

**MEDICAL DEVELOPMENT:
THE CHALLENGES**

Diagnosing the risks of healthcare construction



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With the aging population, almost daily medical technology breakthroughs and increased competition in the healthcare arena, construction and renovation of healthcare facilities is more common than ever.

This type of construction, however, comes with great risk, as most work is done in areas of heavy traffic or only a few feet away from patients who may already suffer from compromised immune systems.

That said, it's vital that risks of construction be assessed and controlled for all healthcare projects.

Planning for new construction or major renovation requires early consultation and collaboration among the project superintendents, construction project managers, architects, design engineers, risk and safety professionals, hospital administrators and

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physicians, infection control professionals and healthcare facility managers.

Due to its delicate nature, healthcare construction has become highly specialized and requires the work of trained, seasoned general contractors who understand the countless considerations and sensitivities when building or renovating healthcare facilities.

Once the risk assessment team is assembled, an in-depth analysis of the size, scope and location of the construction should be completed. Based on that analysis and the associated risk levels, a comprehensive risk assessment plan should be developed that outlines preventative and responsive procedures.

The following topics are five focus areas that frequently require special attention and will likely be the core of most risk assessment plans.

Air quality

The question most commonly posed with regard to air quality is, "What odors or airborne hazardous elements may be present during construction or renovation?"

To reduce strong odors from paint-

ing, torch burning, solvents, etc., the general contractor should try to substitute low odor materials and chemicals. When possible, the contractor should also perform work during non-patient care hours. Other tactics, such as prohibiting construction vehicles to idle on site, will also help reduce odors.

Airborne hazardous elements, such as asbestos, may be present and require abatement before any construction begins. In some cases, these elements have been in or around the healthcare facility for years and do not typically pose a problem unless disturbed. Construction has the potential to disturb these materials, so general contractors should have awareness training and need to be familiar and comply with applicable local, state and federal regulations (i.e., OSHA, EPA).

Other common airborne hazardous elements include fungi, lead and mercury, which also require advance inspection and planning.

Infection control

Under current Guidelines for Design and Construction of Hospital and Healthcare Facilities (used by the American Society for Healthcare Engineering (ASHE) and published by the American Institute of Architects (AIA)), an Infection Control Risk Assessment (ICRA)



PHOTO PROVIDED BY LEOPARDO CONSTRUCTION

Leopardo Construction completed the 20,700 square foot Surgical Center of DuPage Medical Group building in Lombard in late September.

must be part of every healthcare construction project. New 2006 rules will also require that the ICRA plan be implemented by a panel with expertise in infection control, risk management, facility design, construction, ventilation, safety and epidemiology.

Barrier systems, isolated HVAC, walk-off mats, protective clothing, cleaning procedures, traffic control,

hospital staff notification, dust control and water intrusion are just some of the infection control considerations that need to be made before healthcare construction can begin.

At Advocate Christ Medical Center, a 662-bed hospital in Oak Lawn which has more than 120,000-square-feet under construction, hundreds of con-

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trol measures have been implemented, such as those to prevent infection, control traffic and dust.

For example, an entire ramp and stair structure was built outside the hospital leading to the roof where materials and tools are transported through a labyrinth of wooden ramps and supports, and finally enter the building through a new window that is part of a 15,000 square foot neonatal intensive care unit renovation project.

These procedures give construction workers direct access to the site, which makes them more productive, significantly reduces dust and noise, and also prevents any interruption of patient and staff traffic areas.

Utilities

There is no room for error when working with utilities such as electric, water, natural gas, HVAC and medical gas. General contractors must know the routing of existing utilities at their site and implement the necessary control measures.

If not required by the healthcare facility management team, a good practice is to give hospital staff a two-week notice of any planned loss of utility.

Fire detection is one utility that sometimes gets overlooked. Because smoke detectors can be affected by dust and minor smoke (i.e., from soldering), some contractors will cover them, thus losing its sensors and its ability to detect fire hazards.

Since this small oversight can lead to major consequences, an alternative must be made. One alternative is to replace temporary inactive smoke detectors with heat detectors to maintain fire protection and prevent false alarms.

Noise and Vibration

Noise and vibration are a proverbial Catch 22. At first, contractors may think to avoid nighttime noise and vibration because most patients are sleeping. However, daytime will not work either because procedures and treatment are taking place.

Even at moderate and low levels, noise and vibration can potentially compromise patient treatment and services. Vibration can also disturb calibrations of healthcare tools, which have precise settings.

Daily or weekly notices of all construction activity and related noise and vibration levels will allow staff to notify patients, visitors and other health-

care facility workers.

Construction activity mock-ups or noise/vibration tests for staff may be necessary to determine intensity levels and associated risk.

In cases where construction is taking place in or near sensitive areas (i.e., surgical units, neonatal units), extensive noise and vibration control measures must be implemented to prevent the risk of compromised patient care.

For example, at the construction site for the 141,000 square foot pediatric emergency department at The University of Chicago Comer Children's Hospital, an alert system is used where foremen or superintendents, upon receipt of a paged message by the client, can immediately activate a series of flashing emergency lights via remote control.

Almost instantaneously, all workmen, who were trained on this emergency procedure before they were allowed to enter the site, know to quickly and safely stop what they are doing. This safety procedure allows for an entire site shutdown in less than 15 seconds.

Emergency and life safety procedures

If you're working in a hospital, there is no need to dial 911 for emergency.

Most healthcare facilities have their own internal emergency systems, so, in addition to implementing all standard emergency protocol, the general contractor must identify and learn all new and unique internal emergency procedures (i.e., for fire prevention, utility interruptions, hazardous chemical spills, etc.).

Egression, sprinkler systems and construction barricades must also be carefully planned, with particularly close attention paid to traffic flow of both construction and non-construction workers.

There are countless considerations when constructing or renovating a healthcare facility. These five focus areas provide the foundation of a comprehensive risk assessment plan, but the first keys to success are identifying the right healthcare construction team and communicating at a higher level than required in most other construction markets.

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