HCPro

Infection Control During Construction HANDBOOK

Tips to Keep Patients Safe

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Steven A. MacArthur, Contributing Editor
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For more information, contact:

HCPro, Inc.
P.O. Box 1168
Marblehead, MA 01945
Telephone: 800/650-6787 or 781/639-1872
Fax: 800/639-8511 or 781/639-2982
E-mail: *customerservice@hcpro.com*

Visit HCPro, Inc., at its World Wide Web sites:
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About the expert

Steven A. MacArthur

Steven A. MacArthur is a safety consultant in the Accreditation and Regulatory Compliance Division of The Greeley Company in Marblehead, MA. He is responsible for conducting on-site safety assessment and educational programs, survey preparation for safety leaders, development of comprehensive programs related to the environment of care, and various other consulting/professional services.

Prior to joining The Greeley Company, MacArthur was the manager of safety and security services at Brockton (MA) Hospital.

Infection Control During Construction Handbook

Tips to Keep Patients Safe

Introduction

Did you know that patients are at an elevated risk of infection whenever they are in a healthcare environment, and that risk increases during construction projects? This fact places the construction worker squarely on the front line with hospital staff when it comes to protecting patients from infection. In addition to avoiding the spread of infection, you need to contain the dust your work creates because it can affect everything from a patient's allergies and breathing to the clogging of medical instruments and smoke detectors.

Almost 2 million people each year acquire infections during their stays in hospitals. Of those who acquire infections, almost 100,000 people die from them—and 5,000 of those deaths are caused by infections spread through air, water, and construction-related activities.

The majority of healthcare facilities continuously undergo construction and renovation projects. Therefore, hospitals face increasing scrutiny from various regulators to strengthen their infection control efforts, particularly in the area of construction. One of the overriding concerns is that patients should get better during their hospital stays—not sicker. This is where you play an important role in a facility's infection control plan.

Remember, anytime you come on-site to begin a project, no matter how small or easy, you run the risk of infecting patients. Fortunately, there are steps you can take to make sure you protect patients during construction in a healthcare environment's unique setting.

Construction activity

In the healthcare setting, construction activities usually fall into one of the following categories:

- Minor repair and system replacements
- Major system upgrades
- Area renovations
- Major additions
- Adjacent construction

Often, a facility will undergo more than one of these projects simultaneously.

The most common construction activity is updating plumbing, piping, security, communications, data, and electrical systems. Such activities involve opening ceiling cavities and, in some cases, walls—in short, demolition. The exposure to contaminants may be brief, or it could last for days. Either way, all of these activities have the potential to spread contamination into occupied spaces if not properly controlled.

Major improvements to areas such as operating suites or patient floors often involve demolition of existing areas and concrete core drilling or cutting, along with new dry wall work. As you know, none of these activities can occur without raising some dust, which means they expose patients to potentially infectious contaminants.

Adding a new wing or major addition generally involves a higher level of awareness and is often easier to control. With more attention to planning and additional supervision by you or facilities' staff, it is possible to control the spread of infection.

On the other hand, a stand-alone project is often perceived as an irritation to staff and a disruption to normal traffic flow. Although such projects can be less of an infection control issue than others, their work environments may be harder to isolate, so it's important to treat them with the same respect. Remember, if you're working in close proximity to patients—regardless of the size and complexity of what you are doing—the risk is elevated and you must take every precaution.

New construction generates large amounts of airborne dust and debris that can find their way into existing buildings. Even construction outside a facility can leave it open to contamination. A good example of this situation is adjacent freeway construction or the building of a partially subterranean parking garage. In both cases, the projects churn and displace large amounts of soil, releasing fungal spores into the air. It's important to work with the facility staff to ensure that air intakes and other porous aspects of the building are sufficiently protected and that the risk of infiltration of contaminants is reduced to the lowest possible level.

Know your job site

When working in the healthcare setting, be aware of the job site at all times. In nonmedical settings, you are used to working with potentially hazardous equipment and materials. But when you arrive on the healthcare job site, you take on a whole new responsibility.

Besides knowing what system might be behind a wall before you break it down, it's just as important to be aware of patients, staff, and visitors around you. Once you come on a job site, you become part of the patient-care team.

Above all else, make sure what comes to the job site stays there—and doesn't infect patients and others around you.

TIP

Know the scope of your project and how it will affect patients. Know your proximity to at-risk patients. Establish a plan to protect them. Monitor compliance with the plan—and make sure that your coworkers practice clean working habits.

Risk assessment

Before starting a construction project, perform a risk assessment with key hospital staff, including the safety officer, infection control professional, and nurse managers on the patient units on or near where you will be working. Each of those staff members has different concerns about the work you do.

As a team, identify all the susceptible patient populations in the hospital and those who might be affected directly or indirectly by the project. Note the areas in the hospital, such as operating rooms, transplant units, and cardiac intensive care units, that house the most vulnerable patients. During expansion of a nursery, for example, any patient or staff member within 75 ft of the construction site may be at risk for exposure to contaminants unless you take certain precautions.

Patients are not the only ones at risk of infection during construction projects. The risk assessment should take into consideration hospital staff and visitors to the facility. The important step is to establish a perimeter of the area affected and identify protective measures for the environment within that area.

Areas of focus

To ensure the protection of patients, establish a game plan for each healthcare job site with the following areas of focus:

- Containment of the job site
- Entry and exit of the job site
- Containment and transport of construction materials
- Methods of decontaminating construction crews
- Cleanup of the job site

This handbook will guide you through the do's and the don'ts of preventing the spread of infection when performing construction in a healthcare facility.

Containment of the job site

As you know, there are two primary components of any construction project: demolition and construction. Containment of the job site is a critical first step in protecting patients from the spread of contaminants. Adhere to the motto "what comes in—stays in."

"What comes in—stays in."

Any material you bring to the site must stay at that location, even if it's brand new. Every type of material contains matter that increases the risk of contamination.

Begin containment of the work site by shutting the surrounding doors and keeping them closed. Seal the area with fire-rated plastic and use a high-efficiency particulate air (HEPA) filter to control any dust and purify the air. The HEPA unit also helps keep the construction site under negative air pressure relative to the surrounding environment. Test for negative air pressure because it is critical to ensuring that contaminants are not leaching out into the surrounding environment. Remember, however, that there are degrees of negative pressure, so you should regularly test the pressure levels.

There are several simple methods of checking pressure levels in the construction space: You can use a smoke tube, a piece of audiocassette tape, or a piece of tissue paper. Standing outside the workspace, place the device about 2 in in front of an exit door, making sure to hold the device parallel to the door. If the space is at negative pressure, the smoke, tape, or tissue should move toward and under the door—into the room. If the device remains limp or if it's pushed back away from the door, you don't have negative pressure and need to make adjustments. Check those seals and make sure that your HEPA filter is working appropriately.

Work areas that contain air vents could potentially spread dust and debris to nearby locations. Obtain permission from the

safety officer and the facilities manager to block vents and, if necessary, cover components of fire alarm systems (e.g., smoke detectors). Tightly seal them with plastic and duct tape or other form-fitting materials.

Seal the job site with floor-to-ceiling fire-rated plastic sheeting, using duct tape around all the seams. Doing so will help control dust and debris and maintain fire protection in the job space.

Run construction tubing or a chute out a window down to a trash bin at the base of the building. It will allow you to remove larger debris without traveling through patient areas.

In the risk assessment, consider patient transportation near the work site. Work with the safety officer to establish alternate routes for staff and patients, especially if your work affects fire exits or evacuation routes.

Entry and exit of the job site

Avoid dragging dust and dirt from your work site into other parts of the facility. Assess the volume of dust and dirt in the area and make sure you're not taking it with you. Use tacky mats, also known as walk-off mats, to collect dust and other contaminants from your footwear as you enter and exit the job site. Change them as often as necessary—once they get dirty, they aren't as effective in removing dust and debris from shoes.

If the workspace is particularly dusty, buddy up with a coworker to ensure that your (and their) clothing is relatively dust-free before leaving the space. Also, as a general safety rule, if your exit door opens to the corridor, take extra care when leaving the construction space.

Containment and transport of construction materials

Moving materials to and from your work site requires you to take care in keeping containers and other storage units free of dust and debris. For example, if you use a banana cart to transport cable wires from the site, cover it with a plastic tarp or some other nonporous material. Also, clean off the outside of the cart before exiting the work site. This process, along with regular entry to and exit from the work space, is among the most risky because it leaves the barrier between clean and dirty at its weakest. But it only takes a few minutes to make sure that you've taken care of any possible contaminants before you leave the space.

Methods of decontaminating construction crews

Carts and other construction materials aren't the only objects that need to be cleaned when you enter or exit the job site. Construction site materials that remain on you when you leave the work area can potentially be harmful to patients as well, especially those whose immune systems do not function normally.

Every job site is different, but one of the most efficient ways to keep material contained in the work site is to provide removable overalls or Tyvek suits for all of your workers. Tyvek suits can be removed and thrown away without fear of transporting contaminants outside the work site. Consider wearing the hooded suits with boots and gloves.

If Tyvek suits and removable overalls are not available, use the "buddy system" to remove excess dirt and clean off with a HEPA vacuum before exiting the work area. Ask a coworker to brush you off or use the HEPA vacuum to remove any excess dust and particles you can't readily see or reach.

TIP

Wear removable overalls or Tyvek suits; after using them, dispose of them properly. Use the buddy system to remove excess dirt and clean coworkers off with a HEPA vacuum.

Cleanup of job site

Using a tube or chute to dispose of materials outside the building will help you eliminate some of the mess on the job site. Use the HEPA vacuum to get rid of any lingering impurities and use covered carts to remove equipment and materials you used.

Establish alternate routes when removing contaminants from the site, and, if possible, designate times to transport material that are least disruptive to the flow and care of patients.

When dismantling your barriers, first wipe them down with a wet cloth. Next, fold the contaminated barrier into itself and place it in a covered cart. As an added precaution, wipe down the cart for any excess dust or particles.

Leave the work site in better shape than you found it.

TIP

Use covered containers when moving materials from the job site. Wipe down the cart before exiting the area.

Case study

Seventeen contracting firms worked simultaneously on a variety of projects at a major medical facility in Southern California. The work ranged from repair and renovation of plumbing systems to complete demolition and remodeling. The facility was also undergoing a facilitywide computer-system and communication upgrade, further adding to the confusion.

Although the major remodeling was largely contained to two floors, the cabling upgrade involved the entire facility, and at one point the cabling contractor had more than 80 men working two shifts on multiple floors. The project included construction of equipment rooms and hefty electrical work. All of these projects going on at one time made controlling the facility all but impossible.

As the cabling project progressed, the ceiling cavity became a chaotic nightmare of workers, tools, equipment, and materials. As workers pulled cable bundles through the space from opening to opening, debris was dragged

across the upper ceiling surface and dropped into the occupied area through the next opening.

With so many projects going on simultaneously involving so many workers, regular meetings with key personnel from each of the different projects would have helped eliminate some of the problems. The cabling project in particular proved the most challenging. Workers needed to know beforehand that a mass of tools and debris in the ceiling cavity would present an infection control nightmare.

Summary

Are you ready to work in a hospital? It always comes back to the safety of patients. Know the location of patients near your job site at all times. These are the key focus areas for protecting patients, staff, and visitors:

- Containment of the job site
- Entry and exit of the job site
- Containment and transport of construction materials
- Methods of decontaminating construction crews
- Cleanup of the job site

If you have any questions, consult the project manager, facilities manager, infection control professional, safety officer, or staff member in charge of the unit.

"What comes in—stays in."

Quiz

1. Almost 2 million people each year acquire infections directly related to construction projects at hospitals where they are being treated.

   True or false?

2. Only large construction projects have the potential to spread contamination.

   True or false?

3. A construction project located near the hospital where you are working poses a threat of infection to patients.

   True or false?

4. Name three hospital personnel with whom you should conduct a risk assessment prior to starting a project.

   _____

   _____

   _____

5. The risk assessment, among other considerations, should identify all of the susceptible patient populations near your work site.

   True or false?

6. Name the five areas of focus that construction crews should follow to ensure the protection of patients, as discussed in this handbook.

_____

_____

_____

_____

_____

7. New construction materials have the potential to increase the risk of infection.

   True or false?

8. You do not need to obtain permission from the safety officer to seal vents in your work area.

   True or false?

9. Banana carts or other containers should remain uncovered when transporting materials from the work site.

   True or false?

10. The buddy system is an acceptable alternative to wearing Tyvek suits or removable overalls to keep contaminants off your clothing.

    True or false?

Quiz answer key

1. False
2. False
3. True
4. Safety officer, head nurse, infection control professional
5. True
6. Containment of the job site, entry and exit of the job site, containment and transport of construction materials, decontamination methods, and cleanup of the job site
7. True
8. False
9. False
10. True

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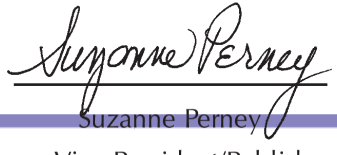

Suzanne Perney

Vice President/Publisher