

EXPLORATIONS



INFECTION CONTROL STRATEGIES

Provide Foundation for New Hospital Building

A Case Study on Infection Control at UC Irvine Medical Center, Orange, CA

INSIDE YOU WILL LEARN ABOUT:

The interdisciplinary infection control working group created to guide design decisions.

The methods used to protect individuals from infection during the construction process.

The design strategies implemented in the new facility to reduce the spread of infections.

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THE QUESTION

What infection prevention and control practices should be implemented at every stage of the design and construction process in order to create the healthiest environment possible for staff and patients?

THE GOAL

UCI wanted to build a replacement hospital that incorporated the latest infection prevention efforts.

Infection Control Strategies Provide Foundation for New Hospital Building

University of California Irvine Medical Center, Orange, CA

Infection Prevention Team Plays Key Role in Replacement Hospital Design and Construction

A hospital known for its consistent high marks, the University of California Irvine Medical Center in Orange County, California, recently decided to build on its reputation by constructing a new seven-story, 474,353 square foot teaching and research replacement hospital on its current campus.

Recognizing that the physical environment plays an important role in infection prevention efforts, the hospital formed an infection control working group to act as a guide from the initial design plans through to the extensive construction phase and beyond.

The group brought together representatives from infection control, facilities planning, maintenance, and construction to determine how best to implement infection prevention strategies within the design, planning, and construction phases of the new hospital building. They worked closely with UCI's Design and Construction Services (D&CS), a group of architects, engineers, project managers, inspectors, contract administrators, and support staff responsible for managing this initiative to implement research-based strategies to prevent the spread of infections in this new, modern space.

The Challenge

Throughout the project, which began over 10 years ago, many challenges arose that had to be addressed in order to reduce the transmission of infectious diseases, explains Linda Dickey, RN, MPH, CIC, Director of Epidemiology and Infection Prevention at UCI. As the new building would be constructed adjacent to the existing hospital, special care had to be taken to ensure that construction materials and



KEY FINDINGS

- 1 The infection control working group was actively involved right from the start of the hospital building plans.
- 2 Design features in the built environment were carefully selected to help prevent the spread of infections.
- 3 The design was created to support the way that care is provided in the space to make it user-friendly and safe.

Care had to be taken to ensure that construction materials and working spaces were protected to avoid exposure to pathogens.

working spaces were protected to avoid unnecessary exposure to pathogens (mold, bacteria, or airborne) that could pose the risk of illness.

The project also involved removing existing buildings. The demolition stage threatened to disrupt the normal flow of operations at UCI, so precautions were required to prevent the spread of illness.

In addition, some of the design features initially proposed by staff didn't meet infection control criteria, so infection control specialists had to redirect certain details relating to room placement, furnishings, air systems, and more.

Results

The infection control working group played an important role in troubleshooting these and other challenges as they arose, ensuring each stage progressed smoothly and safely. For instance, during the construction and demolition phases, some of the safety steps taken included the use of moisture and mold-resistant materials, sealing off building spaces from existing areas, protecting ducts and gas lines, and implementing provisions for project waste and debris.

Specific infection prevention principles were also integrated into the design of the built environment, such as hand washing stations conveniently placed inside patient rooms, separate storage spaces for clean and dirty linens and equipment, strategically designed isolated rooms, easy-to-clean solid surfaces (walls, floors, countertops, and furnishings), and designated accommodations for personal protective equipment. Furthermore, the design and placement of items within patient rooms was made as consistent as possible throughout the new building to improve staff efficiency and help reduce the risk of errors.

The workers involved in the project also received infection control training that highlighted the importance of these prevention steps and described how to apply them appropriately as construction progressed. Finally, Dickey says that the necessity of communicating with the infection prevention staff was emphasized so the workers could



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troubleshoot potential design changes that might compromise infection prevention strategies.

Conclusion

The new UCI Medical Center has been fully operational since 2011 and well-received by staff and patients. The infection prevention safeguards built into the overall design and individual rooms are functioning as expected to prevent hospital-acquired infections and the spread of communicable diseases.

“It’s hard to attribute our success entirely to the built environment because there are so many other strategies we have put into place simultaneously,” Dickey says. She points out that UCI Medical Center also implements strategies such as improvements with hand hygiene, compliance with use of personal protective equipment, best practices in cleaning surfaces and furnishings, and many other evidence-based best practices important for infection control in the healthcare setting.

Communicating with the infection prevention staff was emphasized to troubleshoot potential design changes that might compromise infection prevention strategies.

Design Team

Architecture/Design Firm: UC Design and Construction Services

Contractor: Hensel Phelps Construction