

## Promoting Evidence-Based Design in Healthcare Environments

BY DEBBIE GREGORY, RN, BSN

The United States is currently spending more than \$20 billion per year in hospital construction (Ulrich and Zimring, 2004). An emerging body of science links the design of the physical environment to staff and patient safety, and given this investment in hospital construction, it is important that healthcare professionals, particularly nurses, understand how evidence-based design creates healthy work environments for both staff and patients.

Ulrich and Zimring set the course for today's architects and designers to work hand in hand with hospital staff to design the hospital of the future. Their landmark study "The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a Lifetime Opportunity" documented the link between the physical environment and patient and staff outcomes in four areas: 1) increasing effectiveness in delivering care; 2) improving patient safety; 3) reducing stress and improving outcomes; and 4) improving overall healthcare quality.

When developing work friendly environments, hospital designs should create an environment that limits unnecessary steps and increases staff and patient contact. Evidence-based healthcare designs promote environments that are not only efficient for staff but also therapeutic, enhance family involvement, and restorative for workers under stress. For example, a workplace design that is closely aligned with workflow patterns creates efficiencies, improves staff retention, and patient satisfaction. Anjali Joseph, PhD, Director of Research for the Center for Health Design, states, "properly designed physical environments impact the health and safety of staff by: reducing infections, decreasing back pain and work-related injuries, reducing injuries from medical equipment, improving adjustment to night-shift work, and lessening noise stress" (Joseph, 2006). Poor ergonomic design of patient care equipment and nurses' stations can lead to nurse fatigue

and increased injuries. Joseph suggests that back pain can be reduced by instituting a no-manual lift policy, installing soft floors, and assessing ergonomic issues throughout the environment.

Other factors that designers should pay close attention to are lighting, noise levels, privacy issues, workflow patterns, and reducing infections. Dr. Joseph agrees that these that work environment factors contribute to healthcare errors.

Glen Cove Hospital, part of the 15-hospital North Shore – Long Island Jewish Health System, recently opened a new state-of-the-art critical care unit. According to Betty Olt, of the health system's department of public relations, "Nurses gave input on every step of the design." Ms. Olt points out that instead of one centralized nursing station, the facility has 10 nursing observation stations to 18 beds. This brings the nurse closer to the patient's bedside. Glen Cove critical care nurse, Stacey Lanza, RN, admits that the new nursing stations provide better direct observation of patients, cuts traveling time from one side of the unit to the other and "gives her more time with patients."

The North Shore – LIJ Health System is concerned with the amount of time nurses spend with their patients. The hospital recently participated in a study to track nurse's movements in order to understand how they spend their time. In 2006, nurses used an indoor position system to record their location to determine the amount of time they spent in each activity. As a result of this study, the health system is better prepared to create a more efficient healthcare environment in future construction projects. The nurses that participated in the study were happy to be "pioneers" paving the way for future generations of nurses so they can function more efficiently.

Architects are taking a lead role in redefining



healthcare construction. Architect Sheila Cahnman suggests several key questions should be discussed when considering new designs.

- What is the acuity level of the patient?
- Will the room be acuity-adaptable?
- What specialty service will be needed?
- What is the nurse-to-patient ratio?
- Will supplies and pharmacy be centralized or decentralized?
- What are the privacy and safety issues?
- What will families and patients need for comfort and improved satisfaction?

Working together, an evidence-based designer and an informed client make decisions based on the best information available from research and project evaluations. Nurses are becoming integral members of design teams. The Nursing Institute for Healthcare Design was formed to support nurses in this emerging role. NIHD inspires and educates nurses about healthcare design and construction. "Nurses need a resource to learn about the design and construction process, best practices, evidence-based design, and current trends in healthcare design," states Laura Hayes, co-founder of NIHD. "NIHD Connection, our new online resource, provides educational materials, case studies, helpful links, discussion forums, research, and a product gallery."

The healthcare environment is always changing. There are new ideas, space adaptations, technology, and financial restrictions. This emerging design discipline will continue to evolve as future research informs its link to better patient outcomes, improved patient safety, and nursing retention. Nurses can confidently participate with interior designers, architects, and contractors communicating and collaborating together to influence the future of healthcare for the next generation.

**Debbie Gregory, RN, BSN** is the Healthcare Design Director at the Nursing Institute for Healthcare Design.

NIHD Connection can be found at [www.nursingihd.com](http://www.nursingihd.com)

NIHD has partnered with the Center for American Nurses to offer a healthcare design track at the upcoming LEAD Summit, June 11-13, 2009 in Orlando, FL.

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