Case Study: Sacred Heart Medical Center

BY ALAN YORDY

Ten years ago, PeaceHealth, a Catholic health care system comprised of seven hospitals and multiple physician clinics serving Washington, Oregon, and Alaska, embarked on a journey to replace its flagship hospital. Sacred Heart Medical Center, in Eugene, Oregon, was a 432-bed tertiary care facility serving much of western Oregon. Following the development of a new 386-bed facility in Springfield, Oregon, known as Sacred Heart Medical Center at RiverBend, it is now a two-campus hospital with a total of 490 beds. It is the largest medical center between Portland, Oregon, and Sacramento, California.

Our pivotal decision was to engage two architectural firms—one with resort and hospitality experience, and the other, Anshen and Allen, with more than two-thirds of its focus on evidence-based hospital design. A lead Anshen and Allen partner suggested that we join the Pebble Group. We agreed that ours would be an ideal project to contribute to the body of evidence regarding hospital design. While we knew little about this science, we did know that we had one of the most beautiful sites in the country—185 acres on the McKenzie River, known for its spectacular fly fishing. Careful orientation of the new hospital could give virtually all patient rooms a view of the McKenzie River, the nearby Coburg Hills, or the Oregon Coast range.

During the planning process we made a commitment to create a “healing environment,” which we defined as maximizing the advantages of the pastoral site along the McKenzie River. As time progressed, we discovered that this also meant the use of evidence-based design features, including comfortable family space and carefully designed single patient rooms. A few community members were skeptical that this was anything more than a justification for building an expensive “Hospital Hilton.” The evidence gleaned from our work with the Pebble Group and the overwhelmingly positive response to the early design concepts by the patient review teams converted the skeptics to strong supporters. Roger Ulrich, Texas A&M professor and author of research on evidence-based hospital design, held design sessions with project leaders. Four key elements emerged from Ulrich’s research as the most important:

- Views from patient rooms reduced stress and length of stay by approximately 10 percent.
- Single-patient rooms helped increase communication between caregivers, patients, and families by 50 percent or more.
- Single-patient rooms helped reduce infection rates by up to 25 percent.
- The use of soothing, impressionistic art, muted, warm color, and natural and indirect light had a significant impact in putting patients and families at ease.

Another important influence was a finding from our own research on the benefits of patient lifts. Based on the increasing weight of patients and aging of the nursing workforce, one of our nursing leaders was convinced that the cost of installing lifts—which were rare in U.S. hospitals until recently—would be offset by a reduction in staff injuries. With the average age of our nursing staff pushing fifty, this proposition seemed plausible. To test this hypothesis, we installed lifts in the old hospital in 2003: one of our intensive care units was equipped with lifts, the other was not. Our sixty-month study, published in Health Care Design in 2006, showed an 83 percent reduction in annual work injury costs due to patient lifting. Within the two nursing units in the study, annual staff injuries declined to two from twenty-five, with an associated cost savings of $305,000 during the two-year study period. The lifts actually paid for themselves in fifteen months.

We concluded that every patient room in the new facility must be outfitted with patient lifts. In addition, there must be only single-patient rooms, and art, color, and finish materials must be carefully selected. The comfort and warmth of the facility would belie the sophisticated technology behind the walls. There were risks in designing a patient room that would be replicated hundreds of times. We learned from studying Marriott hotel designers that they build room mock-ups for every hotel and seek customer and staff input prior to construction. The conceptual design often would be changed many times before the room was approved.

We decided to build three mock-up rooms in a warehouse—a patient room, a neonatal intensive care room, and a...
surgical suite. Staff and former hospital patients were invited to provide feedback on the design. More than one hundred substantive suggestions were made. Two of the new rooms—one medical/surgical room and one ICU room—were built in the old hospital so that staff and patients could actually use the rooms for at least three years prior to construction. More than two hundred additional refinements were made to the patient room.

One of the most noteworthy design changes was to place all nonnarcotic medications inside the patient room to significantly reduce staff walking time and medication errors, a change that required prolonged negotiations with regulators. We also installed a system using pneumatic tubes to deliver medications to patient care units, which reduced delivery time by half. Another significant design change was to create a bathroom “barn door” on a sliding track that increased the usable space in the 240-square-foot room, allowing virtually all 386 patient rooms in the RiverBend hospital to have bathrooms that complied with the Americans with Disabilities Act. Surgical suites were designed to a 650-square-foot standard. We theorized that a standard design would reduce errors and facilitate use of any surgical room for specific specialties, except for open heart procedures. A common surgical information technology support system further improved capability by allowing images and data to be moved easily within the surgical environment.

Construction began in the fall of 2005, and the new hospital opened in August 2008. It won the 2009 Vista Award of the American Society for Healthcare Engineering for best hospital project. While the results are still preliminary, trends are emerging that confirm some of the early data from the evidence-based design research.

- Length of stay has decreased from 4.18 to 3.82 days, even though our patient population has become sicker. While we haven’t studied the reason, anecdotal evidence suggests that a reduction in stress (because of families’ increased involvement, single-patient rooms, and calming views) played a role.

- The cost per adjusted discharge has been reduced by $790 per admission (from $14,559 to $13,769), or 5.4 percent. Evidence-based design contributed significantly by reducing circulation time for nursing staff, pharmacy distribution expenses, and surgery-related costs.

- Patient satisfaction has risen to 86 percent, in the top fifteenth percentile nationally and well above the national average of 66 percent. It is also the highest of any acute-care facility within PeaceHealth. Patient comments suggest significant improvement in communication with nurses and physicians. This deserves more study.

- Prior to operating in the new facility only 23 percent of the operating room turnover times were less than twenty minutes. Today more than 36 percent are less than that, improving surgeon satisfaction.

Several areas require further attention. Hospital caregivers need more social spaces that are easily accessible during work activities. Anecdotes suggest that we have succeeded in creating more time with patients, but that staff spend less time with one another. For some, this leads to feelings of isolation from colleagues. Even though injuries due to patient lifting continue to be at minimal levels due to patient lifts, other caregiver injuries have increased. The increased distances that housekeeping staff must navigate due to the larger square footage of the hospital appear to contribute to this troubling outcome. While the trends are promising, we have not been able to confirm any statistically significant change in infection rates, in part because our patients are sicker upon admission.

The ultimate test of any hospital is the experience of patients and families. Shortly after the hospital opened, I experienced the death of a close friend whose last days were spent at the new hospital. The old hospital had mostly 250-square-foot double patient rooms, leaving little opportunity for privacy or space for gathering. In contrast, the 240-square-foot single-patient room in the new hospital became a gathering place for friends and family. It created a sanctuary for conversation, tears, stories, and sacred moments. It was gratifying to know that all the analysis and thoughtful design resulted in a place where families and patients could experience a culture of healing, whether at the beginning or end of life.