

Healing THROUGH DESIGN

By Tracy Certo

As a patient, what if you knew that a room with a nature view, as opposed to an urban view, could speed your recovery and shorten your hospital stay? And that a private room poses far less risk for infection? Would you be satisfied with an institutional hospital setting if you or a loved one had to undergo treatment for a life threatening disease? Or would you opt for a soothing environment with a homey atmosphere where patient care is at a premium?

These are the questions patients face as mounting scientific evidence shows what many have long suspected: that the health care environment directly influences patient health outcomes.

The AIA's Committee on Health Environment Research (CHER) is awarding research studies to organizations on various issues, from the impact of floor covering on resident safety and well being, to why color choices in

healthcare environments are important in the healing process. There's also a proposal for the study of infection and the ability of various materials to propagate harmful organisms and a study of single rooms versus double rooms in acute care settings. Previous studies have shown that yes, there is a difference. Those who stay in private rooms have shorter stays than those in doubles.

On other fronts, researchers have done studies on healing rates of patients with nature views vs. urban views only to find that those with the nature views also have shorter hospital stays, if only by a day or two in short-term health care.

The implications from these studies for healthcare design are profound, no matter what. Add to the mix the full-blown concerns of baby boomers—who, true to form, demand not only the best treatment but also optimal facilities and comfort—and you have the makings of a design revolu-



The waterfall wall seen in the background, and the use of pavers in colors that invoke nature, are part of the design elements guided by nature at the Joyce Murtha Breast Care Center in Windber, PA, designed by L. Robert Kimball & Associates.



Comforting nature hues of blue, green, brown and taupe dominate the patient friendly reception and waiting areas at the Joyce Murtha Breast Care Center.

tion in health care. The question these days isn't, can architecture enhance healing? Now it's a matter of how can it best enhance healing? And what does the research say about that?

Much of the new design philosophy is grounded in common sense, making some question why it took so long. "Medicine is finally realizing that there's a connectedness between mind, body and spirit that you can't really separate," says architect John Schrott of IKM.

"What's pushing it is, we have a much higher education level of the general public and as consumers we don't necessarily accept what we're told. We question it, we want to know why and what the options are. So when the con-

sumer is putting pressure on the provider, the provider realizes it can capture more market share if they treat the patient as a person."

Better design for better healthcare, which means state of the art treatment in a healing environment, is the name of the game these days as hospitals and clinics compete for patients. "It is a priority in the healthcare arena. We're trying to educate our clients as to how it can be a value added service and how it can benefit their patients and improve their bottom line," Shrott says.

That means a big change from the old institutional design of hospitals and healthcare centers to the newer ones with a homelike feel and design cues taken from nature. Col-



Interpreting themes of healing in materials, shape and color is the philosophy behind the design of the new Children's Hospital of Pittsburgh. Designed by Astorino.



PHOTO BY LINDA JEUB

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— JOHN SHROTT

UPMC Shadyside Hospital: The design challenge for a Labor, Delivery, Recovery, Post Partum room is to accommodate medically intense equipment, such as medical gases, monitor, and exam lights, while providing a serene and relaxing environment for the patient, the newborn and the family. Generously sized to accommodate family and medical staff, design elements include hardwood floors, wood furniture, soft seating, and ample built-in storage. The use of ambient lighting in conjunction with a soothing color palette enhances the comfort level and environment for the patient. Additionally, medical gas outlets are concealed by the overhead artwork to assure a less institutional surrounding. Radelet McCarthy Architects and Interior Designers

ors, shapes, patterns and texture can all help enhance the healing process by comforting and calming patients. Stress interferes with healing so the less of it, the better.

Lou Astorino, AIA, chairman of Astorino, says that in designing the new Children’s Hospital of Pittsburgh, his group started with a pioneering research process to understand just how much architecture can enhance the process of healing (see page 14). “What we learned is that healing is really about transformation. And that connection, control and energy are vitally important to the transformative process of healing. The interpretation of these powerful themes will be seen and felt in the material, shape, and colors that will become the Children’s Hospital of Pittsburgh.”

In the healing garden, kids can dig in dirt and run their hands under cool streams of water in this garden. The connection to nature is critical in health care design. It’s all part of relieving stress and providing positive distractions like the waterfall wall in the entrance of the Joyce Murtha Breast Care Center in Windber, PA. Or the fish tanks and

sculpture in the UPMC Cancer Center in Shadyside. Or the varied ceiling heights and window views at Hamot Surgery Center in Erie, PA, (showcased in Health Care Design Magazine, September, 2003 for its homelike atmosphere).

At the new Hillman Cancer Center, architecture enhances healing in a different kind of way that could be the wave of the future. The design premise of the linked clinical pavilion with the research pavilion is to connect the researchers with the medical team for close collaboration. The objective is to promote better understanding of research and its applications and encourage new implementation of research findings that could lead to improved prevention, detection and diagnostic and treatment approaches. Throughout the facility, design elements work to relieve patient stress, from sculpture and skylights to gardens and granite fountain.

When it comes to healthcare design, it helps to take on the perspective of a patient. L. Robert Kimball and Associates’ interior designer Kathleen Muffie-Witt, who worked on the

Joyce Murtha Breast Care Center, poses the question: "If you could imagine yourself going through this space in a gurney, how could you make it better?"

Addressing the stress factor, known to be a powerful determinant in health and healing, is key. "One of the things we're very concerned with is stress and how the environment can help," says Muffie-Witt.

"With life threatening treatments, patients are on edge and anxiety-ridden," says project architect Alan Fishman, AIA of IKM, Inc. "We endeavored to provide an environment in which the patients would feel at ease at the UPMC Cancer Center." He mentions the "wonderful atrium, a quiet place of contemplation," designed by Radelet McCarthy who did the interior spaces. And he praises the design of the Allegheny General Cancer Center, another IKM project, where cherry wood warms the residential setting which is further enhanced by restful lighting and neutral colors.

The more comforting and less institutional the materials, the better. Take water, for instance. "Water is a very soothing element in any space; it goes back to Japanese influ-

ences, and in a healing environment it is very important to have natural elements," says Muffie-Witt.

From the blue ceiling and waterfall in the reception area to the use of translucent surfaces and blue glass in the reception and waiting areas, the design approach at the Joyce Murtha Center is based in nature. That includes the use of porcelain pavers in earth colors of blues, greens, browns and taupe.

Although like most projects, this was "very budget driven," says the designer, they eked out room in the budget for an eight foot tall by six foot wide waterfall wall, designed by Harmonics Environment in Florida. (www.harmonics.com). It's a key element in drawing people into the space and it helps create a theme that extends throughout the nurses' stations and private rooms.

As for research and design principles, "We know what works," says the designer who adds that doesn't necessarily mean healthcare design principles are so accepted they're now commonplace. "You would think so but they're not," she cautions. "People who haven't had a lot of expe-



Since infusions take up to eight hours, the Infusion Treatment Areas at the UPMC Cancer Center are generously sized to accommodate the patient, staff, and family and friends. Similar to an in-patient room, televisions have been strategically located at each station, nursing pods are nearby allowing for visual access to each chair and medical gas outlets are provided at each station for emergency situations. Designed by Radelet McCarthy Architects and Interior Designers



At UPMC Cancer Center, many soothing design elements, including fish tanks, serve to reduce stress in patients and families. Radelet McCarthy Architects and Interior Designers

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rience in health care don’t understand that it’s so important to have a human space. There are still a lot of architects who want an architectural space. You really have to focus on the person on a human scale.”

If some architects haven’t yet caught on, others are captivated by the concept. “It’s a passion of mine because I fully believe architecture can support and enhance and accelerate the healing process,” says John Shrott. “That’s the issue in the profession.

“I can’t imagine how, if you have to put up with a roommate with 10 visiting family members that your recovery is not going to be affected by it. That’s why there’s a shift toward private rooms which reduce infection rates and expedite the healing process.”

On the other hand, cultural differences need to be considered, too. For a facility he designed in Lancaster, PA, Shrott took into consideration the large Hispanic population of the area and how they celebrate birth with family members—meaning as many as 20 people could be gathered around or nearby the labor room.

Accommodating families (in this case, large families) is just one of many things driving healthcare design these days. At the Mayo Clinic in Rochester, Minnesota, the design philosophy is based on caring and respect for the patient that includes stress reduction, and less noise and crowding with positive distractions such as colorful art on the ceilings.

This philosophy is based on evidence-based design, a term that simply refers to design grounded in research. According to the Center for Health Design in San Francisco, there are five areas of evidence-based design:

- Access to nature: healing gardens, indoor plants, outdoor views.
- Control: patient options and choice privacy issue and way finding.
- Positive distractions: from waterfalls to play areas.
- Social support: higher levels mean faster recovery so accommodations are made for family members and visitors with recognition of cultural differences (as in the Lancaster facility).

- Environmental stressors: Everything from noise and intrusive paging systems to lighting and indoor air quality.

The Hamot Surgery Center in Erie, PA, designed by Weber Murphy Fox, Inc. was guided by the AIA's 2001 Guidelines for Design and Construction of Hospital and Health Care Facilities. It was lauded by Healthcare Design magazine for an environment that "includes public spaces with a human scale" along with warm, neutral colors with selected accents and varied ceiling heights giving a homelike atmosphere to family waiting areas, which translates to a relaxed feeling in clinical areas. Project architect William Helmsley, AIA also included operating rooms that feature windows providing a connection to the outdoors and prep areas with space for family members.

When it comes to reducing stress and speeding recovery, nothing is being overlooked. Shrott points out that the

personal touch is more valued these days. The way you organize an inpatient floor, for instance, and how medicine is dispensed. Instead of nurses rolling in one-shop carts, individual rooms could be stocked (and locked) so the nurse would enter, converse, and prepare the medicine right there. Less institutional, more personal.

Those in the trenches know the score and understand the need to soothe the patient with such touches which include design elements such as fish tanks and flowers, Muffie-Witt says.

As far as research is concerned, she would like to do her own study on what's successful and what's not. "I think that's our responsibility as architects to do our own research and our own focus, to study our own spaces and then share that with the community. How else do we know if we truly attained what we wanted?"

I NEVER MET-A-PHOR I DIDN'T LIKE

ZMET, the first patented marketing research tool in the country, is applying some of the findings of neuroscience as a way to measure consumer attitudes toward consumer products. And, in Pittsburgh, Astorino is applying the ZMET method in architecture for the first time to "detect design elements" to enhance the healing process.

Zaltman Metaphor Elicitation Technique was created by Gerald Zaltman whose group has done more than 200 studies for companies in the past 10 years. The premise: consumers can't tell you what they think because they don't know what they think. Their deepest thoughts are not only unconscious but also visual. So, how do you capture those?

To ferret out these thoughts, ZMET uses visual images. In a *New York Times* article on Feb. 23rd, a marketing study of Coca-Cola was described, where Zaltman paid volunteers to spend a week amassing

pictures from magazines and publications that reflected their feelings about the soft drink. Later, they talked about them in a private interview with a ZMET specialist and then they created a digital collage using their images and recording a short bit about the meaning.

After review, Zaltman's group concluded that Coke evokes "not just feelings of invigoration and sociability—something its makers have long known and exploited in its ads—but feelings of calm, solitude and relaxation as well." The big insight, says Zaltman, is that Coke is really two drinks in one and the company was only marketing half of the drink. To which Coke agreed. In making the point at a meeting for division presidents, the Coke bottles lining the conference room were served half full.

Now for the first time, Astorino is applying the same research techniques to architecture. Subjects were asked "to collect six to eight pictures that express your



thoughts and feelings about your experiences at Children's Hospital." The objective was to help Astorino create "Deep Design" by understanding the basic thoughts and feelings and then understanding the deep metaphors.

Neuroscience and Architecture By Tracy Certo

From Alzheimer Care to Neonatal Units, the Design Environment is Critical



Each of the residents' rooms at Woodside Place is marked with a custom-built nameplate to assist in orientation. Perkins Eastman Architects



Dutch doors allow for privacy, yet provide residents at Woodside Place with the ability to look into the rooms. Perkins Eastman Architects

PHOTOS BY ROBERT RUSCHAK

Ask those in the field who are studying neuroscience, the study of the brain, and its application to design and they will tell you that architecture is on the brink of a revolution.

"If there's anything that's going to raise architecture to another level, it's this issue on the neurosciences," says Sylvester Damianos, FAIA, of Damianosgroup. As more is learned about the brain and how we perceive our world, architecture stands to benefit greatly, he says. "Findings will become a resource for teachers as well as understanding how critical the design environment is."

On the Web site of the Academy of Neuroscience for Architects is this prediction: "Knowledgeable professionals will increasingly be required to understand and explore the rich research base of neuroscience to help them in establishing evidence for what have historically been intuitive observations."

Certain areas of architecture are already in the forefront of neuroscience and architecture, such as health care design and specifically, Alzheimer care and neonatal units for premature infants.

Neuroscience is already affecting great change in our culture. And its influence will only increase dramatically in the future. Consider: Brain development studies in children that emerged less than a decade ago have already resulted in a proliferation of full-day kindergarten as well as earlier foreign-language studies. A recent *Time* magazine cover story relays the crucial findings of brain research in the study of dyslexia, and what can be done to improve reading skills in those affected.

In Lexington, Massachusetts, John Zeisel at Hearthstone Alzheimer Care has developed methods "to communicate with emotional memories that can still be reached while developing new memories that can be retained". The loving and emotional approach to Alzheimer patients, unabashedly called caregiving for the heart, features built-in memory cues, visually engaging paths to promote independent movement and accommodate pacing, and subtle physical cues that help in everyday activities.

Closer to home, Perkins Eastman Architects has won many awards for the design approach of its Alzheimer facilities at Asbury Place in Mt. Lebanon and Woodside Place in

Oakmont. Dutch doors prevent entrance yet create a more open atmosphere as they line the halls of patient rooms. Landscaped courtyards connect rooms to the outdoors while color-coded pathways aid navigation. To help identify their rooms, photos of the Alzheimer patients—not recent, but as they once looked and best remember themselves—are posted at the entrance.

As more is known about the debilitating effects of Alzheimer through brain studies—how the brain is effected and how perception is altered—architects will be better able to design for patient care, enhancing comfort and eliminating confusion.

Neonatal Units

Perhaps nowhere are the design implications of neuroscience as profound as they are in the neonatal intensive care unit (NICU). It is, says John Eberhard, FAIA, “the best application yet of neuroscience to architecture and design.”

Thanks to neuroscientists such as Dr. Stanley Graven, we now know that stimuli received early in life affects the visual and auditory cortex development and what they respond to in the future. Such findings are allowing experts to plumb new depths in understanding how to design neonatal intensive care units which can support critical and timely development while minimizing detrimental interference.

The latest and recent brain development research, which maps out the precise sequencing of fetal and infant brain and sensory development, shows just how vulnerable the premature infant is.

With premature infants who are robbed of developmental time in the womb, lighting and noise become an issue since they can create developmental problems if presented out of order. Too much exposure to noise in NCIUs can lead to harmful and long-term hearing consequences such as decreasing a child’s ability to distinguish frequency as well as sound patterns. If a premature baby held the potential to be born with perfect pitch, time spent in a noisy neonatal unit would destroy that capability.

In certain stages of brain developments in infants and preemies (and throughout childhood), critical periods occur



PHOTO BY ROBERT RUSCHAK

At Mt. Macrina Manor, the garden room is designed as a year-around porch for the dementia wing, accessing an outdoor covered porch and wandering garden. Perkins Eastman Architects

when external stimulation produces changes in the way the brain is wired.

For instance, the critical period for visual development occurs from the first visual through five or six months. During this time, the infant’s brain develops the neuron connections that lay the groundwork for perceiving lines and shapes in the future. If the infant is in a dark environment this critical period can be delayed with serious consequences to development.

Once the visual process starts, the infant needs to have varying levels of light and appropriate stimuli. Although light is critical as a source of energy, it is also capable of producing injury depending on intensity, duration and the maturation of the infant’s eyes.

Many design considerations must be re-thought, such as noisy beepers and alarms and loud intercoms and HVAC equipment. Silent equipment using flashing lights and quieter HVAC equipment is now preferred along with lowered staff voices and a generally hushed atmosphere. Another factor in healthy development are periods of uninterrupted sleep which calls for units that are more segregated in the NICU. *For more information visit www.architecture-mind.com*