18S-15-346, Safety and Health During Construction Activities, October 19, 2015.

VIII. RESCISSION: Medical Center Policy 11IC-13-897, Infection Control Construction Project Compliance, dated December 27, 2013.

IX. DISTRIBUTION: Electronic access to all employees

X. ATTACHMENTS: A, B, C, D

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Russell E. Lloyd
Medical Center Director
Signed by: Russell E Lloyd 118065

Infection Prevention Risk Assessment

Matrix of Precautions for Construction & Renovation

Step One:

Using the following table, *identify* the **Type of Construction Project Activity (Type A-D)**

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) ▪ wallcovering, 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.
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 ▪ opening of no more than 1 tile per 10 square feet ▪ access to chase spaces ▪ cutting of walls or ceiling where dust migration can be controlled. ▪ minor renovation of existing space ▪ wet sanding of walls ▪ floor covering removal (without sanding or grinding)
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"> ▪ dry sanding of walls for painting or wall covering ▪ removal of floor coverings (with sanding), ceiling tiles and casework ▪ cutting of walls, removal of drywall or building finishes where work is limited to one room or suite ▪ new wall construction ▪ minor duct work, plumbing work, or electrical work above ceilings (not including system demolition or installation) ▪ moderate renovation of existing space ▪ major cabling activities ▪ any activity which cannot be completed within a single workshift.
TYPE D	Major demolition and construction projects Includes, but is not limited to: <ul style="list-style-type: none"> ▪ activities which require the closure of a unit/wing or relocation of an entire area ▪ activities which require consecutive work shifts ▪ demolition, removal, or installation of a complete cabling, HVAC, plumbing, medical gas, or electrical system ▪ demolition of major fixed building components, assemblies, fit-out elements, or structural elements ▪ new construction located in close proximity (as determined by the ICRA team) of the hospital building ▪ outdoor construction of new structures located in close proximity to existing patient care facility ▪ excavation activities within close proximity of hospital building. ▪ new construction.

Step Two:

Using the following table, *identify the Patient Risk Groups* 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"> Office areas Mechanical spaces 	<ul style="list-style-type: none"> Cardiology Echocardiography Endoscopy Nuclear Medicine Physical Therapy Radiology/MRI/CT/PET Respiratory Therapy Primary care spaces Community Based outpatient clinics 	<ul style="list-style-type: none"> Emergency Room Laboratories (specimen) Outpatient Surgery Pediatrics Pharmacy Post Anesthesia Care Unit Surgical Units Central Sterile supply storage Canteen/Kitchen 	<ul style="list-style-type: none"> Any area caring for immunocompromised patients Cardiac Cath Lab Sterile Processing Intensive Care Units Medical Units Negative pressure isolation rooms Oncology Operating rooms PACU Community Living Center

Step 2 _____

Step Three: Match the

Patient Risk Group (*Low, Medium, High, Highest*) with the planned ...

Construction Project Type (*A, B, C, D*) on the following matrix, to find the ...

Class of Precautions (*I, II, III or IV*) or level of infection control activities required.

Class I-IV or **Color-Coded Precautions** are delineated on the following page.

IC Matrix - Class of Precautions: Construction Project by Patient Risk

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

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

Step 3 _____

Description of Required Infection Prevention Precautions by Class

CLASS I	<ol style="list-style-type: none"> 1. Execute work to minimize the rise of dust from construction operation. 2. Immediately replace any ceiling tile displaced for inspection. 	<ol style="list-style-type: none"> 1. Clean work area upon completion of task.
CLASS II	<ol style="list-style-type: none"> 1. Provides active means to prevent air-borne dust from dispersing into atmosphere (surrounding environment.) 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. 	<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. 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. <u>Complete all critical barriers or implement control cube method before construction begins.</u> 4. <u>Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</u> 5. Remove or isolate HVAC systems in area where work is being performed. 6. Do not remove barriers from work site until complete and project is thoroughly cleaned by EMS. 7. Vacuum work with HEPA filtered vacuum. 8. Wet mop with disinfectant. 9. Remove barrier material carefully to minimize spreading of dust and debris associated with construction. 10. Contain construction waste before transport in tightly covered containers. 11. Cover transport receptacles or cart and tape covering in place. 	<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 Prevention Coordinator and thoroughly cleaned by (EMS) Environmental Management Services. 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	<p>Same as Class III plus the following:.</p> <ol style="list-style-type: none"> 1. Seal holes, pipes, conduits and penetrations appropriately. 2. 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. 3. <u>Wear shoe covers when within entering work site.</u> 	<p>Same as above plus:</p> <ol style="list-style-type: none"> 1. Contain construction waste before transport in tightly covered containers. 2. Cover transport receptacles or carts. Tape covering unless solid lid 3. Vacuum work area with HEPA filtered vacuums. 4. Wet mop area with disinfectant.

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 barriers? (Eg, solids wall barriers); Will HEPA filtration be required?**

 (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 a risk due to compromising structural integrity? (eg, wall, ceiling, roof)**Step 9. Work hours: Can or will the 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 & type of handwashing sinks?****Step 12. Does the infection control staff agree with the minimum number of sinks for this project?**
(Verify against AIA Guidelines for types and area)**Step 13. Does the infection control staff agree with the plans relative to clean and soiled utility rooms?****Step 14. Plan to discuss the following containment issues with the project team.**
Eg, traffic flow, housekeeping, debris removal (how and when),

<i>Appendix: Identify and communicate the responsibility for project monitoring that includes infection control concerns and risks. The ICRA may be modified throughout the project. Revisions must be communicated to the Project Manager</i>

Infection Prevention Construction Permit

Construction Class: I, II, III, IV Project Name and Number: Location of Construction: Contractor Performing Work: FMSS Project Engineer:	Type: A, B, C, D 	Risk Group: Low, Medium, High, Highest Permit #: Project start date: Estimate completion date: Telephone:
Type A: Inspection and non-invasive activities, minimal dust levels Type B: Small scale, short duration moderate dust level Type C: Generates moderate to high levels of dust Type D: Major duration and construction activities requiring consecutive work shift		
CLASS I	1. Work performed is limited to inspections and minor installations. 2. Execute work by methods to minimize raising dust from inspection operations. 3. Immediately replace ceiling tiles displaced for visual inspection. Only 3-5 tiles may be removed at one time 4. Permit does not need to be posted for this classification.	
CLASS II	1. Obtain and post infection control permit at work location before work begins. 2. Provide active means to prevent air borne dust from dispersing into atmosphere. 6 mil/fire resistant poly (plastic) barrier at entrance for short term work. Water mist work surfaces to control dust while cutting or use vacuum device. 3. Place dust mat at entrances and exits of work sites. Seal unused doors with tape. 4. Isolate HVAC and seal/cover air vents. 5. Contain construction waste before transport in tightly covered containers using assigned exit route. 6. Wipe surfaces with disinfectant. Wet mop and/or vacuum with HEPA filtered vacuum before leaving.	
CLASS III	1. Obtain and post infection control permit at work location before work begins. 2. Follow all requirements listed for Class II in addition to requirements listed below. 3. Isolate HVAC supply and return ductwork to prevent contamination of system. 4. Complete all critical dust barriers (hard wall) as well as the creation of an anti-room where required for inspection by ICRA Inspection Team (Safety Officer, IC Nurse, Project Engineer) before work begins. 5. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. Change filters 6. Vacuum work area with HEPA filtered vacuums. Wet mop with disinfectant. 7. Obtain ICRA Inspection Team approval before construction and prior to removal of any dust partitions 8. Contain construction waste before transport in tightly closed containers using the assigned exit route.	
CLASS IV	1. Obtain and post infection control permit at work location before work begins 2. Follow all requirements listed for Class II & III in addition to requirements listed below 3. Isolate HVAC supply and return ductwork to prevent contamination of system. 4. Complete all critical dust barriers (hard wall barrier) as well as the creation of an anti-room where required. All personnel entering and leaving work site must be vacuumed using a HEPA filtered vacuum cleaner or wear cloth or paper coveralls and shoe covers that are removed each time they leave the work site. 5. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. Change filters regularly. Seal holes, pipes, conduits and punctures appropriately. 6. Wet mop with disinfectant. Vacuum work area with HEPA filtered vacuums. 7. Contain construction waste before transport in tightly closed containers using the assigned exit route.	
Additional Requirements:		
Infection Prevention Coordinator:		Date:
Safety Officer:		Date:
FMS Project Engineer:		Date:

INFECTION PREVENTION CONSTRUCTION CHECKLIST**Location:** _____ **Date:** _____**Project COTR:** _____**Safety Representative:** _____**Infection Prevention Coordinator:** _____**Contractor Performing Work:** _____

CONSTRUCTION ACTIVITY:	YES	NO
Type A: Inspection and non-invasive activities, minimal dust levels	<input type="checkbox"/>	<input type="checkbox"/>
Type B: Small scale, short duration moderate dust levels	<input type="checkbox"/>	<input type="checkbox"/>
Type C: Generates moderate to high levels of dust	<input type="checkbox"/>	<input type="checkbox"/>
Type D: Major duration and construction activities requiring consecutive work shift	<input type="checkbox"/>	<input type="checkbox"/>

INFECTION PREVENTION RISK GROUPS:**Low Risk:** _____**Medium Risk:** _____**High Risk:** _____**Highest Risk:** _____**Scope of work:** _____

Date: _____ Location: _____ Class of Precautions: _____

BARRIERS:**YES****NO**

Construction signs posted for the area

- Construction site- DO NOT ENTER

- Emergency contact information

- Infection Control Instructions

Door properly closed and sealed

Floor mats/dust tacks mats at entrance and changed

Floor area clean, no dust tracked

Barrier intact

Door sweep

Door closure device

Door/tools locked when no one in area

AIR HANDLING

All windows closed behind barrier

Negative air at barrier entrance

Negative air machine running

Hepa filter below 2 (above 2 filter change)

PROJECT AREA:

Debris removed in covered container daily

Debris removed via designated exit route

Trash in appropriate container

Routine clearing done on job site

If chute used, it is not adjacent to open windows or

HVAC air intakes

HVAC systems isolated, return ducts covered

TRAFFIC CONTROL:Restricted to construction workers and necessary
staff only

All doors and exits free of debris

ID badges worn and visible by construction workers

Comments:**Signatures:****Project COTR:** _____**Safety Representative:** _____**Infection Prevention:** _____

Infection Prevention – Construction Services

The goal of the Infection Prevention Program is to identify and reduce the risks of acquiring and transmitting infections among patients, employees, and visitors.



During construction, renovation and minor improvement projects, hidden infectious disease hazards may be released into the air, carried on dust particles or on clothing - for example, fungal organisms such as *Aspergillus*. *Aspergillus* species may be found in decaying leaves and compost, plaster and drywall, and settled dust. These organisms usually do not cause problems in healthy people, but a hospital is full of sick patients! *Aspergillus* and other fungal organisms can cause illness and even death in transplant patients, cancer treatment patients, and patients with lung problems or poor immunity. Therefore, it is critical that you do your part to keep our patients, employees, and visitors as safe and healthy as possible. We, in turn, will make conditions as safe as possible for you.

1. Medical Waste:

- a. We will remove any medical waste, including sharps containers (for used needles and syringes), from construction areas prior to the start of the projects.
- b. If you (contract workers) find any needles, syringes, sharp medical objects, please notify Infection Control IMMEDIATELY.

2. Barrier Walls:

- a. The construction areas MUST be kept separated from patient care areas by barriers that keep the dust and dirt inside the worksite.
- b. The walls must provide a complete seal of the construction area from adjacent areas.
- c. The barrier types must be constructed with the following materials/specifications and comply with National Fire Protection Association (NFPA) standards such as fire retardant polyethylene barrier (minimum 6-mil thickness.) for projects less than 72 hours, gypsum wall board, fire rated reinforced plastic fiberglass, masonite painted with fire resistant paint.
- d. Zip walls/door in polyethylene for entrances.

3. Environmental Control:

- a. Negative air pressure must be maintained within the construction area.
- b. Demolition debris is removed in tightly fitted covered carts - use specified traffic patterns.
- c. Exterior window seals are to be used to reduce the amount of outside excavation debris coming into the building.
- d. If demolition chutes are used, they must be sealed when not in use; the chute and damper should be sprayed with water, as necessary to maintain dust control.
- e. Control, collection and disposal must be provided for any drain liquid or sludge found when demolishing plumbing.
- f. Sticky or walk-off mats are placed immediately outside the construction zone and changed whenever necessary to control the spread of dust and dirt.
- g. Containment cubes keep air from dissipating into the halls.



4. Traffic Control

- a. Use designated entry and exit procedures.
- b. Keep all egress pathways free of debris.
- c. No unauthorized personnel should be allowed to enter construction areas.
- d. Use designated elevators only.

5. Cleaning

- a. Keep the construction area clean on a DAILY basis.
- b. Dust and dirt **must** be kept to a minimum. Use of HEPA vacuum should be used.



6. Workers

- a. Clothing must be free of loose soil and debris when exiting the construction area.
- b. Use personal protective equipment (masks, face shields, etc.) as indicated for the task at hand.
- c. Handwashing is the best method of reducing the transmission of infection: always wash your hands with soap and water after visiting the restroom, before eating, when leaving the construction site.

7. Accidents

- a. For needlesticks or other sharps accidents and body fluid exposures; wash skin with soap and water and flush eyes/nose/mouth with large amounts of water.
- b. Report the incident to your supervisor and report to the Safety and Health Manager for further treatment options.

Questions? Please feel free to call Infection Prevention at ext. 7979.