



HOSPITAL EPIDEMIOLOGY AND
INFECTION PREVENTION:
**GUIDELINES FOR
CONSTRUCTION/RENOVATION/DEMOLITION
PROJECTS AND ENVIRONMENTAL CONTROL OF
INVASIVE FUNGAL INFECTION AND OTHER
NOSOCOMIAL INFECTIONS**

POLICY 5.1
Issued: 12/06
Last Approval: 12/19

Office of Origin: Department of Hospital Epidemiology and Infection Prevention (HEIP) 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 provide parameters for safe design, construction, maintenance and sustainability in the healthcare 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. REFERENCES

- A. Guidelines for the Design and Construction of Healthcare Facilities, 2014 Edition Facilities Guidelines Institute.
- B. American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Handbook. 2004.
- C. Vogel RA., ed. Infection Prevention for Construction and Renovation. Association for Professionals in Infection Prevention and Epidemiology. 2015.
- D. California Code of Regulations, Title 22.
- E. Schulster, L., et al. CDC Guidelines for Environmental Infection Control in Health Care Facilities. June 6, 2003.
- F. UCSF Health [Environment of Care Manual \(EOC\) Policy 5.1.2 Interim Life Safety Measures](#).

III. 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: (415) 514-3570 or Hospital Epidemiology and Prevention (HEIP) (415) 353-4343.



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Table A. Types of Construction Activities

Type A	<p>Inspection and non-invasive activities. These include, but are not limited to:</p> <ul style="list-style-type: none"> • removal of ceiling tiles for inspection (up to 4 square feet) • movement of equipment, building structures, etc. for visual inspection • painting (but not sanding) • 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.
Type B	<p>Small scale, short duration activities that create minimal dust. These include, but are not limited to:</p> <ul style="list-style-type: none"> • installing telecommunications cabling • accessing 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 (e.g., counter tops, cupboards, sinks). These include, but are not limited to:</p> <ul style="list-style-type: none"> • sanding of walls for painting or wall covering • removing of floor and wall coverings, baseboards, 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 work shift.
Type D	<p>Major demolition, construction and renovation projects. These include, but are not limited to:</p> <ul style="list-style-type: none"> • activities which require consecutive work shifts • heavy demolition or removal of a complete cabling system required • new construction.

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B. Infection Prevention 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*

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

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



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CONSTRUCTION ACTIVITY/ INFECTION PREVENTION MATRIX

Determine the level of infection prevention 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 prevention barriers as determined in conjunction with HEIP and Project Managers.

A copy of the Infection Prevention Risk Assessment and Mitigation Plan (IPRAMP) must be submitted to HEIP when the matrix indicates that Class III or Class IV preventive measures are required. Adaptations to the prevention measures may be made only after HEIP staff have provided approval. HEIP personnel will be consulted when construction activities are placed in hallways adjacent to Group 3 or Group 4 areas (see **Table B** above).

Table C. Construction Activity and Risk Group Matrix

CONSTRUCTION ACTIVITY→ RISK LEVEL ↓	TYPE “A”	TYPE “B”	TYPE “C”	TYPE “D”
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 Prevention Risk Assessment and Infection Prevention Mitigation Plan checklist must be sent to HEIP for review when the matrix indicates that Class III or Class IV preventive measures are required.

IV. POLICY

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

V. PROCEDURES

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

A. The Construction Sub-Committee of the Infection Prevention? Committee oversees these procedures.

B. Infection Prevention Components for Construction/Renovation/Demolition Projects

Infection Prevention Risk Assessment and Mitigation Plan (IPRAMP). Infection risks, interventions, and prevention strategies must be considered in planning for new construction and/or renovation of healthcare facilities. An IPRAMP is developed for all projects that may

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INFECTION PREVENTION:
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impact the health of patients. The IPRAMP multidisciplinary, documented assessment process is intended to proactively identify and mitigate risks from infection that could occur during construction activities. The scope of the project will dictate others who may be involved. The IPRA/IPMP shall be a part of integrated facility planning, design, construction, and commissioning activities. A risk assessment and mitigation plan form ([Appendix A](#)) will be completed by the project manager during the planning phase of the project, prior to the bidding process.

This risk assessment is based on these factors of the project:

- Nature and scope of project and expected dust generation
- Location
- Duration
- Patient populations likely to be affected

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

Based on preconstruction IPRAMP, the owner shall provide the following recommendations to incorporate into the program:

1. Design recommendations generated by the IPRA.
2. Infection Prevention risk mitigation recommendations (IPRMP).

IPRAMP Design Elements:

1. Number, location, and type of airborne isolation and protective environment rooms.
2. Number, location, and type of plumbed hand-washing stations, hand sanitation dispensers, and emergency first-aid equipment (eyewash stations and deluge showers).
 - The number and location of hand-washing stations and hand-sanitation dispensers shall be determined by the functional program and the IPRAMP.
 - Hand-washing stations will be convenient and accessible for healthcare personnel and all other users.
3. Special HVAC needs to meet the functional program and accommodate the services included in or affected by the project (e.g., surgical services, airborne isolation rooms, laboratories, pharmacies, and other special areas).
4. Water systems to limit Legionella and other waterborne opportunistic pathogens.



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Surfaces and Furnishings:

1. Existing code requirements are to be met.
2. Easy to maintain, repair, and clean.
3. Does not support microbial growth.
4. Nonporous and smooth.
5. See “FGI Design p. 18 A1.2–3.2.1.5 Surface selection characteristics and criteria” for additional detail.

Construction Elements: When conducting the IPRA and developing the mitigation requirements for building and site areas anticipated to be affected by construction, the following shall be addressed:

1. The impact of disrupting essential services to patients and employees.
2. Determination of the specific hazards and protection levels for each designated area.
3. Location of patients according to their susceptibility to infection and the definition of risks to each.
4. Impact of movement of debris, traffic flow, spill cleanup, and testing and certification of installed systems.
5. Assessment of external as well as internal construction activities.
6. Location of known hazards.

Compliance Elements:

1. IPRA Documentation: The written record shall remain an active part of the project documents for the duration of the construction project and through commissioning. The IPRA is filed into the master file for the specific project.
2. The IPRAMP will expire 90 days after the initial approval date. A new IPRMP must be completed and approved by Hospital Epidemiology and Infection Prevention.
3. IPRMRs (infection prevention risk mitigation recommendations). Written plans that describe the specific methods by which transmission of air- and waterborne biological contaminants will be avoided during construction as well as during commissioning, when HVAC and plumbing systems and equipment are started/restarted.

C. Interim Life Safety Meeting

To address situations in which Life Safety Code deficiencies cannot be corrected during periods of construction or other impairment and to provide guidance on type and extent of special measures to compensate for increased life safety risk.

Before on-site construction begins, the project manager shall hold mandatory Interim Life Safety Measures (ILSM) meetings. Refer to EOC Policy 5.1.2 Interim Life Safety Measure.

[Environment of Care Manual \(EOC\)](#)

- D. 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 HEIP ([Appendix B](#)).



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E. Pre-construction Infection Prevention Inspection

1. After dust mitigation measures are in place and before demolition begins, the project manager, with HEIP and the contractor at the job site, schedules an inspection of the job site. The “PRE-CONSTRUCTION INFECTION PREVENTION SURVEY” form ([Appendix C](#)) will be completed at the time of this walk-through.
2. When the PRE-CONSTRUCTION INFECTION PREVENTION SURVEY form is completed and signed, it will be posted at the project site.
3. While UCSF Design and Construction and Facilities Management staff regularly inspect the project site for adherence to dust mitigation measures ([Appendix F](#)), HEIP staff may visit the project site at will. If dust mitigation measures are either not in compliance or barriers and/or measures fail, it is the responsibility of the observer to notify the Project Manager and construction supervisor for immediate remedy. The Project Manager shall then communicate the non-compliance or failure to the Inspector of Record for inspection and documentation.
4. Large projects may require several phases of demolition and/or construction. Each phase may require a separate pre-construction Infection Prevention 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](#))

F. Air Sampling: HEIP may order air sampling, including particle counts, monitoring for airborne mold spores, and culturing for mold, which will be performed by the Office of Environmental Health and Safety. ([Appendix E](#))

VI. HISTORY OF POLICY

Reviewed by:

Infection Control Committee
Quality Improvement Executive Committee
Construction Subcommittee of the ICC

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