

Evidence-Based Design in the Cardiac Cath Environment

By Katherine Kay Brown

Over the last several years, industry trends reveal that as hospitals build and renovate, no longer is the goal simply to assure that procedural space can accommodate equipment and/or that rooms are sized according to code...Rather, organizations are directing focus to enhancing the in-hospital experience (for patients, families, physicians, and staff) while vying for volume in an increasingly competitive landscape...This scenario is especially significant in heart and vascular care—a service line with great revenue potential, though one that also involves rapidly-changing technology and high costs.

Furthermore, difficult economic times and shrinking reimbursement have placed further constraints on hospitals' ability to make facility improvements, renovations, and/or expansions. More and more hospitals have outdated buildings and less-than-optimal care settings, which can negatively affect clinical outcomes, operational efficiencies, financial profitability, and patient satisfaction of cardiovascular services.

In consideration of these factors, Corazon encourages the construction of a "flexible" building—one that will be able to support a variety of patient acuities, technologic advances, and care delivery approaches—using evidence-based design strategies that can bring added benefits without detrimental impact on the bottom line.

What is Evidence Based Design?

An effective way of addressing the above areas of focus is through the use of **evidence-based design**, proven architectural methods for improving patient outcomes, safety, and satisfaction, as well as staff morale and retention and operational efficiency through the built environment. Much research has been done on the impact of evidence-based design within the inpatient room. This includes:

- Using the **universal bed care delivery model**, which brings care to the patient in one private room for the entire hospital stay²
- Facilitating **patient control over the environment** through individual temperature and lighting controls and hotel-like 'room service' meals
- **Reducing patient stress** (both emotional and physiologic) through:
 - A relaxing atmosphere including all of the "comforts of home" – soothing wood tones, muted lighting, and access to natural light and outdoor views
 - Designated space and amenities for family within the patient room

- Private patient rooms and decentralized nursing stations, both of which eliminate noise and distraction
- Focusing on **patient safety** (reducing patient falls and medication errors) through:
 - Decentralized nursing stations near the patient room with all required supportive technology
 - Consistent room design wherein care process are automated and all equipment and supplies are in the same location in every room

Much has been published on the impact of evidence-based design, particularly related to the 'healing environment' on inpatient outcomes; however, this concept hadn't quite moved into the procedural setting...until now...

A Healing Environment in the CCL: The Ambient Experience Cath Lab Suite

At long last, the concept of a 'healing environment' is finally being integrated into the procedural room. Through architecture and technologies, patient anxiety resulting from invasive hi-tech equipment in a sterile setting can be lessened. For instance, the Ambient Experience CCL Suite (introduced by Philips Healthcare) allows patients to choose light and sound themes during their procedure, and even project scenes onto the ceiling, thus creating a radically different (and arguably better) patient experience.

The Ambient Experience CCL Suite, seen in Figure 1, aims to reduce the physiologic patient stress that often accompanies tachycardia and hypertension, and can ultimately reduce the need for pain medications and sedatives. A hemodynamically-stable patient who is awake, yet relaxed, can facilitate throughput within the CCL and the prep-recovery area by requiring less time for observation and recovery from sedation.

Patient satisfaction is tremendously enhanced as well, according to Victor Hall, Regional Vice President of Cardiac Services at Fairview Hospital, part of the Cleveland Clinic Health System Western Market, where the world's 50th ambient CCL has been installed. He states that "patients see the atmosphere as soothing—almost like a spa" rather than as a cold, sterile, procedure room. The physician experience is likewise enhanced with the use of soft flooring that supports the back and personalized physician light settings that help reduce glare and shadows.

FIG. 1



Image courtesy of Fairview Hospital, Cleveland Clinic Health Systems – Western Market

FIG. 2



Image courtesy of St. Joseph Medical Center, Towson, Maryland

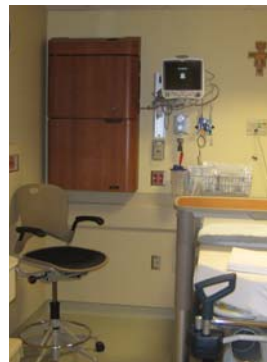
A Healing Environment in the CCL: Decentralized Stations / Room Design

Patient prep/recovery rooms and nursing stations that mimic many evidence-based inpatient room design principles do much to support the creation of a healing environment in cath lab procedural areas.

Corazon recommends the below as just some of the ways that a cath lab setting can be designed with evidence-based principles as a guide:

- Private rooms built to universally support the short-stay patient (from prep through recovery)
- A ‘relaxing’ environment to counteract the stress a rapid turnover unit can convey, including muted lighting, soothing wood tones, and in-room televisions.
- Space for family seating, with cell phone and internet access.
- Decentralized nursing stations that puts the staff closer to patients so as to lessen noise, reduce falls, and minimize walking distances.
- Supportive technology located at the bedside, as seen in Figures 3...this brings care closer to the patient while increasing staff efficiency.

FIG. 3



Bedside Electronic Documentation

Another evidence-based design principle that Corazon recommends is patient access to nature views. Studies have found that recovering patients were discharged earlier and required less pain medications when given access to nature views and healing gardens⁵.

Patient rooms with windows are standard for the inpatient setting and regulated by building codes. Until recently, this concept has not been commonly integrated into planning for a rapid turnover area such as cath prep / recovery. However, as insurers begin to reimburse hospitals for an increasing number of cardiac interventional patients on an outpatient basis, hospitals are attempting to streamline recovery by creating cath

CASE STUDY:

Evidence Based Design Applied to the Pre- and Post-Procedure Area

St. Joseph Medical Center, Towson, MD

Corazon sees the principles of evidence-based design being applied more consistently in the pre- and post-cath procedural areas with recent clients. When St. Joseph Medical Center (SJMC) in Towson, MD was planning for 42 new prep/recovery beds, the staff and architects worked together with Corazon to design a patient- and family-focused facility that employed multiple evidence-based design principles to not only facilitate recovery, but also promote healing.

Prior to construction, cath lab patients were prepped and recovered in an open bay environment with minimal privacy and almost no space for family. It was a loud and chaotic environment with a central nurse station in the middle of the unit. Patients were prepped in one bay and recovered in the next available one, while families were shuffled between multiple waiting rooms, hoping not to miss the physician after the procedure.

Kicking-off the design process for the new cath prep and recovery area, guiding principles were developed. The primary one: a commitment to patient- and family-centered care. The goal of the facility at SJMC is to bring services (prep, recovery, and discharge) to the patient and family, who will be located in one room throughout the entire cath lab experience. The family is invited to wait in the patient’s room, even during the procedure, to reduce their anxiety and facilitate immediate communication with the physician.

Communication systems also needed to be adapted to coordinate patient flow throughout the entire unit and with the cath labs. In addition to using a voice-activated communication system, SJMC elected to develop a home grown patient tracking system that identifies patients throughout their stay. Recent evidence-based design studies that support enhanced patient outcomes with decentralized nursing stations also discuss the need for technology that facilitates caregiver communication in order to provide safe and efficient care⁴.

prep-recovery areas that care for inpatients and outpatients in a 'one-stop' approach. These areas eliminate transfers to inpatient telemetry units where lengths-of-stay tend to be longer due to the intermingling of higher-acuity medical cardiology patients that dilute bedside nurse focus.

Windows provide patients with a positive distraction while waiting for a procedure, or recovering from one. At Fairview Hospital in Cleveland, OH, multiple cath prep-recovery rooms were constructed with a window, granting this healing design element to patients requiring care over 23 hours in this area. As seen in Figure 5, the rooms at Fairview were built with three hard walls, one with a window, and a curtain to care for short stay patients.

FIG. 5



Image courtesy of Fairview Hospital, Cleveland Clinic Health Systems – Western Market

The Future of Evidence-Based Design in Procedural Areas

As more research is published on the impact of evidence-based design on patient outcomes, this trend will no doubt continue. And, as consumers demand care environments that not only allow for recovery, but also promote healing, Corazon feels that evidence-based design will further transition into procedural areas such as the cath lab and angiography suite, and even into the operating room.

Savvy hospitals on the forefront of this facility design trend will be well-positioned for success as a result of more efficient patient through-put, shorter lengths-of-stay, and additional marketing opportunities from a differentiated program.

References:

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