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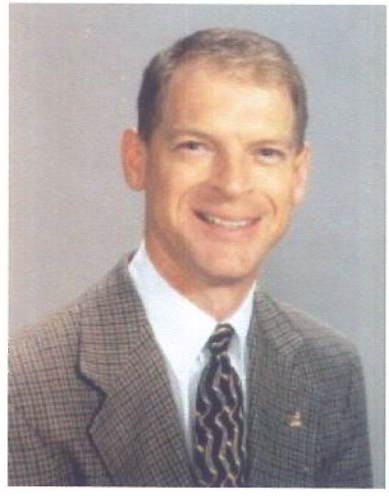
HEALTHCARE CONSTRUCTION INFECTION CONTROL (ICRA)



By: Peter Cappel, Vice President Mountain Division
Sr. Industrial Hygienist

The Center for Disease Control (CDC) estimates that 5,000 patients die every year from nosocomial infections, also known as a hospital acquired infections, associated with construction, renovation and maintenance activities.

This article provides an overview of the requirements and guidelines that healthcare facilities must follow to protect immune compromised individuals from exposure to infectious agents during construction related activities.

Construction projects conducted within occupied and functional healthcare facilities present a number of unique challenges. One of those significant challenges is protecting immune compromised individuals from exposure to infectious agents during construction, remodeling, and maintenance projects.

Immune compromised individuals are more susceptible to various airborne and waterborne biological contaminants. For example, infections can be caused by fungal growth that is often associated with water-damaged building materials or general construction dust. Aspergillus fungi can cause Aspergillosis that is difficult to diagnose and treat and has a high fatality rate.

It is now a requirement of the American Institute of Architects (AIA) "Guidelines for Design and Construction of Hospital and Healthcare Facilities" - 2006 edition, that a healthcare facility perform an Infection Control Risk Assessment (ICRA). The ICRA should also provide Infection Control Risk Mitigation Recommendations (ICRMR) that describe the specific methods by which transmission of airborne and waterborne biological contaminants will be avoided during construction.

By performing ICRAs and more effective planning, healthcare facilities can better protect immune compromised patients. Also, mandatory work practices and engineering controls should be established in facilities for repair and maintenance activities. The primary method in the healthcare industry to develop an ICRA is the use of matrices to classify the construction or maintenance project, patient risk level to infection and level of control measures.

The matrices break construction and maintenance activities into various categories, then define patient risk groups. Based on the type of construction or maintenance activity and the patient risk level a class of work practice and engineering control precautions are selected. Minimal precautions will be implemented in areas for low risk patients when minor construction activities are conducted. As the patient risk level increases and construction activities increase the engineering control measures are elevated.

During major demolition adjacent to high risk patient groups, the work practices and engineering controls implemented will be significant. They may include, constructing temporary barriers to isolate the construction area, establishing negative pressure in the construction area, isolating mechanical systems, instituting dust control procedures, etc.

The following link is to an example ICRA matrix that is available on the American Society for Healthcare Engineering (ASHE) website:

http://www.ashe.org/ashe/codes/cdc/pdfs/assessment_icra.pdf

Construction procedures that can heighten infection risk in healthcare environments include demolition using inadequate barriers, exterior-wall removal, core drilling, etc. The purpose of performing ICRA's and implementing work practices is to reduce the risk of transmission of pathogens from areas of construction, remodeling, and maintenance projects to the occupied indoor environment.

A significant cause of construction-related infections is airborne mold. Mold can become airborne during disturbance of building materials. Thus, the key to controlling nosocomial infections is to control airborne mold and construction dust. Another concern is exposure to airborne bacteria, such as legionella. Water systems can be reservoirs for bacteria and exposure to occupants can occur when these systems are not properly addressed. When plumbing systems are to be out of service for an extended period of time, the system should be isolated and if possible, drained, and sanitized prior to being put back in service. Efforts should be made to avoid creating dead legs and any existing dead legs should be eliminated if possible. Dead legs can cause water to stagnate and provide reservoirs for legionella to grow.

The keys to a successfully construction infection control program are:

- Assembling an interdisciplinary team with expertise in infection control to develop the ICRA,
- Ensure that all individuals responsible for implementing the ICRA are properly trained,
- Developing standards for isolation barriers and other protective measures,
- The owner shall provide evaluation of the effectiveness of the applied ICRMR.
- Ensure that the construction-related ICRMR are incorporated into the project requirements.

The following are several agencies and organizations that can provide additional information:

The Joint Commission
www.jointcommission.org

Association for Professionals in Infection Control and Epidemiology
www.apic.org

American Institute of Architects
www.aia.org

Centers for Disease Control and Prevention Healthcare Infection Control Practices Advisory Committee (HICPAC)
www.cdc.gov/ncidod/dhqp/hicpac_charter.html

About the Author:

Mr. Cappel oversees the daily operation of the GHP Denver office. He serves as a project manager and client contact for various asbestos, microbial, and infection control projects. Mr. Cappel teaches programs on asbestos, mold, meth lab remediation, indoor air quality, and healthcare construction

infection control. He has conducted asbestos and lead paint inspections and airborne lead exposure assessments for general industry, educational facilities, state and federal governments, and healthcare facilities.

Mr. Cappel's experience in industrial hygiene and environmental health and safety includes: conducting industrial hygiene and environmental health sampling and surveys; asbestos industrial hygiene technician, instruction in general employee safety orientations; development and supervision of asbestos air sampling program; conducting surveys and sampling for ethylene oxide, formaldehyde, asbestos, noise, ventilation, radon, PCB's lighting, ergonomics, airborne pathogens and other work place hazards; conducting asbestos and hazardous chemical audits and writing management plans; managing industrial hygiene technician team. Mr. Cappel can be reached at (303) 919-7139 or pcappel@ghp1.com.

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