

The Importance of Conducting a Comprehensive ICRA



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Conducting an Infection Control Risk Assessment (ICRA) in a healthcare organization is essential for minimizing the risks of acquiring and transmitting infections. The Joint Commission (TJC) has identified the need to conduct an ICRA when significant changes occur in the environment, community, or patient population as documented in the Infection Control (IC.01.03.01) and the Environment of Care (EC.02.06.05) standards. This is particularly true when conducting construction activities, especially demolition, where the risk of airborne dust and mold is the greatest and functionality of supporting utility systems can be jeopardized. Since the infection prevention program relies on the environment to provide controls for patient care, conducting an ICRA requires the cooperation between Infection Prevention, Engineering, and Nursing.

The Center for Medicare and Medicaid Services (CMS) also requires an active program of prevention and control to avoid sources and transmission of infectious and communicable diseases (Condition of Participation 482.42). Therefore, an organization must have a program to conduct and assess risks, implement measures to control, mitigate, or eliminate identified risks, monitor control measures to determine their success, and institute modified or new measures to achieve that goal when necessary. The size, in square footage or cost, does not dictate the need or exclusion of the ICRA, but whether or not the activity will impact negatively on a patient is the criteria.

In addition, the Centers for Disease Control and Prevention (CDC) also identifies the need for conducting an ICRA during construction in the guidelines, "Recommendations for Environmental Infection Control in Health-Care Facilities Recommendations," (Air Section II). It states that:

- Before the project gets under way, perform an ICRA to define the scope of the activity and the need for barrier measures
- Determine if immune-compromised patients may be at risk for exposure to fungal spores from dust generated during the project
- Develop a contingency plan to prevent such exposures

Identifying the Risk Elements:

For “construction” projects, including renovation and demolitions activities, TJC has identified six risk elements that must be evaluated as part of the Pre-construction Risk Assessment (PRA) process prior to initiating the activities (EC.02.06.05 EP2). These include:

- Air Quality
- Infection Control
- Utility Systems
- Noise
- Vibration
- Other Hazards

The PRA also requires an assessment of the impact of the project on the fire protection features of the building in accordance with the Life Safety Code, NFPA 101, 2000 Edition and the implementation of the appropriate Interim Life Safety Measure (ILSM) as needed.

The degradation of air quality or the restriction of a utility system can also have a negative impact on the infection prevention process and should be evaluated as part of the ICRA. Air quality, which includes temperature and humidity, may not be directly related to the transmission of a disease, but elevated humidity in the sterile storage area can result in mold formation and contaminate the sterile supplies held in storage. The same for changes in the ventilation rates, air exchanges per hour, and directional airflow, which can have a negative impact on patients in an area away from the project. This requires the collaboration of the Engineer and Infection Preventionist to determine the impact and identify the control measures required. The greatest attribute for minimizing the transmission of infectious organisms, outside of hand washing, is considered the movement of air throughout the facility. The risk of a change in the design airflow or the necessity for increased or specialized ventilation is greatest during construction, renovation, and demolition activities.

However, many repair activities may also “upset” the air balance creating a risk to immuno-compromised patient or the staff. For example, this may occur while servicing an elevator that requires the top and bottom of the shaft to be opened to the facility, causing a chimney effect, and changing the airflow patterns throughout the building. Such an activity requires the assessment of each task by individuals knowledgeable in the process and implementation the appropriate control measures. These control measures may even require the movement of patients and closing of a department.

Conducting the Process:

The assessment of the project can be done in a variety of ways and an Assessment Matrix can assist in identifying the risk based on the “type” of activities being considered and the “areas” involved in patient care activities. The assessment should not only consider just the immediate area of the project, but also the areas nearby or served by the supporting utility systems. By recognizing the Type and Area, the “Class” of the risk in the matrix will be identified and lead to a list of Suggested Control Measures that may be needed. The Assessment Matrix utilizes the professional opinions of the individuals responsible for taking the actions needed to reduce or eliminate the risks.

Assessment Matrix				
Activity Conducted: Choose one			Areas Involved: Choose one	
	Type A: Inspection and non-invasive activities, with no air quality issues			Group 1: Low or minimal risk, i.e., offices or waiting areas
	Type B: Small scale and short duration activities with minimal air quality issues			Group 2: Medium risk in non-invasive areas, i.e., radiology, food services
X	Type C: Large scale projects that generate moderate to high levels of air quality issues		X	Group 3: Medium/High risks, i.e. nursery, operating rooms
	Type D: Major construction activities, including demolition, with significant air quality issues			Group 4: Highest risk, i.e., bone marrow or immune-compromised patient isolation, sterile processing
Circle the Class based on the Activity Type and Area Involved				
	Group 1	Group 2	Group 3	Group 4
Type A:	Class 1	Class 2	Class 2	Class 3
Type B:	Class 1	Class 2	Class 2	Class 3
Type C:	Class 1	Class 2	Class 3	Class 4
Type D:	Class 2	Class 3	Class 4	Class 4

For example, the “large scale” renovation project in the nursery would equate to a Class 3 Risk in the Assessment Matrix. Once the relative risks have been assessed and the Risk Class identified, the list of Suggested Control Measures for Class 3 should be reviewed and the applicable measures implemented. However, unless otherwise indicated, all of the measures included in that Class must be implemented before the project begins. If one of the suggested control measures in the list is not required, it should be denoted or eliminated from the form.

Suggested Control Measures	
Class 3	1. Identify and relocate any compromised or contagious patient near activities.
	2. Cover register and vents to isolate the HVAC system from construction activities.
	3. Install dust barriers or utilize control cube techniques.
	4. Maintain negative air pressure with HEPA equipped air filtration units.
	5. Clean work areas with HEPA filtered vacuum cleaner.
	6. Mop with the appropriate disinfectant.
	7. Clean work areas frequently and carefully to minimize the spread of dust and debris.
	8. Contain construction waste in tightly covered containers before transporting.
	9. Place adhesive, walk-off mats at entrance and exit of work area.
	10. Seal holes, pipes, conduits, and punctures appropriately to contain dust.
	11. Wear the appropriate cover apparel, including shoe covers, when working in the construction area, or vacuum or cover work attire when leaving the construction area.

Prior to beginning the project, the implementation of all appropriate control measures should be verified and documented on an ICRA Inspection Checklist. If a universal list of control measures is used, identify whether a control measure is required or not, and provide the status of the control during the inspection. This same form can be used for subsequent inspections to verify the status of the control measures and the mitigation of the impact of the project on the patients. If a control measure is not mitigating the risk, a new or modified control measure maybe needed.

ICRA Inspection Checklist		Required		Status	
Class 3: Suggested Control Measures		Yes	No	Pass	Fail
		1.	Identify and relocation compromised or contagious patient near activities.		
2.	Cover register and vents to isolate the HVAC system from construction activities.				
3.	Install dust barriers or utilize control cube techniques.				
4.	Maintain negative air pressure with HEPA air filtration units.				
5.	Clean work areas with HEPA filtered vacuum cleaner.				
6.	Mop with appropriate disinfectant.				
7.	Clean work areas frequently and carefully to minimize the spread of dust and debris.				
8.	Contain construction waste before transport in tightly covered containers.				
9.	Place adhesive walk off mat at entrance and exit of work area.				
10.	Seal holes, pipes, conduits and punctures appropriately to contain dust				
11.	Wear the appropriate cover apparel, including shoe covers, when working in the construction area, or vacuum or cover work attire when leaving the construction area.				
12.	Other:				

As can be seen from the Assessment Matrix, air quality issues are a major concern, primarily the direction of the airflow and contaminants that might be involved. This may require the utilization of a portable HEPA filtration system to create the appropriate negative pressure or, when deemed necessary, provide a recirculation system in areas that cannot be exhausted to the outside environment. The use of the appropriate filtration systems is essential along with the suitable HEPA filter, preferably “certified” to provide the required filtration performance. The use of pressure monitors should be considered as well. Monitoring air pressure differentials will ensure correct levels of airflow and air pressures.

Continuing the Assessment:

Since most projects have multiple stages of activities, usually beginning with some demolition, followed by the “build-out” of walls, counters, and ceiling, and finished with work such as painting and laying carpeting. An ICRA should be conducted to “assess” the addition of new or elimination of old risks determining the appropriate control measures for each stage. If the initial assessment determined that the risks were at Class 3, but the finishing stage was at Class 2, a number of the control measures implemented initially would not be utilized. However, some new control measures could be needed and added to the list. Conducting “phased” assessments, with implementation and documentation of the appropriate measures, is extremely important for documenting compliance. Conducting a “simple” ICRA on maintenance activities is also a good idea to prevent any negative impact on patient care conducted in the area.

Summary:

Not only is conducting the ICRA a requirement for compliance with the appropriate guidelines and accreditation standards, it is also a necessity to prevent negative impact on patients in a healthcare organization. It requires the commitment of the individuals with expertise in the specific areas to conduct the assessment, identify the necessary control measures, and document that the control measures are implemented and followed. Without the proper inspection process, documentation is not available to demonstrate compliance.