

An infection control risk assessment (ICRA) is a systematic process that determines level of risk to patients and defines controls to reduce risk. The purpose of the risk assessment is to identify the effects of the construction or renovation activities on air and water quality. Once the effects are understood, then control measures are designed and implemented for the purpose of reducing health risks to patients, visitors and staff.

Completing an ICRA for any construction or renovation project includes four steps:

1. Identify the type of construction
2. Identify the patient/resident or staff risk group that will be most affected
3. Determine the level of infection control classification using the ICRA Matrix
4. Assign appropriate controls that are needed to reduce or eliminate risk to patient/resident or staff risk group. Infection controls are documented in the ICRA Permit

Step 1: Identify the type of construction: For the purposes of performing an infection control risk assessment, construction activities have been divided into four types: A, B, C, and D. Each of these construction types is listed on the sample ICRA permit (below) and includes example construction activities for each type.

Step 2: Identify the patient/resident or staff risk group: Each healthcare facility may have its own unique patient/resident population with different susceptibility to construction related infections. Likewise, each facility may have different departments that have strict cleanliness requirements, which can be adversely affected by construction dust. For example, the Sterile Processing Department and Perioperative Department have very strict cleanliness requirements, whereas the facility's lobby or waiting areas likely have less stringent cleaning requirements. The patient/resident and staff risk group is obtained from a table with different assigned ratings of susceptibility to infections from airborne contaminants that may be released during construction/renovation activities.

Risk Group

Low	Medium	High	Highest
Administrative offices	Employee Health	Blood donor center	Any area caring for immunocompromised patients (ONC/BMT/Hematology)
Basement main hallways	Materials Management	Central supply	Cardiac Cath Lab
Cafeteria	Medical day treatment	Clinic lab	Cardiac Intensive Care Unit (CICU)
Chapel	Outpatient pharmacy	Dental clinic	Maternal Fetal Unit
Lobby	Physical therapy	Dialysis – Kidney center	Negative pressure isolation rooms
	Inpatient psychiatric unit	Endoscopy (GI Lab)	Newborn Intensive Care Unit (NICU)
	Sleep lab	Emergency room	Operating rooms
		Flight team area	Pediatric Intensive Care Unit (PICU)
		Inpatient floors	Pharmacy (IV room)
		Pharmacy (inpatient)	Positive pressure isolation rooms
		Perioperative Admit /Discharge Unit	Sterile Processing Department (SPD)
		Post Anesthesia Care Unit (PACU)	Adult Intensive Care Unit
		Radiology – MRI, CT, Nuclear Medicine	

Step 3: Determine the level of infection control classification using the ICRA matrix: Once the type of construction project and risk group is defined, then these two pieces of information are matched in a matrix to determine the infection control classification most appropriate for the project.

ICRA Matrix: Using the matrix, select the Infection Control Classification – I, II, III, or IV

Patient Risk Group	Construction Project Type			
	A	B	C	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	III / IV	III / IV	IV

Step 4: Assign appropriate controls that are needed to reduce or eliminate risk to patient or staff risk group – See ICRA Permit

Controls listed in the ICRA Permit are listed within categories of combined Class I and II controls, and Class III and IV controls. But, the infection Preventionist can select any combination of controls from either Classification that are necessary to meet the needs of the construction project.

For tasks that require the use of an Environmental Containment Unit, (ECU) (i.e. HEPA cart), the ICRA Permit lists controls specific for ECU use.

A Medical Center			
Location of Construction:		Permit No.:	
Project Manager & Cell:		Permit Start Date:	
Construction Supervisor & Cell:		Permit Expiration Date:	
Infection Preventionist & Cell:			
Construction Project Type – Based upon the type of work, select (X) the construction project type			
___ Type A			
Inspection, Non-Invasive Activity: <ul style="list-style-type: none"> • Removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet Non-Invasive Activity: <ul style="list-style-type: none"> • Wall covering installation • Electrical trim work installation (i.e. cover plates, data box covers) • Minor plumbing repairs (all plumbing outside of wall cavities; i.e. change faucet) • Minor patch and paint (without sanding) • Changing door hardware, or making repairs on cabinetry or millwork hardware without sanding • 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 or where dust migration can be controlled at the source: <ul style="list-style-type: none"> • Above ceiling access to install cabling, electrical equipment and/or conduits, electrical or lighting fixtures, to perform minor plumbing repairs or clean/inspect/repair VAVs, fan coil boxes or humidifiers • Access to wall chase spaces via access panels for minor plumbing repairs, investigation, electrical work • Cutting of walls or ceiling where dust migration can be controlled • Minor floor repairs on vinyl or carpet flooring • Installation of wall art/framed pictures 			
___ Type C			
Work that generates a moderate to high level of dust or requires demolition, removal and build-back of any fixed building components or assemblies: <ul style="list-style-type: none"> • Sanding of walls for painting or wall covering • Removal and reinstallation of floor coverings, ceiling tiles and casework • New wall construction • Minor HVAC duct work • Major electrical work above ceilings • Major cabling work above ceilings • Core drilling operations • Any dust generating activity which cannot be completed within a single work shift 			
___ Type D			
Major Demolition and Construction Projects: <ul style="list-style-type: none"> • Activities which require consecutive work shifts • Requires heavy demolition and removal of building systems (i.e. walls, floors, ceilings, and infrastructure including plumbing, electrical, HVAC) • New construction 			
Risk Group – Based upon the type of work, select (X) the Risk Group (See Risk Group List)			
___ Low	___ Medium	___ High	___ Highest

ICRA Matrix – Using the matrix, select the ICRMR Classification – I, II, III, or IV

Patient Risk Group	Construction Project Type			
	A	B	C	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	III / IV	III / IV	IV

Infection Controls: Using the outcome from the ICRA Matrix, select (X) the appropriate controls. You can combine controls from different classifications, as needed.

Preparation for work – Select Controls applicable for all Construction Project Types (√)

- All work personnel shall have clean clothing and shoes at all times when in the facility. Hard hats and high visibility clothing shall also be clean.
- All equipment, materials, waste carts and transfer carts shall be wiped clean prior to entry into the hospital and shall be clean at all times when moving throughout the hospital.
- Clean interior and exterior surfaces of HEPA filtered vacuum. Conduct detailed inspection of the vacuum to ensure clean, intact filters and proper seating of the HEPA filter on the filter gasket.
- Clean interior and exterior surfaces of HEPA filtered portable air scrubber. Conduct detailed inspection of the air scrubber to ensure clean, intact filters and proper seating of the HEPA filter on the filter gasket.
- Conduct detailed inspection of the HEPA filtered negative air machine to ensure clean, intact filters and proper seating of the HEPA filter on the filter gasket.
- Have available a HEPA filtered vacuum for the purposes of vacuuming dust and debris from equipment, materials, carts and personnel clothing
- Have available clean cloths and spray disinfectant or wipes for the purposes of wiping clean all equipment, materials and carts
- No tool belts, gloves, or rags shall be hanging from contractor belts or pockets. All small equipment (tool belts, tape measure, hammer, drywall saw, etc.) shall be placed inside cleanable portable containers.
- Have bunny suit ensemble (bunny suit, booties, hair bonnets) available
- Have booties available

Class I and Class II Controls – Select all that apply (√)

- Immediately replace a ceiling tile displaced for visual inspection
- Place HEPA filtered portable air scrubber in area with open ceiling tile.
- Immediately upon replacement of ceiling tile, vacuum personnel clothing, equipment, ladder and floor to remove dust and debris generated by removing and replacing the ceiling tile.
- Close door to work area – the room will serve as containment.
- Remove all equipment and materials from room prior to beginning work.
- Place tape and plastic over cabinets and shelving within room.
- Place HEPA filtered portable air scrubber inside work area.
- Place HEPA filtered portable air scrubber outside of work area (in adjacent occupied spaces).
- Seal unused doors with tape.
- Coordinate with the Control Room a shut-down of the Terminal Box or Variable Air Volume Box serving the work area prior to covering the supply air diffuser.
- Securely seal and block off supply air diffusers.
- Securely seal and block off return air grills

- Place MERV 11 filters over return air grills
- Securely seal and block off exhaust air grills
- Place MERV 8 filters over exhaust air grills
- Place tacky mat at corridor entrance into the work area. Change tacky mat as needed so it remains effective at capturing dust and debris.
- Place tacky mat within work area at the exit to the adjacent corridor. Change tacky mat as needed so it remains effective at capturing dust and debris.
- Capture dust during drilling by placing the nozzle of a HEPA filtered vacuum at the drill point.
- Capture dust during cutting by placing the nozzle of a HEPA filtered vacuum at the cut point.
- Maintain a clean work area by vacuuming all affected surfaces with HEPA-filtered vacuums.
- Contain construction waste before transport in tightly covered containers. All trash carts shall be wiped clean (on all surfaces and wheels) prior to exiting the work area and again prior to re-entry into the hospital after dumping at the loading dock. This may necessitate placement of cleaning materials at the loading dock entrance.
- Cover transport receptacles or carts; tape covering down unless solid lid. All covers shall be clean and not stored on the floor when not in use; the covers shall be stored in a clean container or bag.

Class III and Class IV Controls – Select all that apply (√)

- Remove or isolate HVAC system in area where work is being done to prevent contamination of duct system.
- Coordinate with the Control Room a shut-down of the VAV serving the work area prior to covering the supply air diffuser(s).
- Install all critical barriers,(i.e., sheetrock, plywood, plastic), to seal area from non-work area per attached infection control schematic.
- Install hard-wall barriers without anteroom.
- Install hard-wall barriers with anteroom.
- Install plastic wall barriers without anteroom.
- Install plastic wall barriers with anteroom.
- Install plastic sheeting above the ceiling up to the ceiling deck.
- Seal holes, pipes, conduits, and all other penetrations through containment barrier.
- Maintain negative air pressure within work site utilizing HEPA-equipped air filtration units.
- Discharge negative air to: _____ (write in discharge location)
- Place manometers with data logging or printing capabilities in each anteroom. Measure pressure differential between work areas identified in the infection control schematic. Program alarm set point at - 0.02 or -0.03 inches water gage (circle selection).
- Place HEPA filtered portable air scrubber inside work area.
- Place HEPA filtered portable air scrubber inside anteroom.
- Place HEPA filtered portable air scrubber outside of barriers at work area entrance.
- Do not begin construction work until barriers and other infection controls are inspected by the Infection Preventionist and an infection control permit is issued.
- When bunny suits, booties and hair bonnet/hat cover are required, all clothing should be stored off the floor inside the anteroom
- Bunny suits shall be worn by all subcontractors within work area while dusty tasks are being performed. These tasks include demolition and installation/sanding drywall.
- Contain construction waste before transport in tightly covered containers. All trash carts shall be wiped clean (all surfaces and wheels) prior to exiting the work area and again prior to re-entry into the hospital after dumping at the loading dock. This may necessitate placement of cleaning materials at the loading dock entrance.
- Cover transport receptacles or carts; tape covering down unless solid lid. All covers shall be clean and not stored on the floor when not in use; the covers shall be stored in a clean container or bag.
- Anteroom shall be clean at all times.
- Maintain a clean work area by vacuuming with HEPA-filtered vacuums.
- Maintain a clean work area. Use dust suppressant when broom sweeping.
- Workers are required to vacuum their clothes with a HEPA vacuum while in the anteroom and before exiting the work site

- Workers are to wear bunny suits, booties and hair bonnets/hat covers when exiting the work area.
- All personnel entering work site are required to wear shoe covers (booties). Shoe covers must be changed each time the worker exits the work area.
- Install new HVAC ductwork using clean duct protocols - cover all open ducts at the end of each shift.

When work is above ceiling and requires the use of an Environmental Containment Unit – Select all controls that apply (√)

- Access above ceiling using a containment cube that has been cleaned on all interior and exterior surfaces
- Depressurize the containment cube using a HEPA filtered negative air machine
- Place HEPA filtered portable air scrubber in the work area and near the exhaust discharge of the containment cube
- Prior to exiting the cube, thoroughly clean (vacuum and wipe with disinfectant) the cube interior and all materials and equipment within the cube
- All work personnel shall thoroughly vacuum clothing and shoes prior to exiting the cube. Hard hats and high visibility clothing shall also be clean.
- Workers are to wear bunny suits, booties and hat covers when exiting the containment cube
- Contain construction waste in tightly covered cleanable containers.

Cut-out Box (Bird-box) Controls – Select all that apply (√)

- Use cutout box (bird box) when cutting drywall and/or installing electrical box and/or pulling cable into the box
- Depressurize cutout box using a HEPA filtered vacuum
- Prior to removing the cutout box from the wall, thoroughly vacuum all dust and debris from within the box, and then wipe the box interior with disinfectant
- Contain construction waste in tightly covered cleanable containers.

At the end of all construction select the appropriate activities that must be completed prior to patient/resident and staff occupancy (√)

- Coordinate construction turnover sequence with Epidemiology/Infection Preventionist/Industrial Hygienist
- Perform a construction area clean by wiping all work surfaces with disinfectant.
- Perform a construction area clean by wet mopping.
- Perform a construction area clean by vacuuming the floor, walls and other affected surfaces at the completion of work using a HEPA filtered vacuum.
- Coordinate an Environmental Services EVS terminal clean at the completion of the work.
- Coordinate an EVS triple-terminal clean at the completion of the work.
- Remove isolation of HVAC system in areas where work was performed.
- Perform test, balance and adjustment of the HVAC system as required by Facilities Management.
- Do not remove barriers from work area until completed project is inspected by the Infection Preventionist.
- Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.

List any additional controls not included above

Permit approved by: _____

PRINT NAME

SIGNATURE

Date: _____