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Designing for a New Model of Healthcare Delivery



Donald B. Altemeyer, AIA
Chairman, BSA Design Inc.
Indianapolis, Indiana

Todd M. Buerger, AIA
Principal, BSA Design Inc.
Indianapolis, Indiana

Ann L. Hendrich, MSN, RN
Senior Vice President of Nursing and Patient
Care Services
Clarian Health
Indianapolis, Indiana

Joy L. Fay, MS, RN
Director of Clinical Operations, Cardiac
Comprehensive Critical Care
Clarian Health
Indianapolis, Indiana

A growing body of research is demonstrating that a patient-oriented, family-friendly method of delivering medical care helps patients get healthier more quickly. The concept of a holistic, healing environment-in which technology, service delivery, design, and the environment work together to benefit patients-is therefore attracting increased attention among healthcare design professionals.

Clarian Health Partners Inc. of Indianapolis wanted to adopt this approach to patient care in the new cardiac critical care facility at one of its Indianapolis hospitals, Methodist Hospital of Indiana. Clarian Health charged its Indianapolis-based architectural and engineering firm, BSA Design Inc., with turning this vision into reality and doing it on a fast track of about 12 months. The construction budget (\$6.2 million, or about \$137 per square foot) was comparable to what the hospital had spent in the past on more traditional unit design, construction, equipment, and furnishings.

Designing what became Methodist's Cardiac Comprehensive Critical Care unit required outside-the-box thinking, constant communication among all parties, and a participatory process that encouraged the nurses who would work in the unit to become very involved in planning the project.

The unit began accepting patients in February 1999. Although it is too early for quantitative results, anecdotal evidence in the first 90 days of operation indicates it has more than fulfilled Clarian Health's hopes of minimizing patient transfers while creating a high level of patient and family satisfaction. Everyone involved with this project believes its successes and lessons can be useful to other healthcare design teams as they work to produce more patient-friendly facilities.

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Hospitals are supposed to be healing environments. But all too often, they're not. Beeping monitors at the bedside frighten patients. Clanging food trays keep them awake. Patients are frequently transferred to different rooms, confusing them and confounding their families. Glaring fluorescent lights make everyone look unhealthy. And privacy? Not likely.

A growing body of research, however, is demonstrating that a more welcoming, caring, comforting hospital environment can help patients heal better and faster. While hospitalization never will be confused with a trip to a resort hotel, this research suggests that more sensitive delivery of care in a more therapeutic environment can benefit patients and have a positive bottom-line impact on healthcare institutions. In our cost-conscious era, those are results that can't be dismissed.

In 1997, officials at Clarian Health Partners Inc. began discussing ways to make cardiac care operations at its Methodist Hospital of Indiana more patient focused and family friendly. (Methodist is a 750-bed acute-care teaching hospital in downtown Indianapolis that admits 47,000 patients annually.)



[Figure 1](#): View from the reception area to family retreat area and interior garden

One inspiration for this new focus was the San Francisco-based Planetree Model Hospital Project, in which hospital units have been reconstructed to increase patients' control over their environment. Another was the work of Jain Malkin, who teaches healthcare design at Harvard University and has written extensively about the design of healing environments and the role that family and friends play in patients' recoveries. Ideas also came from time and motion research and the personal experience of Ann Hendrich, Clarian Health's senior vice president and nurse executive, who saw firsthand the disquieting effect of traditional care delivery on patients and families when her parents were hospitalized for cardiac problems that year.

By 1998, Clarian Health officials had decided to try the patient-

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friendly approach by remaking Methodist's cardiac critical care unit. BSA Design Inc. was awarded this challenge, told to complete the project within 12 months, and given a construction budget of \$6.2 million, or \$137 per square foot. That's on par with what the hospital had spent in the past on its more traditional construction projects.

The Methodist Hospital Cardiac Comprehensive Critical Care unit began treating patients in February 1999. Although it is too early for quantitative results, anecdotal evidence from the first 90 days of operation indicates it has more than fulfilled Clarian Health's hopes for an environment that promotes healing by putting patients first.



[Figure 2](#): A patient room

The new environment also has produced other benefits-nurses in the unit are more easily learning new skills from each other, for example. There have been some disappointments, too. The change has been too different for some employees, who have transferred to return to work in more traditional critical care units.

Overall, though, BSA and Clarian Health believe the project's many successes and lessons can be useful to other healthcare design teams working to produce patient-friendly facilities to treat cancer, neurological conditions, and other illnesses. Here's what we did and what we learned.

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The Cultural Challenge

Before this new unit opened, cardiac care at Methodist was provided through two primary units. There was a 22-bed cardiac intensive care unit for the most seriously ill patients and a 41-bed cardiovascular medicine unit for those who were somewhat healthier. Different nurses staffed each unit, and patients were transferred between units as their conditions required. The rooms in both units were small, with little space for visiting family members. The design was traditional and institutional.



[Figure 3](#): Typical patient room concept

Uninspired as the settings might have been, the units allowed the staff to provide excellent care. So the proposal to combine the two into one, and radically change the operating philosophy, was greeted by many physicians, nurses, and staff members with this question: "If it ain't broke, why are we fixing it?"

That skepticism was even greater because the hospital wanted to make this change with critical care patients. These patients are very ill, and the staff that takes care of them needs state-of-the-art equipment and facilities to monitor their health and respond to life-threatening emergencies. Home-like rooms, around-the-clock visitors, and patient comforts may be fine for maternity/delivery rooms, the conventional wisdom went, but not critical care.

Finally, some nurses were concerned that combining in one unit patients who needed different levels of attention might confuse operations and hurt patient care.

Unspoken—but also a factor, we believe—was a concern that the status of critical care nurses would be somehow altered by working in this different environment.



[Figure 4](#): The patient corridor

To address those skeptics, and to keep the project moving, teams were formed with representatives of the hospital, the design firm, and the general contractor. These teams were responsible for planning the unit's design, picking the technology and equipment to be used there, deciding how care would be delivered to patients, and making sure that the unit provided the best possible healing environment. The teams' work was supervised by a steering committee of cardiologists, critical care

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directors, nurses, and top Clarian Health and BSA officials.

The result was a very participatory, hands-on design process that successfully converted many skeptics to supporters as they were able to see their ideas incorporated into the project.

Because the new 56-bed, 45,000-square-foot unit was built on two vacant, adjacent, and newly constructed floors, existing cardiac critical care operations weren't disrupted during the planning and construction process. And having those open floors often was an advantage. For example, project meetings were held in the space, helping team members visualize the final product. When design teams were struggling with how to lay out a patient room, a full-scale mock-up was built on site and the walls were moved to model different room configurations.

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The Finished Product

The final design supplies the healing environment so important to patients and supports the cultural change Clarian Health officials were trying to make with staff in ways big and small.



[Figure 5](#): Site plans and concepts for Cardiac Comprehensive Critical Care

For example:

- Visitors and staff come off the elevators into a lobby filled with natural light and furnished to resemble a living room at home. Double wooden doors lead to the patient and staff areas
- The two floors are identical so as to communicate that they are part of the same unit. Staff are alphabetically assigned lockers on both the fourth and fifth floors. While nurse-to-patient ratios are the same (critical care nurses take care of two patients each, cardiovascular medicine nurses monitor four or five), the patients are assigned randomly to rooms so there's a mix of patient conditions on each floor. Patients get to know both critical care and cardiovascular medicine nurses this way, which increases their comfort and minimizes the need for transfers
- Small nurse stations containing patient linens and other supplies are located outside each patient room. This keeps the staff closer to the patients and eliminates the chatting and loud noises that go on at a centralized station
- Offices and workstations for unit administrators and staff are located in the center of each floor, behind glass doors. That gives the staff privacy but also makes them visible and accessible to patients or their families
- Patient rooms are placed around the perimeter of the floors, giving rooms window views and natural light
- Each patient room is 450 square feet, nearly twice as large as a traditional hospital room. The room is divided into three zones, one for the staff, one for the patient, and one for the patient's family
- The staff zone allows staff to do their jobs with little disruption to the patient. Defibrillators and other acute-care equipment are located in a specially designed headwall, close if needed but out of the patient's view if not. Electrical outlets are at arm's height in the headwall for quick access if necessary
- The patient zone is designed to offer comfort, control, and a feeling of home. The bed transforms into a chair, providing mobility and independence. Shelving across from the bed contains a television, VCR, and space for personal mementos.

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Patients can control the room's lighting and temperature. Glass in the room's corridor windows is electrically charged and with the flip of a switch can become opaque, giving additional privacy. An in-room bathroom and shower has double doors for easy access

- The family zone contains a comfortable chair-bed, storage for personal items, a small refrigerator, a desk, a private phone, and a computer/Internet hookup. Family and friends may visit at any time, because research has shown that having loved ones around also helps speed the healing process
- Common areas in the center of each floor include a family center with home-like chairs and sofas, a kitchenette, an entertainment area, an aquarium, an interior garden, and a kiosk where patients and families can obtain health information
- Corridors separating patient rooms from the core of each floor are wide and curved, with ambient lighting and flowing ceiling designs to communicate a sense of serenity and security. These curving walls also draw the eyes away from patient rooms, providing additional privacy

Interior finishes were carefully chosen to enhance the unit's healing environment and support the design concept. As much as possible, hospital standard materials were used. But in some cases, finishes were upgraded to better communicate the home-like atmosphere the designers and the hospital wanted to achieve. At the same time, care had to be taken so that interior finishes also symbolized the unit's state-of-the-art care and technology. A reception desk in the elevator lobbies, for example, was created in metal and wood to illustrate the combination of the two.

Other examples of interior design choices:

- Ambient lighting minimizes institutional fluorescence.
- All areas are decorated with a full spectrum of color, especially plum, red, green, gold, and earth tones. The walls of patient rooms are painted plum to communicate a lively, upbeat feeling.
- Finishes were chosen to help control noise. Vinyl rather than VCT flooring was used on patient room floors. Carpeting was installed in unit corridors.
- Commissioned artwork is displayed in public spaces. Each patient room contains a different art print.
- The artwork, fabrics, and décor use a soothing nature theme of leaves, clouds, plants, shells, and woods. In the family center, iron patio furniture and plants provide an interior garden seating area, and an aquarium filled with tropical fish adds to the soothing environment.
- Wherever possible, detailing was softened. The edges of laminate countertops were rounded. Hardware was eliminated from the doors of headwall cabinets. Curves of the ceiling bulkheads were echoed in designs cut into the carpeting. Floors were built up so that rolling wheelchairs or beds don't bump when moving between the carpeted hallway and the vinyl-covered patient rooms.

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The Envelope, Please

While Methodist's Cardiac Comprehensive Critical Care unit has only been open a short time, early indications are that it's a winner. Patients say they feel more relaxed, and families give the unit high marks for allowing them to visit at any hour and spend the night comfortably.



[Figure 6](#): Unit secretary area

One patient, quoted in a local newspaper story about the new unit, described his feelings this way. "It's like a touch of home, I think. It's really very nice, and the bathrooms in the hospital rooms I have been in have never been this big. There's even a shower in there. It's really nice not to have to go down the hallway to take a shower."

Quantitative data about the unit's impact on productivity and cost-effectiveness are hard to come by at this stage. But, again, early signs are promising. In the first 30 days of operation, 523 patients were admitted for an average daily census of 52. Of those 523 patients, only 21 were transferred to other rooms or units within Methodist Hospital. A year earlier, in the old cardiac critical care unit, 195 patients were transferred. As one critical care staffer says, "It used to be that we worked like crazy to get the patient to the right bed. Now these are all the right beds. We just work to get the right nurse to the patient."

The impact on staff has been mixed. Going in, the approximately 200 staff members of the old cardiac units were allowed to choose whether they wanted to work in the new unit. A few resigned before the unit opened, and a handful of others have left in its first 90 days. The largest turnover has been among critical care nurses who are not comfortable with the new environment and the regular interaction with patients' families. On the positive side, though, having critical care and cardiovascular medicine nurses working side by side has made it easier for nurses to gain practical knowledge and learn new skills from each other. That makes for a more stimulating, exciting work environment.

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Lessons Learned

While the results of this new healthcare facility and philosophy aren't yet measurable at Methodist Hospital, lessons the design team learned from the process are more readily apparent. For instance:

- It may be obvious, but it bears repeating-it is possible to design something radically different without blowing the budget or compromising patient care. Hospitals aren't required to have straight hallways and small rooms with square corners
- In designing something different, however, know that your commitment to the vision will be tested. In the Methodist project, for example, the maintenance staff's desire for durable and easy-to-maintain spaces conflicted with the design goal of a home-like environment. Maintenance wanted vinyl upholstery on the chairs; designers wanted attractive fabrics with a leafy motif. The compromise-a residential-looking, fabric-covered chair that easily comes apart so fabric can be replaced-is true to the vision but still accommodates maintenance's legitimate functional concern
- Look for vendors who can help you achieve your vision. In our experience, nurses decided that a standard headwall wouldn't meet their needs. Although it wasn't an effortless sell, we were able to get the manufacturer to modify one of its models to better satisfy the client. We believe the smart medical equipment manufacturers must increasingly take into account not only the function of their products but also how their look, noise level, and style fit into a healing environment
- Communication is critical. This is always true, but especially when the project is a radical departure from the norm. Allowing end users to participate in the design process yields more highly satisfied clients-if designers listen carefully to be sure clients know what they want. In the relatively uncharted waters of a new project, everyone involved needs to think through the functional and philosophical implications of every decision made
- Broad participation also is critical. Having contractors involved in the early stages, for example, ensures timely delivery of materials and helps keep the project on schedule and on budget
- The end users of different healthcare facilities should understand that they'll probably need to use different criteria to choose staff. Methodist Hospital has found that good interpersonal skills are as important as good clinical skills for the nurses working in the new Cardiac Comprehensive Critical Care unit. With patients' families ever present and always seeking information, nurses are "on stage" all the time they're on the floor. Nurses who enjoy working with people are comfortable with this change; others find it extremely

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stressful. Staff education requirements also change. Nurses need to understand the boundaries of their new culture-in other words, being accommodating to patients' families doesn't mean fetching them coffee. It's a wonderful new world, but one for which staff must be prepared.

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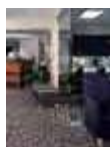
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Conclusion

The volume of research and literature about the importance of healing environments is on the rise. The number of requests Methodist Hospital has received for tours of its new cardiac unit shows that interest in this kind of facility is growing. Why aren't there more of these environments today?



[Figure 7](#): Education resource center and unit secretary station

The obvious answer-and the correct one at this time, we believe-is that this philosophy represents the cutting edge of healthcare delivery. Many hospitals and designers aren't ready to cross that line yet, and patients aren't demanding that they do.

But that will change. Baby Boomers are aging and will need more healthcare services. This is a generation of savvy consumers who demand creature comforts, luxury items, information, and access to decision-makers. Boomers already have changed the way society shops for clothing, eats its meals, takes its vacations, and educates its children. It's only a matter of time before they demand the same kind of attention and comfort from their hospitals and medical clinics. And their Generation X children will be right behind them, with even greater expectations of personal service and flexibility.



[Figure 8](#): Staff lounge

A healing environment like the one created at Methodist Hospital's Cardiac Comprehensive Critical Care unit isn't appropriate for all aspects of healthcare. In operating rooms and trauma centers, technology and clinical function obviously will always need to take top priority. But we believe most other hospital operations can put the patient first and do so in an environment that contributes to healing, harmony, and bottom-line efficiency. We look forward to this coming revolution. 🙌

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[Figure 3](#)
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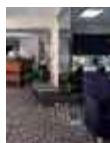
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Figure 1: View from Reception Area to Family retreat Area and Interior Garden. Photo: Mardan Photography, Indianapolis, IN.

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Figure 2: A patient room. Photo: Mardan Photography, Indianapolis, IN.

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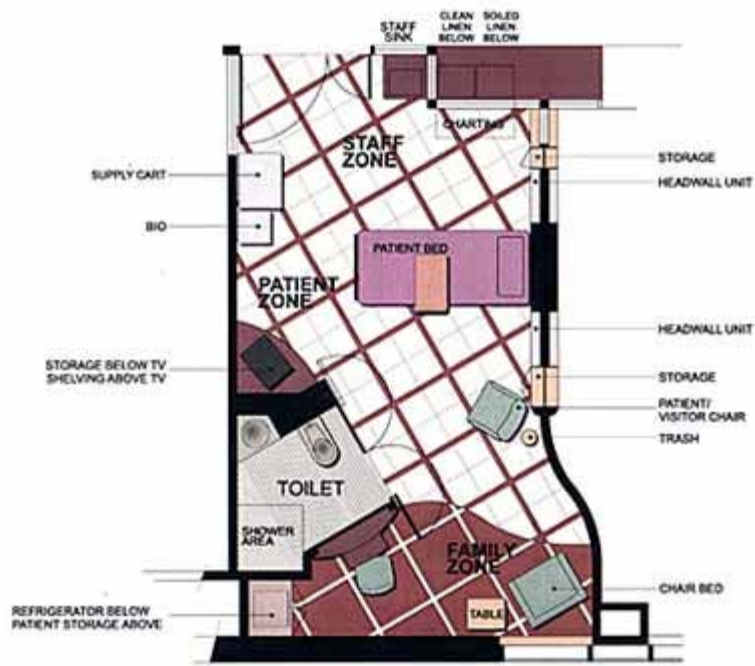
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Typical Patient Room Concept

Figure 3: A patient room design. Clarian Health; BSA Design, Indianapolis, IN.

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Figure 4: The patient corridor. Photo: Mardan Photography, Indianapolis, IN.

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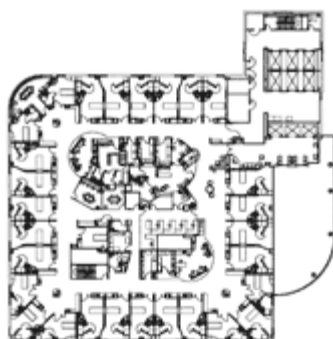
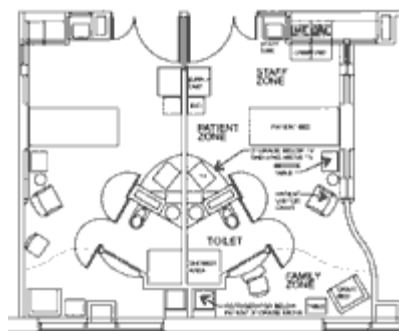


Figure 5: Cardiac Comprehensive Critical Care. Clarian Health; BSA Design, Indianapolis, IN.

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Figure 6: Unit Secretary Area. Photo: Mardan Photography, Indianapolis, IN.

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Figure 7: Education Resource Center. Photo: Mardan Photography, Indianapolis, IN.

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Figure 8: Staff Lounge. Photo: Mardan Photography, Indianapolis, IN.

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A One Man User Group: The Architect Becomes a Patient

David J. Reichard, AIA
Senior Healthcare Planner, Health Facilities Design Division
Helman Hurley Charvat Peacock/Architects, Inc.
Maitland, Florida

In the 1991 film *The Doctor*, William Hurt plays a physician who experiences life as a patient in the hospital. His observations and interactions change the way he views the practice of medicine from that point forward. In 1998, this healthcare architect experienced a similar situation . . . admitted through the emergency room to an inpatient medical unit for a week of tests, intravenous feedings, and antibiotics.

Although seriously ill, I was very aware of my physical surroundings, a result of my education as an architect and more than 20 years of experience in designing hospital spaces. What I learned during this reflective period of illness and healing will strongly influence the remaining years of my career. To the extent that I may influence not only my own designs, but also those of other healthcare architects and decision-makers, I will minimize the details of my illness and emphasize the design lessons learned.

The Emergency Department

The next time you are faced with the question of enclosed or curtained treatment cubicles in the emergency department (ED), I would suggest that you take three hours and place yourself in each type of location. I found myself in a curtained bay with an inebriated and solicitous woman in the adjacent space. In addition to the physical pain I was experiencing and the anxiety associated with waiting for test results and subsequent diagnosis, I was subjected to a loud, verbally offensive neighbor in the ED. (I more fully appreciate the nonmedical patient situations that ED staffs endure every day—drug overdoses, inconsolable children, and gang-member victims of violence). Cold and lying on a stretcher, I had nothing to listen to or look at to pass the time. I lost any hope of privacy as the curtain remained partially open and members of the ED team, members of other patients' families, the police, and others walked past. I could hear conversations I didn't care to hear. After this experience, I will encourage all my clients to consider private treatment spaces with solid wall dividers and sliding glass doors.

The Patient Room: Mobility and Range-of-Motion Limitations

I was admitted to the hospital with acute infection, dehydration, and malnutrition, which translates into multiple intravenous lines and nasogastric tubes. As I lay in my bed, I found it nearly impossible to access the systems and services that, as a design architect, I believed would be at my fingertips. The bed controls

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were difficult to reach because of the restrictions caused by the tubes and IV lines inserted into my body. The telephone and overhead lights were equally inaccessible, requiring the assistance of a nurse or visitor. The next time your designers are involved in the selection and location of equipment, place one in a bed tethered to an IV pole to test the accessibility of the controls.

My bed was turned toward the window to accommodate both the equipment and my view, but I was unable to adjust the blinds from my bed to reduce the intrusion of healthy Florida sunshine during my frequent naps. However, the positive design aspects of the large window in the room provided a visual respite from the hospital and a clear sense of time and place. It reminded me that there was a life outside the walls of the hospital to return to after my recovery.

The Patient Room: Engineering Systems

Attention mechanical/electrical engineers! Think long and hard about fan coil units and the impact they have on the patient's comfort level. I know all the reasons we use them-insufficient floor-to-ceiling height, cost, etc.-but they create drafts and greater discomfort for the patient. They are noisy and present difficult challenges to the maintenance team. The variation in room temperature during on-off cycles creates hot-cold periods for the patient. As we work with our consulting engineers and HVAC equipment manufacturers, perhaps we can find or develop a unit that reduces drafting and is more accommodating to patients' individual control and temperature preferences.

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