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Title: "The Healing Mission"  
Authors: Lejla Zejnilovic, Graduate Architect/Medical Planner, Harrell Group Inc,  
M. Arch., Assoc. AIA  
Christine Madden, Vice-President, Harrell Group Inc  
Medical Planner/ Senior Designer  
Project: Mercy Medical Center: Pediatrics Unit and Cardiac Catheterization Lab  
Project Location: Springfield, Ohio  
Firm Location: Cincinnati

**ABSTRACT**

This paper discusses the creative means of balancing functional needs with patient-focused design amenities used at Mercy Medical Center in Springfield, Ohio. Through a comprehensive look at the renovated Pediatrics Unit and the Cardiac Catheterization Lab, the authors will demonstrate how effective design that addresses the whole patient can aid the healing process.

The Pediatric Unit of the Mercy Medical Center is a 7,500-square-foot renovation project designed around the notion that a child's healing capacity is directly affected by their surroundings and by the comfort they derive from having family members active in their care delivery. It encompasses a variety of features that provide a fantasy world to which children may escape and resolve their fears. The unit includes a playroom of sunken treasures, a ship wrecked at sea and real fish intermingling with fantasy fish. The nurse station is an impressive ship with portholes, a big red smokestack and an array of treasures that the children can take home once they have conquered their illnesses. The patient rooms are sized to accommodate parents' overnight stays, and a refreshment area enables parents to prepare some of their children's meals. Natural light is abundant throughout the patient and staff areas of the unit.

The Cardiac Catheterization Suite also is a renovation project that successfully has balanced "high-tech" with human design. Care was taken to perceive the entire sequence of the diagnostic procedure from a patient's perspective. The equipment-intense image of the suite is softened through the use of murals, lighting, and soothing colors. Painted ceilings in both cath labs allow patients to be distracted from medical procedures.

Both projects have proved successful in meeting the operational as well psychological needs of patients. The lesson is that although we are enticed by the lure of technology, architects and designers must remember that ultimately, humans – not machines – inhabit the spaces we design.

## Mission 2000: Innovative Approaches to Facility Master Planning And Patient-Focused Design

### Introduction

In the fall of 1997, Mercy Medical Center in Springfield, Ohio, initiated a strategic master plan entitled "Mercy Mission 2000." It is a hospital-wide plan to provide a new care- delivery model centered on patients and family, not internal and departmental operations. In assessing their current delivery system, the hospital found that patient care was fragmented due to multiple caregivers, hand-offs between departments, and staff inefficiencies caused by poorly designed work environments. In addition, physical environments were lacking in patient- and family-friendly amenities and overall ambiance.

Mercy Medical Center, a 100-bed, 50-year-old hospital, is one of two community hospitals in Springfield, a city of 80,000 that boasts a liberal arts college and a strong industrial base. The two hospitals compete for patients and staff with each other as well as with medical institutions in the three major cities within an 80-mile radius: Cincinnati, Dayton and Columbus.

Administrators felt that the "Mercy Mission 2000" plan would reinforce their position within this marketplace. To provide a fresh "outsider's" viewpoint, hospital administrators retained Hannah Williams LLC, a medical strategic planning consultant firm from Houston, to perform a series of ongoing facility-wide analyses, and recommend feasible operational and physical facility improvements. Harrell Group Inc. joined the team to help in the assessment, implement the results of the analyses, and provide a "roadmap" for future renovations and expansions.

While the transition is ongoing, this article will focus on two of the departments that were part of this master planning effort: the Pediatrics Unit and the Cardiac Catheterization Suite, both of which have benefited from some very creative and unique design approaches.

Although the two departments were programmatically different, the driving forces propelling the design of both departments were similar. In keeping with the "Mercy Mission 2000" goals, the task was to provide patient- and family-focused environments that are also conducive to staff productivity. The floor plans are efficient and meet program requirements, but break from standard institutional solutions throughout

the design by the use of lighting, finishes, color, and unique personal touches.

The staff was involved in the design process from the initial programming stages through completion, and energetic presentations and discussions enabled the staff to become an integral part of the departmental metamorphosis. As with any renovation project, existing structural limitations, building envelope and departmental adjacencies made it especially challenging for the architects to achieve the desired results.

### Pediatric Unit

#### *Existing pediatric unit*

The existing Pediatrics Unit at Mercy Medical Center had not been renovated for at least two decades, except for such topical applications such as new carpet and fresh paint. A visitor to the unit would find it difficult to distinguish the it from any other inpatient unit, except for a makeshift playroom. The Treatment Room, with its' cold clinical atmosphere, could have been frightening to an apprehensive child. The patient rooms were small and intended for double occupancy, leaving no room for parents to sleep near their children. Poorly designed staff areas increased travel distances and decreased staff productivity. The overall image of the unit seemed dark and unwelcoming, despite the staff's ongoing efforts to add personal touches.

#### *Process*

Even before the master planning effort, pediatrics staff had voiced their concerns to the administrators about the unit's location on the sixth floor of the hospital. They felt that they were too removed from the emergency department, should emergency assistance be required. They also noted that many pediatric patients and their families disliked having the unit all the way up on the sixth floor. Finally, many staff members believed that the Pediatrics Unit needed to be closer to the new freestanding Women's Center.

Based on these observations and further analyses, instead of renovating the existing Pediatrics Unit, the architects recommended the existing unit be converted to an respiratory therapy unit, based on its configuration and departmental adjacencies. They believed that another vacant unit on a lower level of the hospital would be a better choice for creating a new Pediatrics Unit. This solution also allowed the

existing pediatric unit to function without disruption during construction.

The administration selected to adopt this approach, and the design process energetically began. As stated, the staff participated in all aspects of the design, including a hands-on presentation of patient headwall arrangement. The architects cut out actual-size paper replicas of medical gas outlets, electric outlets, light switches and phone outlets, and together with the staff created a unique headwall design system with which all of the participating staff members were satisfied. The architects maintained throughout that such staff involvement is crucial in achieving a satisfactory design, because the staff ultimately are the users and need to be comfortable with the final outcome.

### *Result*

This collaboration between the architects and the staff resulted in a unique 7,500-square-foot, 10- Pediatrics Unit with 10 private rooms. Patients' first impressions focus on the welcoming entry to the unit, thus distracting the patients from their illness (*See Exhibit A*). The unit is arranged along a double-loaded corridor, yet it breaks the standard with the addition of a playful curve. This geometry sets up a picturesque entrance to the unit, whose first visible landmark is the PlayRoom with its distinctive nautical murals, custom soft-foam toys and real aquarium. To sick children, this scene is an exciting first glimpse of their new temporary "home," and with its whimsy may ease some of the anxiety associated with the transition from home to hospital (*Figure 1*).



**Figure 1.** *Play Room: Pediatric Unit at Mercy Medical Center*  
*Photography: Courtesy of Harrell Group Inc*

The PlayRoom is a dynamic, theatrical composition depicting a "shipwreck/pirate" scene: a soft-foam boat "wreck" lies on the bottom of the ocean, with pirate treasures and riches scattered about. A mural

on the three walls of the room depicts the bottom of the ocean, with glimpses of the shore and distant islands above. A real aquarium on the west wall adds movement through the beautiful tropical fish swimming about, as well as the tranquil sound of gurgling water.

Custom-crafted whimsical knobs, designed and donated to the unit by the design architect, add a personal touch to the murals. Patients and their siblings are encouraged to imagine and explore the riches of this room safely, for there are no sharp corners or accessibility barriers--even those patients dependent on an IV can make the most use of this wonderful room. For the less mobile children there are two enclosed Nintendo/video stations along the west wall, as well as a small library.

Other metaphors are carried throughout the unit to emphasize the playfulness and spontaneity of children. The 440-sq. ft. Administrative Control Center (nurse station) becomes a modern ship anchored at port (*Figure 2*). Its shape, child-scale, and design--which include "portholes" and a structural-column-turned-smokestack--speak to children reassuringly. A glass toy-display case serves as an enticement for children to get better quickly, since each child will receive a toy upon discharge.



**Figure 2.** *Nurses' Station: Pediatric Unit at Mercy Medical Center*  
*Photography: Courtesy of Harrell Group Inc*

The idea was to make patients notice décor, environment, and process, and concentrate on wellness rather than illness. Family involvement is encouraged by providing sleeping accommodations for parents in each patient room, and by providing a "refreshment center" on the unit. It is equipped with a microwave, a refrigerator, and an ice machine so that parents may prepare some of their children's meals.

This family/patient-centered care is further evident in the fine details of each patient room. Rooms range from 230 to 259 square feet, making them a comfortable size for patients and parents alike. Each room is equipped with a private toilet with sink and shower, staff sink, crib, and adult bed. During peak season, the rooms function as semi-private, yet are capable of allowing parents to sleep in their child's room. In off-peak times, most of the rooms function as private rooms in which both parents can be accommodated.

Each room has a "display center," which allows for the personalization of each child's private space. In addition to large exterior windows, each room has corridor windows to bring borrowed light into the corridor (*Figure 3*). The play of sunlight in interior spaces is refreshing and cheerful in any space, yet in a hospital setting may have added psychological and healing properties. The corridor windows also provide staff with more opportunity for patient observation without having to physically enter each room. This allows patients and their families increased privacy plus the assurance that they are receiving optimum care and service.



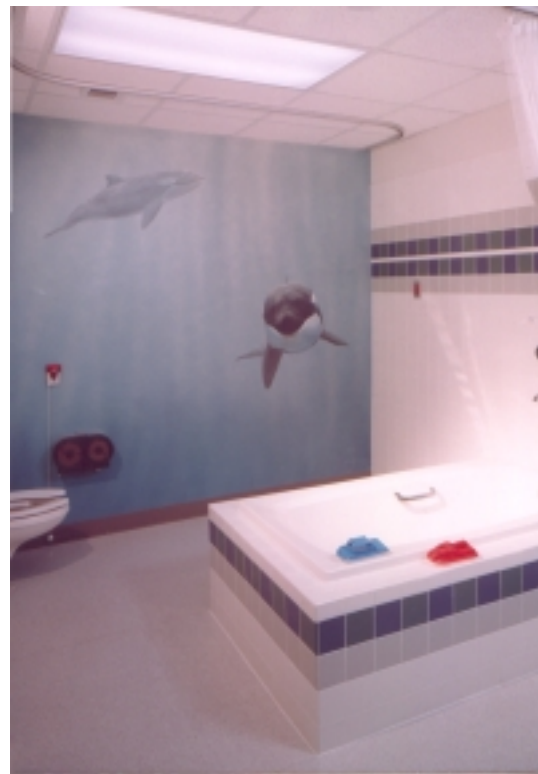
**Figure 3.** Corridor: Pediatric Unit at Mercy Medical Center

*Photography: Courtesy of Harrell Group Inc*

Going back to the nautical metaphor, each room has a personalized room sign, tied into the nautical theme, ranging from "Captain's Quarters" to "Galley." A child's name can easily be inserted into the sign and a room is instantly personalized. The hospital stay thus becomes less of an institutionalized, "numbered" event and--with playful and imaginative details--can transform the healing experience. This is true also of the Treatment Room and Treatment Bathroom, where the architects incorporated murals of underwater

scenes to distract children from the treatment and associated anxiety. (*Figure 4*). The calming blue/green hues are intended to soothe and pacify, while painted dolphins appeal to children of all ages.

Because the unit will primarily be staffed by two nurses and a clerk, the corresponding staff areas are modest in size, yet adequately designed for the staff functions. A combined meds/nourishment area is approximately 124 square feet, and is conveniently situated behind the Nurse Station. Central positioning of the Nurse Station provides security, visibility, and control. In an attempt to minimize nurses' traveling distances, three smaller charting stations were positioned along the corridor and each has a nurse server below the countertop. Even minute details--such as paper orientation for the forms stored in slots above each nurse server--were discussed with the staff to ensure smooth operation and efficiency.



**Figure 4.** Treatment Bathroom: Pediatric Unit at Mercy Medical Center

*Photography: Courtesy of Harrell Group Inc*

#### *Conclusion*

The above-described design approach yielded a truly unique pediatrics unit, where the staff gained a motivating work environment and physical as well as

the psychological needs of children and their families were met.

The power of the mind plays a major role in healing, as described by Bill Moyers in *The Healing and the Mind*. The architects' intent was to capture the child's imagination so that it, in tandem with traditional medicine, may heal the body through the playfully theatrical imagery and its magical connotations.

The unit has been in operation for almost a year, and the staff has been very happy with the outcome. They have also had positive feedback from patients and their families, which ultimately reflects the success of this Pediatric Unit's renovation.

### **Cardiac Catheterization Suite**

#### *Existing Cardiac Catheterization Labs*

Cardiac catheterization, a diagnostic imagery treatment for coronary disease in which a catheter is inserted through a vessel into the heart, can be a terrifying experience. The procedure uses equipment that can intimidate and make the patient feel helpless, and not in control. Further, confusion and anxiety often results if a patient is wheeled through corridors and made to wait in unfriendly surroundings. During the procedure itself, the patient may be unable to focus on anything but the unfamiliar equipment and sounds enveloping them.

The existing Cardiac Catheterization labs at Mercy Medical Center were housed with the **XXXXXXX** department in the lower level of the hospital, and accessed from a secondary entrance to the hospital. The appearance of the labs was function-driven and completely dominated by equipment. The rooms were small and void of character, all factors that did not promote a patient-friendly environment.

The hospital was interested in opening an Open Heart Program, which would increase volume to the cath labs. Since it became clear that accommodating the projected annual patient visits would be very difficult in the existing space--and the existing space lacked desired amenities--the hospital decided to relocate and expand the unit.

It was important for the inter-related departments involved to agree on an acceptable location, because minimal patient transfer distance was crucial. The architects studied several proposed locations for the Cardiac Catheterization Suite, and through a series of schematic diagrams presented proposed scenarios and facilitated the ensuing discussions.

The location chosen was an area on the entry floor, next to admitting and the emergency department.

#### *Process*

The architects phased construction to keep adjacent units operational, and, as with the Pediatrics Unit project, the staff was involved early in the design process to ensure that the new suite would operate smoothly. Because of the complexity of the equipment in this area, several equipment and technical experts were consulted, and the staff contributed their expertise on measures that would make their department more efficient. Even the catheter storage units were custom-designed to make the most of the space.

#### *Result*

The constant dialogue between the architects and Cath Lab staff proved productive in creating a successful and innovative design. The result is a 5,700-square-foot Cardiac Catheterization Suite that strives to maintain a humane emphasis within this "high-tech" sea of equipment (*See Exhibit B*).

The suite is comprised of two Cardiac Cath labs with a common control room, seven patient recovery rooms, a nurse administration area, a viewing room that can accommodate families, staff work areas, and support space. Circulation within the suite is well organized with unobstructed paths to the labs. The central nurse administration area is positioned to optimize staff visibility into each recovery room.

The architects designed the space as a series of thresholds that a typical patient would go through until discharge. This creates a sense of expectation and generates a perception of control. This psychological empowerment prepares patients for the actual medical procedure, which is rather invasive. (Needless to say, it is often frightening to undergo any kind of invasive medical procedure and especially so in an ambiguous, sterile environment.) By taking the patients through the series of thresholds, their perception of the actual procedure is broken down into smaller sections of time, thus reducing their anxiety levels.

The location of the new Cardiac Cath suite decreases inpatient patient transfer time from other departments. Most transfers now are from the same floor of the hospital, eliminating the invasion of privacy that can occur when a patient in a vulnerable position has to ride in an elevator with strangers. Ambulatory patients are near the hospital's front entrance and the main waiting area.

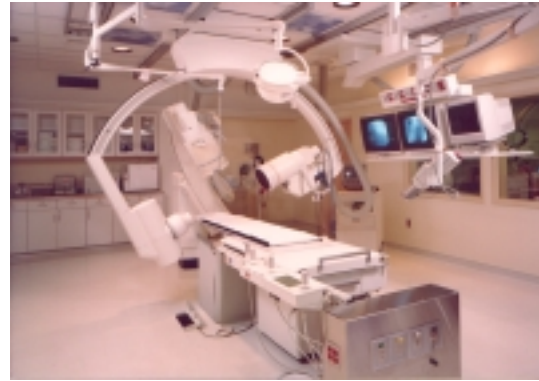
Once inside the suite, patients pass by a calming, 20-foot-long wall mural of rolling landscape and water on their way to the labs (*Figure 5*). While the downside of the cath lab suite's new centralized location means it is totally within the building's interior, the mural enlivens the space.



**Figure 5.** Corridor: Cardiac Catheterization Suite at Mercy Medical Center  
Photography: Courtesy of Harrell Group Inc

The Cardiac Cath labs themselves are spacious—more than 500 square feet each—and share a generously sized control room that provides informal conferencing and work space. In-room storage (including catheter storage) increases staff efficiency by decreasing travel distances.

Because of the intimidating nature of the procedure, the designers chose many of the space's amenities from a patients' perspective. For instance, they installed variable lighting that can be brought down to a minimal level during the procedure, and used warm and soothing colors throughout. To take the patient's focus away from the procedure, intermittent ceiling tiles were custom-painted to depict a clear sky on a sunny day with a few cumulus clouds passing by (*Figure 6*). Because a great deal of equipment is ceiling-mounted, this small and economical detail has proven to be the most appreciated amenity noted by visitors to the suite.



**Figure 6.** Cath Lab: Cardiac Catheterization Suite at Mercy Medical Center  
Photography: Courtesy of Harrell Group Inc

A great deal of equipment had to be ceiling mounted, so the tiles were placed in a haphazard pattern wherever space allowed. The result was the essence of a plane with punched openings or “peepholes” to the sky. As typically occurs in a diagnostic setting, equipment costs were so high there was little money available for any discretionary design elements. This small and economical detail has proven to be the most appreciated amenity as voiced by patients.

Lighting within the labs is variable so it can be brought down to a minimal level during the procedure. Usually a high light level is required only when equipment is being serviced or the room is being set up for a procedure. This general room illumination is accomplished with indirect perimeter cove lighting. Recessed lights on dimmers provide further flexibility. Fluorescent strip fixtures were avoided because they can be uncomfortable for a patient on a stretcher. Colors are warm and soothing, chosen to provide a non-threatening envelope. Because of the orientation of the patient, most of the wall surfaces are out of the patient's view so strong accent colors would not have a large impact.

The Cath Labs themselves are spacious at over 500 sq. ft. each and share a generously sized control room. The enlarged control room proves to be a valuable bonus for the staff by providing informal conference and work space. Storage within the labs includes custom catheter storage that increases staff efficiency by decreasing travel distances for equipment retrieval and restocking.

After the procedure, the patient is recovered within the same suite. Eliminating transfer between departments at this juncture has proven to be another

real success for the project. The recovery rooms are in close proximity to the central nurse work area, reinforcing a sense of security for the patients. However, they are located off of a different corridor than the labs and control room to avoid any possibility of one patient overhearing discussions about another patient's diagnosis during a procedure. There is a personal locker and a television in each recovery room to add an individual touch.

One of the recovery areas is a two-bed open bay directly across from the nurse work area, which can be utilized in an emergency situation by expanding to accommodate additional equipment.

Although the Cardiac Catheterization Suite described above is small, it proved to be a challenge to the design team due to existing structural limitations versus technology requirements. However, the end result is a successful project where a humane atmosphere prevails despite the high technology.

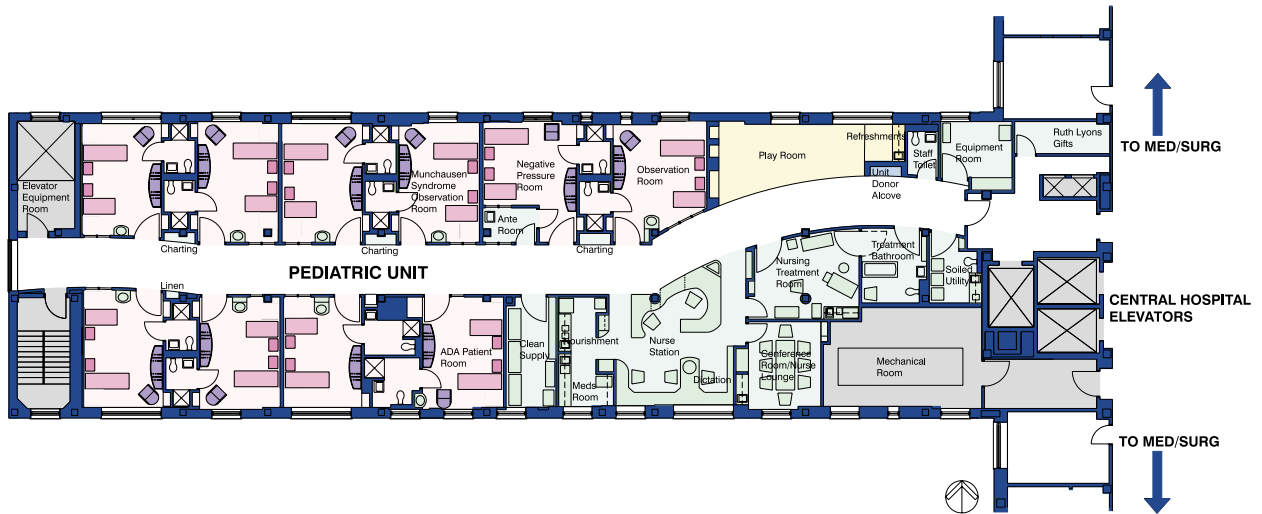
## CONCLUSION

With ever-improving technology comes the price of ever-increasing stress, which in turn leads to more frequent manifestations of "modern" diseases such as heart disease, cancer and the like. Stress is the silent enemy. Despite the notion that many people believe stress is the precursor of disease it is especially harmful when manifested during an actual episode of illness. It thwarts healing because it suppresses the immune system. Very ill people have to be cared for in a hospital, yet many hospitals are still unaware of this relationship between stress, illness and recovery. Consequently the environments patients find themselves in are highly stressful.

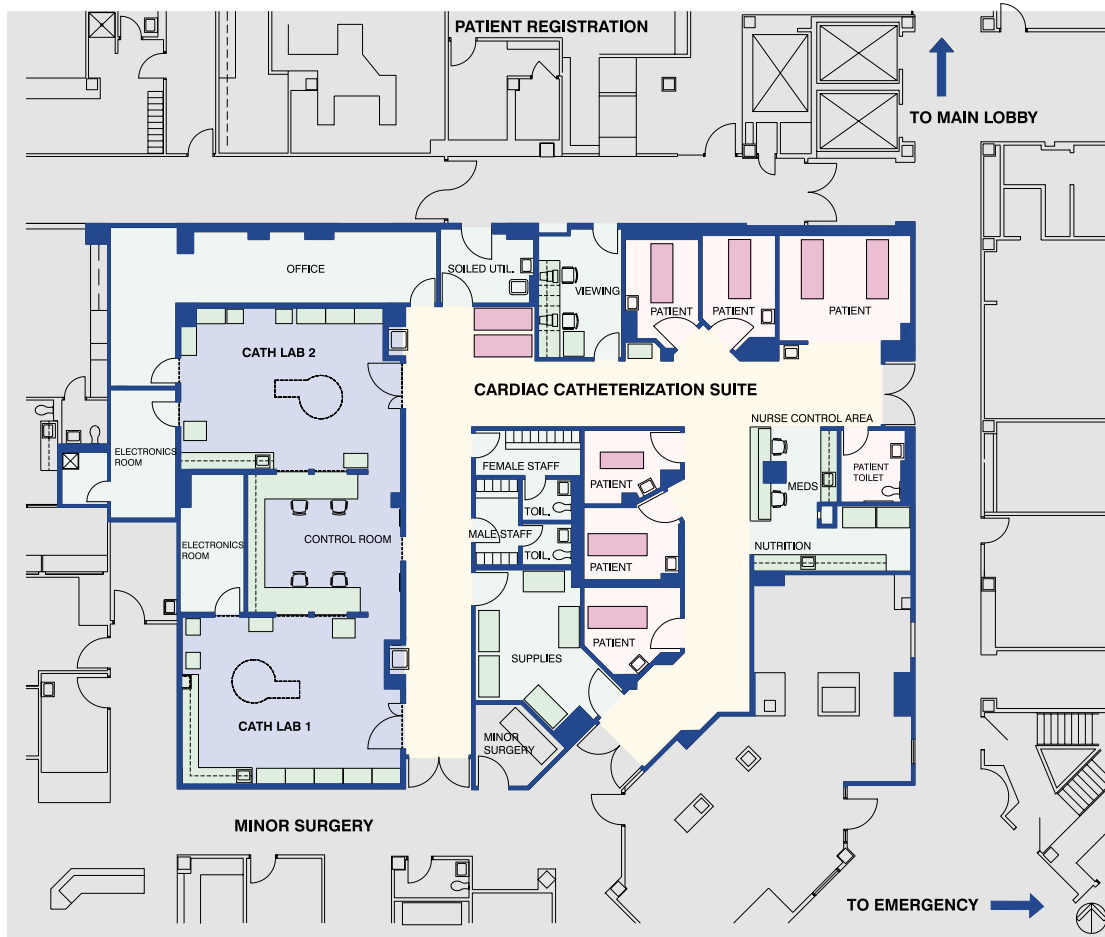
The design team contacted staff at both units after a year of occupancy in the renovated areas and received very encouraging feedback. Nurses believe that they are more productive because of the improved image and efficiency, and physicians are proud to show off their units to other physicians at the hospital. A common goal in the design of both units was to establish a connection with nature.

As we enter a new century and a new millennium, we cannot help but wonder what technological and medical miracles will occur in the future. However, we must also ask ourselves what effect will they have on our humane-ness, our mind and soul. We must aspire to preserve that humane quality in order to keep the technology from completely taking over and robbing us of ourselves. We can do that by ensuring that our designs speak to and encompass the human, as ancient civilizations knew so well. Their legacy is of an ageless quality that transcends time and space because of the human connection. Keeping this connection will inevitably result in places that are alive and timeless.

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*(Exhibit A).*  
 Courtesy: Harrell Group Inc



*(Exhibit B).*  
 Courtesy: Harrell Group Inc



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