

SUBJECT: HOSPITAL CONSTRUCTION, RENOVATION, AND DEMOLITION

PURPOSE: To provide Infection Control guidelines for hospital construction, renovation, and demolition.

POLICY:

- A. An assessment of risks to patients, healthcare workers, and the public will be done prior to planning for any renovation, construction or demolition project in or near any Fairfield Medical Center hospital units or clinics.
- B. The assessment will be carried out by a committee make up of the representatives of the Infection Control department, Plant Engineering, and Safety and Health.
- C. Each risk assessment shall include review of the following:
 - 1. Location of the project and susceptibility of nearest patients to opportunistic infections.
 - 2. Planning for air handling and water systems/plumbing.
 - 3. Traffic patterns for patients, healthcare workers, and visitors.
 - 4. Transport and disposal of waste materials.
 - 5. Education of construction workers on containment of dust within the construction/renovation area.
 - 6. Occupational health expectations
 - a. Identification of special risks to patients and staff
 - b. Identification of special risks to construction workers
 - 7. Authority to determine if or how patient unit closure will occur and the method by which the information will be communicated.
 - 8. Documentation of the findings of the risk assessment shall become part of the project file.
- D. Patients should be transported to areas in the hospital where they have diagnostic or therapeutic procedures by routes that minimize their exposure to construction sites.
- E. Education of construction workers about infectious diseases.
 - 1. Facility and contractor workers should be educated about infectious hazards they may encounter during the renovation/construction at the pre-construction conference.
 - 2. Individual worker education will be provided by the contractor.
- F. Health protection for patients from construction workers.
 - 1. Requirements will vary with degree of environmental risk and proximity to the patient populations.

2. Signs of symptoms of various contagious diseases shall be monitored by the contractor and reported to Infection Control.
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I. Design of measures to protect patients, healthcare workers, and the public from infections related to construction/renovation.

A. Barriers will be used to isolate all construction/renovation projects from other areas in the hospitals/clinics.

Minimal dust generation

Non-combustible or limited combustible

1. Barriers will be provided using fire rated plastic sheeting.
2. The portal(s) of entry through the plastic sheeting will have overlapping flaps that are at least 2 feet in width.
3. Plastic sheeting will extend from the floor to the deck above and will be sealed to prevent dust from escaping from the worksite.
4. HEPA filtration will be used as needed.

Moderate to heavy dust generation

1. Barriers will be dust-proof, smoke-barrier walls with caulked seams.
2. Walls will extend from the floor to the deck above.
3. Entry ways will have doors with gasketed door frames and doors with tight seals when closed.
4. Non-combustible or limited combustible plastic barriers will be installed prior to construction and removal of dust barrier walls.

B. All construction areas will be under negative pressure unless noted to the contrary.

1. Negative pressure must be monitored with an alarm device.
2. Air from the construction zone must be discharged to the outside after passing through pre-filters and 95% high efficiency filters and be discharged away from air intakes or public ways.

C. Ventilation systems

1. All ventilation systems outside the construction area will be isolated from the construction area.
2. Pressure relations must be checked and maintained in critical areas near construction sites throughout each construction project.
3. All windows in the construction area will be sealed and seals checked periodically and repaired as needed.

D. Elevator Shafts

1. Elevator shaft access shall be sealed if located in areas undergoing construction/renovation.

E. Pneumatic tube system

1. Pneumatic tube system ports will be sealed in areas undergoing construction/renovation.

F. Removal of debris

1. Debris must be removed in carts with tightly fitted covers.
2. Traffic routes for removal of debris will be designated.
3. When elevators are used for removal of debris, they must be used at the period of lowest activity by patients and healthcare workers.
4. Debris must be removed daily.
5. If a chute is used to discharge debris to the outside, the chute opening must be sealed when not in use.

G. Decontamination of construction workers prior to their exiting the worksite

1. Workers' clothing must be free of loose soil and debris before they leave the construction area.
2. When construction workers wear no protective apparel, their clothing must be cleaned with a HEPA-filtered vacuum prior to leaving.

H. Work site cleanliness

1. The worksite must be swept or vacuum with a HEPA-filtered vacuum daily to remove dust.
2. Areas adjacent to the construction area must be damp mopped one or more times per day.
3. Walk-off mats must be placed at worksite entrances to minimize tracking of dust by construction workers.
4. Storage sites must be designated for construction materials, and they must be located as close to the construction site as possible.

I. Only authorized persons will be allowed to enter the construction zone.

J. Signage must direct pedestrian traffic away from construction areas.

K. It shall be the responsibilities of the contractor and or Environmental Services, depending on the size, scope and timeframe of the project, to provide terminal cleaning before newly renovated or constructed areas are opened.

L. Water distribution systems

1. When there are alterations in the water distribution system within an area under construction/renovation, no "dead legs" will be created, and any "dead legs" will be removed.
2. After completion of renovation/construction, all water pipes in the areas of renovation/construction will be adequately flushed.

Continuous surveillance for infections related to renovation/construction will be done as deemed appropriate by the Infection Control department.

The Infection Control Risk Assessment Matrix of Precautions for Construction and Renovation must be performed by Infection Control prior to any construction or renovation.

**Infection Control Risk Assessment
Matrix of Precautions for Construction and Renovation**

Will this project affect the Interim Life Safety Yes _____ No _____

Project Name: _____

Step One:

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

TYPE A	<p>Inspection and Non-Invasive Activities. Includes, but is not limited to:</p> <ul style="list-style-type: none"> • removal of more than 5 ceiling tiles for visual inspection; limited to 5 tile per 150 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. • installation of telephone and computer cabling
TYPE B	<p>Small scale, short duration activities which create minimal dust Includes, but is not limited to:</p> <ul style="list-style-type: none"> • work in chase spaces • cutting of walls or ceiling where dust migration can be controlled
TYPE C	<p>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:</p> <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 duct work or electrical work above ceilings • major cabling activities • any activity which cannot be completed within a single workshift
TYPE D	<p>Major demolition and construction projects Includes, but is not limited to:</p> <ul style="list-style-type: none"> • activities which require consecutive work shifts • requires heavy demolition or removal of a complete cabling system • new construction

STEP 1: _____

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 	<ul style="list-style-type: none"> • Cardiology • Echocardiography • Endoscopy • Nuclear Medicine • Physical Therapy • Radiology/MRI • Respiratory Therapy 	<ul style="list-style-type: none"> • Emergency Room • Labor & Delivery • Laboratories (specimen) • Newborn Nursery • Outpatient Surgery • Pediatrics • Pharmacy • Post Anesthesia Care Unit • Surgical Units • Medical Unit 	<ul style="list-style-type: none"> • Cardiac Cath Lab • Central Sterile Supply • Intensive Care Units/PCU • Occupied isolation rooms • Oncology • Operating rooms including C-section rooms

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 Precautions are delineated on the following page:

IC Matrix 6 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	1	2	2	3 / 4
MEDIUM Risk Group	1	2	3	4
HIGH Risk Group	1	2	3 / 4	4
HIGHEST Risk Group	2	3 / 4	3 / 4	4

Note: Infection Control approval will be required when the Construction Activity and Risk Level indicate that 3 or 4 control procedures are necessary.

Step 3 _____

If Level 1 or 2, stop here and complete permit. Continue for level 3 and 4 to the next page.

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 e.g. 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? (e.g. solid 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. Is there a risk due to compromising structural integrity? (e.g. wall, ceiling, roof) Yes ___ No ___ NA ___

Step 9. Work hours: Can or will the work be done during non-patient care hours?
Yes ___ No ___ NA ___

Step 10. Do plans allow for adequate number of isolation/negative airflow rooms?
Yes ___ No ___ NA ___

Step 11. Do the plans allow for the required number & type of hand washing sinks?
Yes ___ No ___ NA ___

Step 12. Does the infection control staff agree with the minimum number of sinks for this project? Yes ___ No ___ NA ___

Step 13. Does the infection control staff agree with the plans relative to clean and soiled utility rooms? Yes ___ No ___ NA ___

Step 14. Plan to discuss the following containment issues with the project team. e.g. traffic flow, housekeeping, debris removal (how and when)

Description of Required Infection Control Precautions by Class

During Construction Project

Upon Completion of Project

Class 1	<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. 	
Class 2	<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 3	<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 owner's 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 4	<p>1. Isolate HVAC system in area where work is being done to prevent contamination of duct system.</p> <p>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.</p> <p>3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.</p> <p>4. Seal holes, pipes, conduits and punctures appropriately.</p> <p>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 wear cloth or paper coveralls that are removed each time they leave the work site.</p> <p>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.</p> <p>7. 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 owner's Environmental Services Department.</p>	<p>1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction.</p> <p>2. Contain construction waste before transport in tightly covered containers.</p> <p>3. Cover transport receptacles or carts. Tape covering unless solid lid.</p> <p>4. Vacuum work area with HEPA filtered vacuums.</p> <p>5. Wet mop area with disinfectant.</p> <p>6. remove isolation of HVAC system in areas where work is being performed.</p>
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PLEASE POST AT JOB SITE

<p>Infection Control Risk Assessment Authorization For Construction/Renovation</p>

Project: _____ WO# _____

Location of Construction: _____ Project Start Date: _____

_____ Project End Date: _____

Contractor Performing Work: _____

Responsible Person: _____ Telephone: _____

(Project Manager) _____

Match the Patient Risk Group (L, M, H, HH) with the Construction Project Type (A,B,C,D) to find the Class of Precautions (1-4). CIRCLE ONE				
Patient Risk Group	Type A	Type B	Type C	Type D
Low Risk	1	2	2	3 / 4
Medium Risk	1	2	3	4
High Risk	1	2	3 / 4	4
Highest Risk	2	3 / 4	3 / 4	4

Notes:

Project Manager: _____

Date

Safety Officer (as needed): _____

Date

Infection Control Dept. Approval (as needed): _____

Date