Design of the Ideal Workplace: Strategies and Lessons Learned

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Abstract

As the need for cancer care grows, so does the need for facilities that address the needs of patients and their families. The design of a cancer center must support the treatment and interventional process and maximize the feeling of comfort and reassurance while the patient is present for care. This article will focus on outpatient cancer-care design and the issues involved to assist the administrator in leading this effort.

Workplace Design

"I don't want to have to watch those soap operas or Jerry Springer." These words were shared with this author during a recent focus group about design of cancer-treatment facilities. The design of the workplace affects not only the workers but the patients as well.

As early as 1896, Florence Nightingale and others realized that design affected the patient-care process and patient outcomes.

> Mortality and morbidity are related to defects in hospital construction, sanitation and poor public health. Light is a healthful stimulus. The sick room should be as far as possible from noise. The convalescence of patients would be hastened if hospitals were built to afford them fresh air, sunlight, calm and quiet, views of nature, and a setting filled with beautiful objects, especially of brilliancy of color.[1]

As we move further into the 21st century, cancer care will become more prevalent. Cancer has already overtaken heart disease as the major cause of death for those under the age of 85.[2] As the population ages, cancer care will increase. Therefore, the design of cancer-care facilities has become a specialized focus of healthcare design and architecture. With more cancer-care facilities being developed by hospitals and healthcare systems, the competition among multiple players is increasing and the need to differentiate one center from another has become keener. No longer will patients go wherever their physician directs them. A quality cancer program in an appropriate and well-planned facility will attract patients for care and will ensure the recruitment and retention of qualified, competent staff.

Unfortunately, many cancer-program administrators and office staff have minimal involvement in the workplace design. However, the input of those who will ultimately use the space is critical. This article will focus on the outpatient workplace and the issues that should be considered in design (or redesign) of that workplace. These issues should be considered whether you are designing a small physician office or a large multidisciplinary cancer center.

Why Not Here?

In his talks on healthcare design, Leland Kaiser discusses the visioning necessary for the future. He states:

- Nothing has to be the way it is.
- There is no right way to do anything.
- For everything that is, there are an infinite number of things that could just as well be, and you can always substitute one for the other.
- Everything that can happen will happen at sometime in some place. Why not here? Why not now?

In design of the workplace, it is necessary to look into the future and visualize what can be.

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Current Research

Roger Ulrich provides an excellent review of literature on workplace design, and the variables that he believes affect workplace design for cancer programs include:

- Age of the nurse. By 2010, the average age for nurses will be 50 years old.
- Error rates. Medication errors are increased when there is improper lighting or when distractions occur.
- Privacy needs for patients. In the outpatient setting, privacy is rarely accommodated, and most patients feel their privacy was not assured.
- Stressors in the healthcare environment. Noise increases patients' heart rate, blood pressure, and stress level.
- Distractors. Distractions such as music, companion animals, and nature settings can reduce stress for patients.
- The curative nature of nature. A study on cancer patients revealed that those who were exposed to scenes of natural settings and nature exhibited reduced anxiety levels and less distress and pain.

The built environment can affect patient outcomes. Changes in the healthcare environment to make it comfortable, aesthetically pleasing, and informative have been shown to decrease stress and improve patient satisfaction.[3]

The Ripple Effect of Change

The Pebble Project, launched in 2000, is a joint research effort between The Center for Health Design, a nonprofit research and advocacy organization, and selected healthcare providers. The purpose of the Pebble Project is to provide researched and documented examples of healthcare facilities whose designs have made a difference in the quality of care and financial performance of the institutions.

In one case, the The Barbara Ann Karmanos Cancer Institute in Detroit, Mich, found that a focus on design supported by the Pebble Project resulted in the following organizational and human outcomes:

- 18% increase in patient satisfaction
- Nurse attrition rate decrease from 23% to 3.8%
- Lower daily variable costs per case
- Reduced pain-medication requirements in patients
- Decrease in medication variances
- 30% reduction in medical errors as a result of increased space in medication room, location of medication room, organization of medical supplies, standardized visual cues, and acoustical panels to decrease noise levels

- 6% reduction in patient falls as a result of better visualization of patients because of angle of doorway, improved lighting, and room layout[4]

Numerous cancer centers are involved in review of outcomes based on design. You can review this information at their website.[4]

Planning

Before starting any project, a plan for the future must be laid out. The development of a strategic plan is essential. After all, if you do not know where you are going, any road will lead you there. Numerous articles have been written in *The Journal of Oncology Management* about strategic planning, and they all apply to workplace design. Before starting on a design effort, it is essential that the manager review information on strategic planning and use the strategic thinking to guide future decisions.

The greatest issue we see in workplace design is poor planning—not planning for growth, not planning for competition, or not anticipating changes in the patient volume. The following questions must be asked:

- What are the demographic changes that may affect your primary and secondary service areas (growing elderly, growing baby boomers, decreasing population)?
- What areas of growth do you think may affect patient volumes (adding another physician, adding new technology)? How much will the service line be affected?
- Location, location, location: Are we in a location to grow in the future or are our patients moving away from our location?
- Access: Are we easy to get to and in and out of?
- If you are in an independent practice setting, do you see your chemotherapy volume staying with you or moving to the hospital?
- If you are in a hospital setting, do you see your physicians moving more of their care to your setting?
- What are your competitors doing? Are other providers looking at your location?
- How advanced do we want to be in technology? Are we first adaptors? Do we know what technology we may want to have in the cancer center in the future?

Focus-Group Information

The most important part of workplace design is to talk to the users—patients, families, and staff. This author, along with Ellen Tobin, has conducted numerous focus groups with patients and staff about design issues. Although each

group of patients is different according to nationality, background, age, and distinctive characteristics, some common themes have emerged.

- Offer a variety of treatment and waiting areas. "A place to get away from everyone else when I am not feeling well and a place to talk to my fellow patients when I am feeling well."
- Provide a variety of diversion and entertainment options. "I don't want to have to watch those soap operas or Jerry Springer."
- Privacy. Allow patients privacy and dignity. "Don't come into the room where I am getting treated and tell me I am not doing well. Allow me to gather myself."
- Celebrate the successes and allow a time to mourn the losses for both staff and patients. "We get to ring a big bell when we are done with treatment. It is really a celebration."
- Allow complementary treatments to occur, but discuss them with the patient.
- Ask patients what helps them. "I want to have a few minutes before my treatment to listen to my inspirational message of the day."
- Be aware and passionate of everything that will help patients while they are in your environment. Can you paint a wall to make it more appealing? Can you have a small area as a "quiet, meditation, or spiritual" area? Can you have input into the design or renovation?
- Patients are frightened and apprehensive and want a center that helps ease that fear and apprehension.
- Patients want to know for certain that the nurses and medical staff are readily available. "I don't want to have to get up to find my nurses."
- Rooms should be convenient, spacious, and comfortable for the patients and their families.
- Patients want to be treated in a highly accessible homelike setting for family oriented, patient-centered cancer care.
- The center needs to appear warm and caring while being professional and clinical when necessary.
- Patients want an environment that facilitates healing through all senses—relaxation, color, light, sound, and sensation.
- Create an education or resource center where patients and families can research for themselves about the patient's condition and various treatments that are offered.
- Provide separate entrances for screening activities for the healthy person.

Create a design that supports optimal professional functioning for the staff as well, such as:

- Minimize walking distances. "Spacious is nice, but don't make me walk forever to get to my patients."
- Have everything the nurse or therapist needs close by but with enough room to work.
- Have flexibility in space for fluctuating census. "If we know our census if high every Wednesday, give me room to accommodate that."
- Reduce the amount of lifting. "Can you put the molds in lower shelves so I don't have to always take them down from a high shelf?"
- Allow private space. "I need to get away from the patients sometimes, so I need a quiet place."
- Have treatment areas in a nice setting. "I like to look out at nature as well and get some natural daylight in. When will you start putting natural light in radiation oncology centers?"

Recent Cancer-Center Design

In recent surveys and design, workplace design has varied according to the needs of the patient and staff, and cost issues are always a consideration. In reviewing the design needs of several cancer centers, some standards seem to emerge. Most hospital-based cancer centers and many freestanding cancer centers include many similar and different services. The typical services often seen are shown in Figure 1; additional services are shown in Figure 2.

A question often asked relates to the average size and square footage of the typical cancer center. Of course, size is totally dependent on the services provided in the center, but there are some "rules of thumb" to guide the planning. Table 1 shows some sizes and services in recently designed cancer centers.
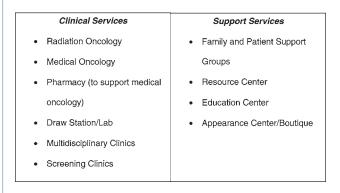
Clinical Services	*Support Services*
• Radiation Oncology	• Family and Patient Support Groups
• Medical Oncology	
• Pharmacy (to support medical oncology)	• Resource Center
	• Education Center
• Draw Station/Lab	• Appearance Center/Boutique
• Multidisciplinary Clinics	
• Screening Clinics	

Figure 1. Typical cancer-center components.

Clinical Services	Support Services
• Breast Center	• Integrative Medicine (CAM)
• Outpatient Pharmacy	programs
• Shared clinical space for	• Hospice Offices
visiting specialists	• Rehab/Physical Therapy
• PET	• Offices for ACS
• CT (or PET/CT)	• Enterostomal Therapy
• MR	

Figure 2. Additional services frequently seen in cancer centers.

For medical oncology, the space is dependent on the number of treatment chairs and the treatment space. Table 2 shows some recent examples of size and services in recently designed medical oncology centers.

Who Are Our Partners in Design?

To ensure an optimal design that fosters a healing environment for patients and families and supports efficient functions of the professional staff, a partnership must be developed between the designers and the healthcare team. Members of the workplace design team should include:

- Architects. The architectural team will include a project manager, a design architect, space programmers (also called medical planners), and often clinical experts (such as a nurse).
- Engineers. There are numerous engineers—civil, structural, mechanical, electrical, and plumbing.

- Interior designer. An interior designer is a critically important team member. This professional assists the designers in the interior design of the facility as well as the interior elements. Often this person is part of the architectural firm but occasionally may have his or her own company separate from the architects. It is important that the interior designer have strong healthcare experience to ensure that he or she is aware of hospital standards and guidelines. The interior designer is instrumental in creating a design that supports healing, reduces stress, and maximizes the visual and esthetic "feel" of the center.
- Others. Often overlooked is the importance of the landscape and signage or graphics support. If an education center is included, an audiovisual expert is useful.

Selection of Architect and Design Team

The selection of the design team should be based on various criteria that often include:

- Previous experience. Pick a team who has experience in cancer-center design. You do not want to provide on-the-job training for an inexperienced team or fix their errors of omission because of their inexperience in healthcare design or lack of knowledge of cancer patients' needs.
- Use of consultants. The engineering team can be a part of or separate from the architectural group. If separate, make certain that the team has worked together and understands the need for close collaboration. Again,

Table 1. Sizes and services of recently designed cancer centers					
Size (ft^2)	No. of Accelerators	Chemotherapy	Resource Center	Education	No. of Offices (Lease)
81 000	3	Yes	Yes	Yes	10
67 000	2	Yes	Yes	No	10
63 000	3	Yes	Yes	Yes	8
61 000	2	Yes	Yes	Yes	8
34 000	2	Yes	Yes	No	3
27 000	2	Yes	Yes	No	2
8000	1	Yes	No	No	1

No. of Medical Oncologists	No. of Approximate Area (ft^2)	No. of Chemotherapy Treatment Chairs	Chemotherapy Treatment Rooms	No. of Exam Rooms
2	5000	10	0	4
2	6800	14	0	5
2	7500	10	3	6
3	8000	12	2	4
3	14 000	17	1	9
4	11 000	18	2	9
4	12 000	20	4	8
4	13 000	12	2	8

Table 2. Sizes and services of recently designed medical oncology centers

use consultants (especially engineers) who understand the details of cancer-center needs.

- Philosophy. Choose a team who shares your philosophy. If you want to have an interactive experience, choose a team who wants to be interactive. If you want a "packaged and complete" design without much input, choose a team who is known for that.
- References. For team members and the company overall, references are critical. Make sure you check references for the company and for specific team members who are assigned to your project. Request that any change of selected team members occurs only after your review and approval. This is especially important for the project manager, who ensures that your project is delivered in scope, on time, and in budget, and the project designer, who is critical to optimal design to support the patient's and staff's experience.
- Site visits to other facilities. Plan to either visit or review electronic images of other cancer centers that the team has designed. Inquire about lessons learned from previous experiences and what design elements they would have changed to improve the final outcome.
- Fees. Of course, the fees proposed by the architect, engineering, and interior design team are critical, but when comparing among several proposing teams, make certain that you are comparing the same scope of work and promised deliverables. If necessary, ask for clarification if there is significant variation among proposed fees, because they may not be covering the

same scope of work. Although important, the proposed fees are but a small part of the overall cost of the facility. The lowest bidder may not always be the best choice. Picking the right team who is experienced, who can demonstrate successful outcomes, and who has an interactive process is most important. The real cost of a project is how well it can minimize recurrent operational costs while attracting patient referrals and sustaining qualified, competent staff. A well-designed cancer center that supports the philosophy of a healing environment can meet these goals.

So What Does This Mean for You?

As the cancer-program administrator, you must have an active and integral part in workplace design. The team involved may be large, and each member contributes special knowledge and input into the design. The team leaders of the design process should be the administrative director and a facilities expert (the owner's representative). The administrative director should control the design, planning, and needs of the department or center. For example, if you are renovating a radiation oncology center, the director of radiation oncology should lead the planning because he or she is most familiar with the flow and clinical needs. A typical workplace design team may include those listed in Figure 3.

As the administrator and design leader, make certain that you have a clear budget and timeline for the project

• Administration	• Financial Counseling
• Doctors	• IT
• Nurses	• Communications
• Therapists	• Vendor of Equipment
• Support Staff	• Housekeeping
• Hospital Support Services	• Board Members
o Facilities	• Community Leaders
o Department of	• Current or Past Patients
Environmental Control	• Jurisdictional Agencies
o Infection Control	
o Security	
o Others	

Figure 3. Typical members of a workplace design team.

and the necessary assistance to make the project successful. Be realistic with your expectations and clearly articulate them to the design team so that everyone is aware of the goals and limitations and shares the same vision.

Last, have fun. Creating something new and seeing your vision become reality can be one of the most important experiences of your career! Not only is the design of a new or renovated facility exciting and fun, but the final outcome can help patients and their families for many years to come.

Acknowledgment

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