

Flexibility is essential to  
accommodating multiple needs

## STEP INSIDE THE PATIENT ROOM OF *THE FUTURE*



Ellerbe Becket professionals participated in a design charrette to generate ideas for the "patient room of the future."

When sixth century Greek philosopher Heraclitus said "nothing endures but change," he easily could have been referring to the healthcare field, an arena in which advances come quickly as medical technology improves and caregiving methods evolve. The business side of healthcare delivery also has seen dramatic changes. This constant transition is perhaps most evident in hospital patient rooms, where creating flexible designs is becoming critical to cost-effectively staying atop quality care.

### LOOKING AHEAD

What will this adaptable patient room of the future be like? That's the question Ellerbe Becket medical planners, architects, interior designers and engineers set out to answer.

"The patient room is a key element of a hospital. We instigated a continuing education exercise to stimulate discussion about what will be important to the hospital room during the next several decades," says John Waugh, AIA, Ellerbe Becket principal architect. "We wanted to explore the possibilities to better ourselves for our clients."

During charrettes (intense work sessions yielding resolutions and action steps), Ellerbe Becket professionals worked through key issues to arrive at an optimum design. The process started with consideration of healthcare trends that will influence the room's features, including characteristics of future patients, resource limitations, rising costs and technology.

## SUSTAINABLE DESIGN IMPORTANT TO FUTURE FACILITIES

Creating the patient room of the future wouldn't be complete without considering the issue of sustainable design, a building process that promotes environmentally conscious facilities.

“Sustainable design is about designing and building environments to meet today's needs without compromising future generations' ability to meet their needs,” says Stephanie van de Mortel-Statz, Ellerbe Becket interior designer. “It's a trend that's been on the rise for decades and is here to stay.”

Multiple sustainable design factors are relevant in constructing future hospital rooms that minimize negative effects on the natural environment and people living in it, or even restore the environment. Opportunities include:

**Durable natural finishes from renewable resources.** Employing materials such as linoleum flooring and bamboo wood—which grows quickly—lessen deforestation. Natural finishes also can be cleaned without harsh chemicals and processes, eliminating toxic volatile organic compound vapors.

**Operable windows.** While not currently recognized by healthcare industry standards as an acceptable means of ventilation, future designs may incorporate patient-controlled access to outdoor air. Limited application in non-critical environments is seen as a potential opportunity to boost the patient's mental outlook and aid healing.

### AGING BOOMERS, LIMITED NURSES

Hospital patients during the next 30 to 40 years largely will come from the baby boomer generation. “As these individuals grow older they'll have a greater need for healthcare and frequently will have multiple problems,” says Waugh. “They also may be having elective procedures and a general expectation of a higher level of care, including spa-like amenities. Obesity also will be a factor among patients.”

Meanwhile, the nursing shortage will continue and existing nurses will age, making professional caregivers scarce and tasks more strenuous. “This creates concern for staff and patient safety. For example, overweight patients are harder to move, potentially harming caregivers and the patient,” explains Craig Hall, AIA, senior medical architect at Ellerbe Becket. “Placing room functionalities, such as sinks and work counters, where they aid efficiency will save time and therefore labor costs. Additionally, families will become an important part of providing care so the room must have space for them during all hours.”

### READY FOR ANYTHING

Along the lines of saving money, the room must be universal enough to allow changes dependent upon hospital needs. “During 30 years a room may be part of a pediatric unit, an intensive care unit or labor and delivery. The room even could be used for minor procedures making it a treatment room and more of a profit center,” says Hall. “The key is to make the room flexible so transitional expenses are minimized. Additionally, using 'green' building techniques will continue to be important for environmental preservation and to cost-effectively construct facilities long term.”

When you consider the medical technologies of today that didn't exist even 10 years ago, it's easy to understand how important it is to build a room that can accommodate advances. “Buildings need to be adaptable enough to work well without knowing what's to come. For example, the building's structural, mechanical and electrical infrastructure has to support these changes,” says Waugh.



**Energy efficiency.** Natural light can be used instead of electric lights during daytime hours, as well as varying air-fan speeds. Side-toilet room designs with fixtures back-to-back more effectively use space and allow common waste, vent and water piping. This reduces the amount of construction material needed and minimizes renovations when medical-unit changes occur. Using locally-sourced construction materials also reduces energy expended in transit.

**Recyclable materials.** Choosing materials and products that can be recycled or remanufactured at the end of their useful life conserves resources.

“The challenge is for healthcare organizations to realize the initial extra expense of using sustainable design is justified by the building's life-cycle cost,” says Dan Dickenson, a mechanical engineer at Ellerbe Becket. “Because healthcare facilities are built to last many decades—even beyond their use as medical buildings—building sustainable space is efficient as well as environmentally responsible. Soon it even may be required.”

Rapid advances in medical technology require hospitals to be flexible and adaptable to provide the best possible care to patients.

### OPTIMUM DESIGN

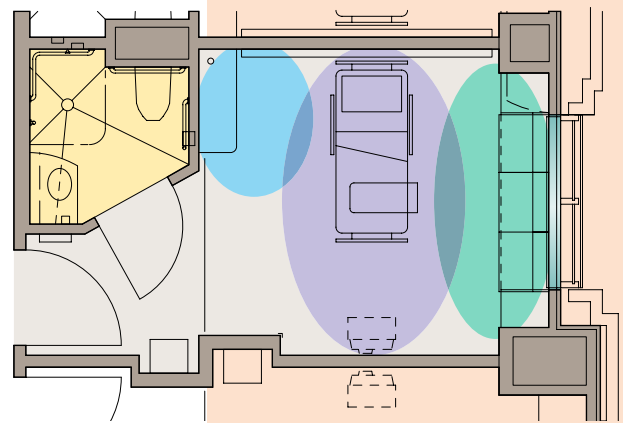
With all these factors in mind, Ellerbe Becket's healthcare contingent considered inboard toilet room designs (where the toilet is located along the corridor wall thereby allowing more natural light and extra space for family members) and outboard toilet designs (where the toilet is located along the exterior wall to provide maximum patient visibility for hospital staff) before deciding on a room design with toilet areas side-by-side between patient rooms.

Three distinct zones make up the oval-shaped side-toilet room design: one each for caregivers (blue), the patient (purple) and family members (green).

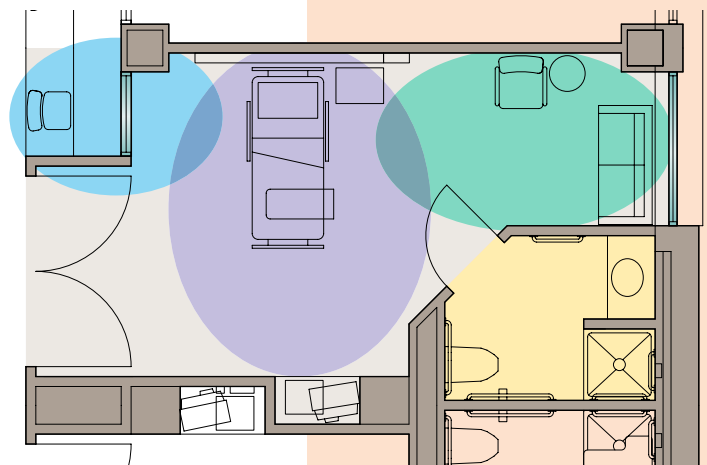
The portion of the caregiver zone outside the room entrance includes space for staff to perform electronic charting and see into the room. Nurses could monitor several patients from this location. Inside the room, the caregiver has a hand-wash sink and work counter, plus easy access to the patient headwall.

The bed is the main feature of the patient zone, one that allows easy transporting to the bathroom to prevent caregiver injuries. In the family zone, a day bed provides sleeping arrangements, while a desk enables family members to continue work while supporting their loved one. Wireless technology gives online access throughout the room. "With fewer nurses, family members will assume more and more patient-care responsibilities. They need space and amenities to be comfortable and continue their lives while doing this," notes Hall.

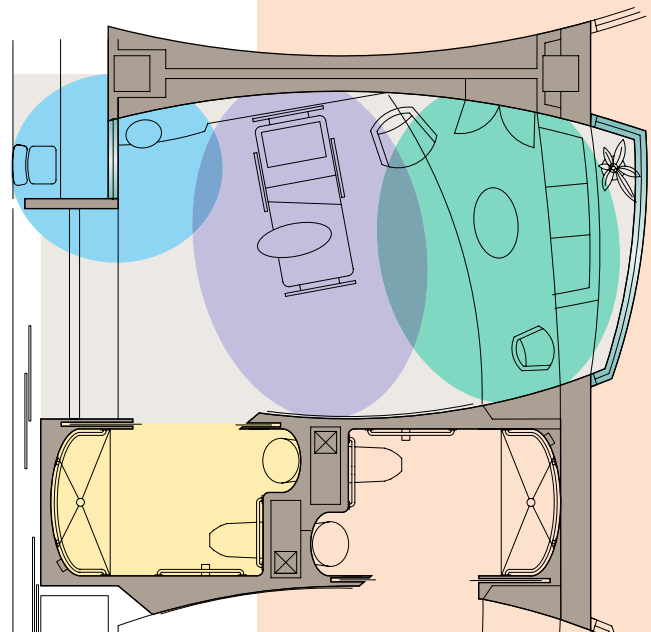
"While both inboard and outboard toilet rooms have merits, the side version allows the best of both worlds — a view to the outdoors and family space, while maintaining staff visibility into the room for better patient care," says Christine Hester Devens, NCIDQ, Ellerbe Becket project interior designer. "It's also flexible enough that remodeling to accommodate unit changes would be minimal. Only interior features would require changing. No plumbing needs to be relocated."



Inboard Toilet Design



Outboard Toilet Design



Side-by-Side Toilet Design

Each plan considers the location of the toilet room and its effect on the function of the patient room.

Design features of the side toilet room promote healing and comfort for patients while addressing caregiver needs.



The curved wall and ceiling forms are a departure from the traditional institutional feel.





Left, positive visual and auditory elements can be displayed on the room's video screen, along with information pertinent to the patient's care. Below, interior design characteristics are soothing and conducive to healing, and a departure from traditional institutional elements.

The side toilet room plan also marries high tech with high touch. While it can accommodate the latest medical technology, its interior-design characteristics are serene, comfortable and conducive to healing. "The environment is like a spa — calming and simple," explains Devens. "The curved wall and ceiling forms are a departure from the traditional institutional feel. Surfaces on walls, floors and furniture are textured but easily cleaned. Sights, sounds and smells are appealing."

Positive visual and auditory elements can be introduced on the room's video screen. "From their bed, a patient can pull up a wooded scene with a babbling brook, which can lower stress and aid recovery. This is especially important for hospitals in urban settings where there are no views of nature," says Devens. "The video screen allows some patient control and also can be used for videoconferencing with their children at home, speaking to medical specialists, communicating with nursing staff and more."

#### ASSESSING SIZE

One drawback of the side toilet version may be that the overall nursing unit becomes longer. "The floor plan has 18 linear feet versus the typical 15 linear feet of corridor space per room. This equates to longer travel times to support spaces for already busy nurses," explains Hall. "However, this is assuming a 28 to 32 bed unit. In the future, units may be smaller making the increased size not as much of an issue. Overall, buildings with side-toilet rooms will be longer but not quite as wide, meaning costs typically won't increase."



The toilet location debate might not be a discussion point today if not for Tom Ellerbe who, in 1922, first proposed the radical idea of equipping each hospital room with its own private bathroom.

Flexibility in design has been a goal of healthcare visionaries since the days when the brothers Mayo opened their first clinic. Durable, sustainable design, if implemented properly, will allow future healthcare executives to hold the line on costs and continually improve the quality of patient care.

