

# Designing an Efficient and Cancer Care Environment

**SHOULD A HOSPITAL OR CANCER CENTER** decide to design a new facility or upgrade an existing one, a balance must be obtained between an *efficient* design that encourages space sharing and allows cross-coverage whenever possible and a *compassionate* design that soothes and uplifts patients.

The first step is to analyze current operational practices and work flow and look at construction that will improve these patterns. Future operational and staffing plans should be considered as well.

In 2002 the cost of new construction for a community-based cancer facility that includes infusion therapy, two to three linear accelerators, physics support, exam rooms, and physician offices was approximately \$150 to \$160 per square foot. Renovations are often as expensive as new construction because they must be performed without interrupting existing services.

The number of appropriate exam and treatment rooms for the facility should be calculated based on past volume numbers, patterns of referral, market demographics, and community growth expectations. Hours of operation, procedure room traffic, and scheduling efficiency must also be factored into the room calculation equation. Room utilization should be benchmarked against industry standards to ensure a return on the facility's investment.

In addition to the obvious infusion and radiation therapy treatment areas, a multidisciplinary clinic will need space to treat cancers of the lung, head and neck, skin, gastrointestinal tract, urological system, and neurological and endocrine systems, with the specialized equipment each of these conditions requires. Breast and gynecological cancers might be better treated in a dedicated women's health suite, and whenever possible these women's health centers should be adjacent to the hospital's mammography and ultrasound departments.

If a rehabilitation program is offered on the premises, areas for physical, occupational, and speech therapy will be needed in addition to offices for physiatrists, pain control specialists, enterostomal therapists, and others.

Space for wellness programs that encourage annual colonoscopies, mammograms, and other preventive testing for specific risk groups is also important.

The design should also take adjacency requirements into consideration. For example, treatment and diagnostic areas should be planned to reduce steps for patients and their families in addition to being convenient for the physicians and staff. Infusion therapy, radiation therapy, and exam suites should be next to each other, but separate and distinct units. Clinical research and teaching spaces should also be conveniently incorporated into the treatment area. Staff lounges and research labs that patients will not enter should be placed away from the patient entrance



**Design of the linear accelerator room at Baylor Healthcare System in Irving, Tex., provides a soothing and beautiful surrounding for patients undergoing radiation therapy.**

and caregiving spaces. Research laboratories should be located near the principal investigators' offices, and should be sized based on grant dollar projections. The tumor registry, physics lab, pharmacy, and research protocol offices should be conveniently situated for staff access. Procedural and operating room services will require preoperative, holding, recovery, and postoperative areas.

Planners should also consider patient transportation needs, materials distribution, ease of access to inpatient areas, and staff support elements when planning an efficient cancer center.

Linear accelerators and even exam room space are expensive. Before undertaking a costly expansion, facilities should review their operating procedures to see whether they could be streamlined or improved, and consider staying open more hours during the week or on weekends to accommodate more patients. Although these additional hours will require more staff, an investment in personnel may offer a higher return than an investment in new buildings.

Changes in technology must be anticipated to allow the center to grow. Since many medical and surgical oncologists prescribe PET scans for their patients, a mobile pad should be sited so that this diagnostic modality can be accommodated now or in the future.

If the anticipated oncology staffing shortages continue, robots will likely take over any number of tasks in the health care environment of the future. Robots have already changed the entire process of medication delivery and are being employed in research, surgery procedures, imaging, and rehabilitation.<sup>1,2</sup>

by Constance Nestor, M. Arch.

Of course, cancer centers should be compassionately designed to support the patients who use them, and not just provide efficient workplaces in which treatment can be delivered. Patient support services should include social workers, psychological counselors, pastoral care, nutrition counseling, and a patient education/resource center. These services should be located conveniently near the patient care areas for easy access. Using pleasurable support services to “reward” patients after difficult treatments is an approach some cancer centers are exploring. Anticipating a massage after chemotherapy can make the infusion process easier to endure.

Offering compassionate care that supports the presence of family members is critical in an age of clinic and hospital staffing shortages. Family members can take over some of the physical care of their loved ones, which eases the burdens of overworked nurses and nurses’ aides. Areas within the hospital where patients can be alone with their families to participate in the activities of daily living and

receive and provide emotional support are well received.<sup>3</sup> Facilities that allow out-of-town patients and their families to stay together while the patient receives treatment and palliative care suites, where the family can live for a few days with hospice patients, are especially valued. ☐

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## References

<sup>1</sup>Guth JH. *High Tech Medicine and Robotics. The Time Has Come*. Norfolk, Va. Scientific and Forensic Services; Norfolk, Va. Available at <http://jhguth1942.tripod.com/scitechnews/id9.html>. Accessed Jan. 28, 2003.

<sup>2</sup>Okie S. Robots make the rounds to ease hospitals’ costs. *Washington Post*. April 3, 2002:A03.

<sup>3</sup>Daniels JH. Wright-Patterson Medical Center, right care—right people. *Military Living’s News for Seniors, Military Retirees*. 2000.

## A View From the Inside: Gundersen Lutheran Medical Center

**P**atients and the patient experience were central concerns of the design firm RTKL when it designed the Gundersen Lutheran Cancer Center in LaCrosse, Wisc. Patient focus groups and patient surveys, among other tools, were used to ensure that the patient perspective was considered and understood.

During the pre-planning process, RTKL consulted with everyone who would work in the center. RTKL also worked with the multidisciplinary providers who would later practice in or be involved with the center to create specialized examination and treatment rooms that would serve the various clinical disciplines. Because Gundersen Lutheran promotes a culture of collaboration, the design process went very smoothly.

The vision of the Gundersen Lutheran staff was to create a truly multidisciplinary clinical environment at the cancer center where patients have choices and physicians and other specialists are encouraged to collaborate and consult, not just formally but informally in the corridors, locker rooms, and other proximate spaces. To facilitate this kind of interaction, the following services were incorporated into one building: outpatient clinics, a breast center, operating rooms, the clinical research center, radiation oncology, the pharmacy, the lab, imaging and patient support services (including geneticists, nutritionists, and social workers). Patients can choose to be treated in either private rooms or public

spaces where they can chat with other patients.

The reception area was designed to promote privacy and confidentiality, and financial counselors have offices adjacent to the patient entrance.

Radiation oncology is located on the first floor, next to a parking area. Simulation is located in the radiation oncology suite. The treatment planning area is flexible and expandable and has space for collaborative conferences that involve radiation oncologists, physicians, nurses, and radiation therapists.

The pediatric and adult oncology clinics are on the second floor, but are completely separate and have their own entrances and waiting areas.

The center’s technology is a matter of pride. The entire building is digital. Radiology information is transmitted to PACs through the center’s intranet system, and images developed at remote locations can be instantly transmitted to the center. Bedside charting eases the burdens of the chemotherapy treatment staff. Patients can also access the most recent data on treatment and screening modalities through Gundersen’s computer network.

Quality of life enhancers were incorporated into every part of the facility, starting at the reception area where patients are offered refreshments and continuing through the private treatment rooms, which have attached bathrooms and windows with blinds for maximum privacy. Practitioners at Gundersen Lutheran make it a point of pride to keep the patient’s perspective “at the top of their mind.” ☐