

**HOSPITAL EPIDEMIOLOGY AND  
INFECTION CONTROL:  
Guidelines for  
Construction/Renovation/Demolition  
Projects and Environmental Control of  
Aspergillosis and other Nosocomial  
Infections**

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Office of Origin: Department of Hospital Epidemiology and Infection Control  
(HEIC) and Facilities Management

**I. PURPOSE**

- A. Dust and debris generated from construction/demolition activities can contain a mold or fungus, which, if inhaled by immune-compromised patients, can cause disease and even death. To ensure a safe environment for our patient population, visitors, and employees, dust mitigation measures must be utilized during all construction activities at the Medical Center. Dust-generating construction activities that disturb existing dust or create new dust must be conducted in enclosures that prevent the flow of particles into patient areas.

**II. POLICY**

- A. The guidelines are designed to maintain air quality and dust control in the Medical Center during construction, demolition, or renovation projects.

**III. PROCEDURES**

NOTE: Not all dust mitigation measures described on this form are required for each project. Each project will be assessed independently.

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A. Infection Control Components for Construction/Renovation/Demolition Projects

1. Infection Control Risk Assessment (ICRA) and Infection Control Mitigation Plan (ICMP). A risk assessment form ([Appendix A](#)) will be completed by the project manager prior to the bidding process. This risk assessment is based on these factors of the project:
  - Expected dust generation
  - Location
  - Duration
  - Patient populations likely to be affected

Based on the ICRA and ICMP, dust mitigation strategies during the entire project are reviewed during the Interim Life Safety Measures meeting (see section III.B). HEIC must review and approve the risk assessment and mitigation plan prior to the beginning of any construction activities.

B. Interim Life Safety Meeting

1. Before on-site construction begins, the project manager shall hold a mandatory Interim Life Safety Measures (ILSM) meeting.
2. The meeting attendees will include Office of Design and Construction, Facilities Management, Medical Center Safety Office, Environmental Health and Safety, HEIC, and managers of affected departments as deemed appropriate.
3. All safety measures to be implemented, including the ICRA and ICMP will be reviewed during this meeting.
4. UCSF Medical Center requires all individuals performing construction activities, including UCSF staff, contractors, subcontractors, material suppliers, vendors, employees, or agents, to be bound by these same requirements.
5. Notes of this meeting will be kept with the project documentation.
6. The Office of Design and Construction document titled Interim Life Safety Measures and Infection Control Measures for Standard Operating Programs for Construction Areas (which includes the

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Division 1 Infection Control Specifications) is reviewed by the project manager with the contractor and is signed by the agent representing the contractor and/or sub-contractor.

- C. Annual Training for Design & Construction: Project Managers and Inspectors of Record (IOR) will attend an annual in-service training covering current dust mitigation measures. This in-service is sponsored by HEIC ([Appendix B](#)).
- D. Pre-construction Infection Control Inspection
1. After dust mitigation measures are in place and before demolition begins, the project manager, with HEIC and the contractor at the job site, schedules an inspection of the job site. The "PRECONSTRUCTION INFECTION CONTROL SURVEY" form ([Appendix C](#)) will be completed at the time of this walk-through.
  2. When the PRE-CONSTRUCTION INFECTION CONTROL SURVEY form is completed, it will be faxed to the attention of the project manager at the Office of Design and Construction or Facilities Management.
  3. While UCSF Design and Construction and Facilities Management staff regularly inspect the project site for adherence to dust mitigation measures ([Appendix F](#) & [Appendix G](#)), HEIC staff may visit the project site at will.
  4. Large projects may require several phases of demolition and/or construction. Each phase may require a separate pre-construction Infection Control inspection.
  5. Major exterior construction, demolition or remodeling projects performed in the vicinity of Medical Center buildings also require contractor compliance with dust mitigation measures. These include but are not limited to partial or total building demolition adjacent to UCSF controlled properties. ([Appendix D](#).)
- E. Air Sampling: HEIC may order air sampling, including monitoring for airborne mold spores, which will be performed by the Office of Environmental Health and Safety and culturing for mold counts by UCSF Medical Center Microbiology Lab or designee. ([Appendix E](#).)

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#### **IV. DEFINITIONS**

##### **A. Construction Activity Types**

The construction activity types are defined by the amount of dust that is expected to be generated, the duration of the activity, and the amount of shared HVAC systems (Table A). For questionable activity, contact the construction site project manager (name and contact number posted at the construction site), UCSF Medical Center Facilities (Parnassus Campus: 353-1120; Mount Zion Campus: 885-7576) or HEIC (353-4343).

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Table A. Types of Construction Activities

Type A	<p><b>Inspection and non-invasive activities.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• removal of ceiling tiles for inspection (up to 4 square feet)</li> <li>• movement of equipment, building structures, etc. for visual inspection</li> <li>• painting (but not sanding)</li> <li>• putting up 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.</li> </ul>
Type B	<p><b>Small scale, short duration activities that create minimal dust.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• installing telecommunications cabling</li> <li>• accessing chase spaces</li> <li>• cutting of walls or ceiling where dust migration can be controlled.</li> </ul>
Type C	<p><b>Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies (e.g., counter tops, cupboards, sinks).</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• sanding of walls for painting or wall covering</li> <li>• removing of floor and wall coverings, baseboards, ceiling tiles and casework</li> <li>• new wall construction</li> <li>• minor duct work or electrical work above ceilings</li> <li>• major cabling activities</li> <li>• any activity which cannot be completed within a single work shift.</li> </ul>
Type D	<p><b>Major demolition, construction and renovation projects.</b> These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• activities which require consecutive work shifts</li> <li>• heavy demolition or removal of a complete cabling system required</li> <li>• new construction.</li> </ul>

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**B. Infection Control Risk Groups**

Patients and employees have been grouped according to their relative risk of being affected by the project because of its physical proximity or potential exposure to the activity. (Table B.)

Table B. Population and Geographic Risk Groups\*

<b>GROUP 1 LOWEST RISK</b>	<b>GROUP 2 MEDIUM RISK</b>	<b>GROUP 3 HIGH RISK</b>	<b>GROUP 4 HIGHEST RISK</b>
<ul style="list-style-type: none"> <li>• Office areas</li> <li>• Administrative areas</li> <li>• Areas not used for patient care, patient holding or transport of patients</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby</li> <li>• Cafeteria</li> <li>• Clinical Labs</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency Room</li> <li>• Radiology/CT scan</li> <li>• Labor and Delivery</li> <li>• Well Baby Nurseries</li> <li>• Pediatrics Med/Surg</li> <li>• Nuclear Medicine</li> <li>• Admission/Discharge area</li> <li>• Rehabilitation Therapy</li> <li>• Echocardiography</li> <li>• General Medical/Surgical Units</li> <li>• Outpatient Care Clinics</li> </ul>	<ul style="list-style-type: none"> <li>• All Critical Care areas</li> <li>• Comprehensive Cancer Center</li> <li>• Peri-operative areas (including L&amp;D OR, PACU)</li> <li>• Sterile Processing</li> <li>• Cardio-Pulmonary Acute Care Units</li> <li>• Cardiac Catheterization &amp; Angiography areas</li> <li>• Dialysis areas</li> <li>• Inpatient Oncology &amp; Bone Marrow Transplant Units</li> <li>• Endoscopy areas</li> <li>• Pharmacy admixture areas</li> <li>• Ambulatory Surgery Center</li> <li>• Pediatric Treatment Center</li> </ul>

\*Designation of grouping for any location may be changed at the discretion of HEIC.

**CONSTRUCTION ACTIVITY/ INFECTION CONTROL MATRIX**

Determine the level of infection control classification necessary for the work by matching the construction activity with the designated risk group in the matrix below (Table C). Plan for and use the associated infection control barriers as determined in conjunction with HEIC and Project Managers.

A copy of the Infection Control Risk Assessment and Infection Control Mitigation Plan must be submitted to HEIC when the matrix indicates that Class III or Class IV preventive measures are required. Adaptations to the prevention measures may be made only after HEIC staff have provided approval. HEIC personnel will be consulted when construction activities are placed in hallways adjacent to Class III or Class IV areas.

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Table C. Construction Activity and Risk Group Matrix

CONSTRUCTION ACTIVITY→	TYPE “A”	TYPE “B”	TYPE “C”	TYPE “D”
RISK LEVEL ↓				
Group 1	Class I	Class II	Class II	Class III/IV
Group 2	Class I	Class II	Class III	Class IV
Group 3	Class II	Class III	Class III/IV	Class IV
Group 4	Class III	Class III/IV	Class III/IV	Class IV

A copy of the Infection Control Risk Assessment and Infection Control Mitigation Plan checklist must be sent to HEIC for review when the matrix indicates that Class III or Class IV preventive measures are required.

**V. REFERENCES**

- A. Abrutyn, Elias, Donald Goldmann, D, Scheckler, W. ed. “Guideline: 37-4 Guidelines for Construction and Equipment of Hospital and Medical Facilities,” Saunders Infection Control Reference Service, Philadelphia: W.B. Saunders Company. 1998.
- B. American Institute of Architects Academy of Architecture for Health, et al. Guidelines for Design and Construction of Health Care Facilities. 2006.
- C. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Handbook. 2004.
- D. Bennett, J. and Philip S. Brachman M.D, ed. Hospital Infections, ed. Boston: Little, Brown and Company. 1992.
- E. Bartley, J., ed. Construction and Renovation. Association for Professionals in Infection Control and Epidemiology. 2004.
- F. Brace, S. Infection Control During Construction: Planning is Key. Healthcare Facilities Management Series, American Society for Hospital Engineers of the American Hospital Association. 1993.
- G. California Code of Regulations, Title 22
- H. Cater, C. Infection Control Issues in Construction and Renovation. Infection Control and Hospital Epidemiology, Vol. 18#8. 1997.
- I. Hansen, W. Infection Control During Construction. Opus Communications. 2002.

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- J. Henimes, M. Managing Healthcare Construction Projects. A practical guide. Chicago: American Hospital Publishing, Inc. 1993.
  - K. National Fire Protection Agency (NFPA) Life Safety Code Handbook.
  - L. Sehulster, L., et al. CDC Guidelines for Environmental Infection Control in Health Care Facilities. June 6, 2003.

**VI. HISTORY OF POLICY**

<b>Reviewed by</b>	<b>Month Approved</b>
Infection Control Committee	08/09
Quality Improvement Executive Committee	

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