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HOME CONTENTS ARCHIVES CALL FOR PAPERS

Cancer Care In the Next Millennium



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[Go to Article](#)

One in four Americans will develop cancer in his or her lifetime. As a disease associated with the aging of the population, its incidence is expected to continue to grow. Advances in treatments, as well as in approaches to carrying out such treatments, are ushering in a new paradigm in the design of cancer care centers. Among the trends in cancer care under way are an increasing emphasis on administering treatments on an outpatient basis; consolidation of cancer services in one facility capable of providing the full continuum of care; and providing patients with current research information on disease and treatment alternatives.

Two facilities exemplifying these trends are the Hoag Cancer Center, built in 1991 in Newport Beach, California, and the Klabzuba Cancer Center, built in 1996 in Forth Worth, Texas. Developers of both facilities incorporated significant patient input into their designs from qualitative research obtained through focus groups. Each center, while addressing the important clinical needs of cancer patients, was designed for the provision of "holistic" care, in which cancer patients are viewed as a whole person, taking into account their physical, emotional, and spiritual needs. Each offers state-of-the-art treatment within a warm, home-like setting designed to make the patient comfortable and optimize his or her chances for recovery.

The Academy Journal

HOME CONTENTS ARCHIVES CALL FOR PAPERS

Cancer Care In the Next Millennium

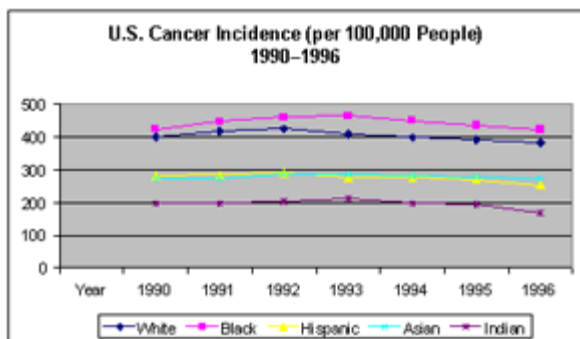
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The Impact of Cancer

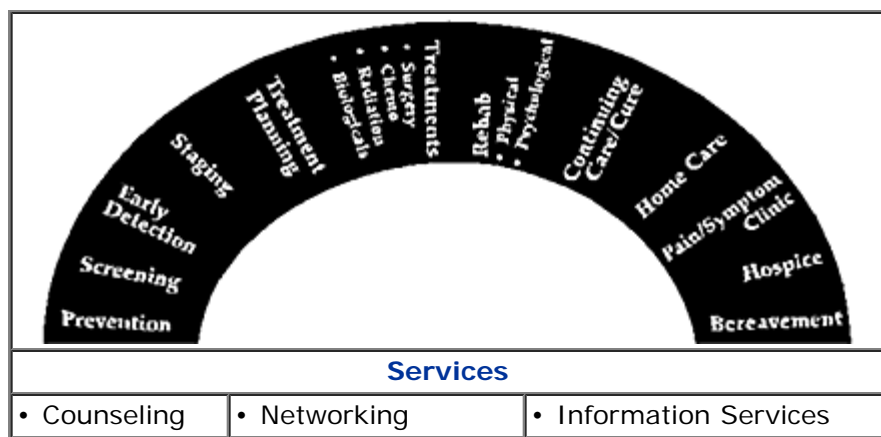
It is estimated that over 1.2 million Americans will be diagnosed with cancer each year by the year 2001. While this is an alarming number, the incidence rate actually fell almost 1 percent from 1990 to 1995, the first time such a decrease has occurred in recent years. (1)



Graph based on data from the National Cancer Institute

Medical care for those with cancer will top \$300 billion, or over 20 percent of all healthcare expenditures. (2) While this trend continues, more Americans are living with cancer than ever before. However, over 1,500 persons per day continue to die in the U.S. from cancer. Treatment of cancer has changed little in recent years. While specific drugs or regimens have changed, the mainstay for cancer treatment continues to be surgery, chemotherapy, and radiation therapy.

Cancer centers are placing more emphasis on the entire continuum of care, as shown in The Cancer Care Continuum.



• Education	• Research	- Lay
- Lay	- Treaments	- Profdessional
- Professional	- Cancer Control	• Affiliations
• Data	• Accommodations	• Transportation
• Support		• Marketing

Exhibit 1. The Cancer Care Continuum

This continuum involves prevention activities, screening, treatment, and aftercare. This emphasis is being driven by the public, which is demanding prevention, early detection activities, and care after treatment.

The authors wish to acknowledge Ellen Tobin, President, Cancer Care Strategies, for her assistance in sharing information on qualitative research and her work with cancer patients.

[Abstract](#)

[Next](#)



The Academy Journal

[HOME](#) [CONTENTS](#) [ARCHIVES](#) [CALL FOR PAPERS](#)

Page 2 of 10

Cancer care is delivered in a variety of settings. The American College of Surgeons' (ACOS) Commission on Cancer has developed an approvals program for facilities that treat cancer patients. While only 25 percent of all hospitals are approved by the ACOS, fully 80 percent of all cancer patients are treated in these facilities. (3)

The sites of care that receive the most publicity and recognition are the NCI Designated Comprehensive Cancer Programs. At the current time, there are 31 programs and include such institutions as [M. D. Anderson Cancer Center](#) in Houston, Texas; [Fred Hutchinson Cancer Research Center](#) in Seattle, Washington; and [Memorial Sloan-Kettering Cancer Center](#) in New York. While these larger NCI centers receive great publicity and recognition, it is the community hospital or local academic center where most care will be given. It is estimated that 75 percent to 80 percent of all cancer patients are treated in their own community, most outside one of the NCI comprehensive cancer centers. (4)

There is also a blurring between care given at comprehensive centers and the community setting. With the advent of community clinical oncology programs and outreach activities by the Comprehensive Cancer Centers, patients can now have access to leading-edge technologies and clinical trials for the treatment of cancer without ever leaving their community physician and hospital. As well, with the advent of new pharmaceuticals, immunotherapies, and support therapies, cancer care is increasingly being given in an outpatient setting.

Several paradigms are shifting in cancer care.

Old Paradigm	New Paradigm
Majority of care on an inpatient basis	Majority of care on an outpatient basis
Fragmented and often incomplete	Single access point to enter seamless continuum of care
Poorly informed consumer	Educated consumer armed with current research information on disease and treatment alternatives. (5)

[Previous](#)

[Next](#)

Cancer Care in the Next Millennium

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Interest Area of The
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of Architects

The Academy Journal

HOME CONTENTS ARCHIVES CALL FOR PAPERS

Page 3 of 10

Cancer Center Design

With this trend of growth in new cases, the aging of the population, and the use of community hospitals in cancer care, it is no surprise that more cancer centers are being designed and constructed. According to Modern Healthcare, the number of cancer centers that broke ground in 1998 was almost double that of 1996.

Trends in Cancer Center Construction Outpatient Cancer Centers			
	1996	1997	1998
Completed Construction	79	90	109
Broke Ground	48	68	74
Completed Design	123	220	119

Source: *Modern Healthcare Annual Design and Construction Review*

In order to design the appropriate cancer care facility, input from patients, staff, and the public is necessary. This paper will discuss the use of qualitative research (focus groups) to determine what exactly patients are requesting in their cancer treatment facility and present two case studies on the design and construction of large, comprehensive community cancer centers.

The Starting Point: Qualitative Market Research (Focus Groups)

Qualitative, or focus group, research is conducted to evaluate the quality and desirability of services from the perspective of patients and other users of services.⁶ Qualitative research is not merely a measure of satisfaction or opinion; listening closely and looking under the surface at what patients say gives a real understanding about situations that impact the quality and indeed the outcome of care.

Understanding the differences between what a patient needs and what gives patients satisfaction has wide implications for those who are developing or enhancing interdisciplinary services. Although patients often cannot critically judge clinical attributes, professionals who hear patients can interpret their words and initiate important actions. These experts can solicit opinions and judgments from the patients and their families as to what their needs are.

Professionals who conduct focus groups routinely for cancer services state that cancer patients have excellent ideas for what was well designed and what could be improved.

As the oncology programs are developed, the management of the hospital must ensure that services successfully meet the

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requirements of "users" (cancer patients and those who may be at risk for cancer) and providers (physicians, staff, etc.). Primary reasons to include patients' preferences and the requirements of other important constituencies of cancer services in this process are to:

- Determine if current diagnostic, medical, and support services meet the needs of constituents
- Provide valuable insights that will support program development
- Assess the marketability of oncology services, especially of a site that may be targeted for niche marketing, i.e., a breast center
- Assess satisfaction with existing services
- Assess availability and appropriateness of psychosocial and patient information strategies
- Identify the current perceptions of key constituencies regarding access, availability, and guidance to appropriate services
- Become aware of the perceptions regarding the appropriateness of the detection and diagnosis, efficacy of treatment, and the outcome, including quality-of-life issues
- Determine if the requirements for information, patient education, and emotional support are being met
- Overcome barriers, either perceived or real, to early detection through mammography, cancer treatment, and supportive service
- Assess communication messages, strategies, and vehicles that would be appropriate and useful for cancer patients and their families.

All of these issues can and should impact the planning and design of any new facility. While professionals (physicians, therapists, nurses, and others) are critical to the design of a cancer center, an often overlooked group for consideration is the cancer patient. Who better than the patient to help decide which are the best options for design and architecture? It is recommended that cancer patients be included in the planning, programming, and design of any facility. Qualitative research can answer questions as to preferred options for chemotherapy, resources desired, and appropriate colors and interior finishes.

For renovation or smaller additions, including the patients and their families in interviews and receiving their opinions can be very useful. This is particularly true when one is attempting to consolidate all services and will have various types of patients and families served in one area. Physician and staff input is also mandatory. One who designs in isolation tends to have a beautiful nonfunctional building.

[Previous](#)

[Next](#)

The Academy Journal

HOME CONTENTS ARCHIVES CALL FOR PAPERS

Page 4 of 10

National Trends

While many of the findings in qualitative research are directed toward the operations of the program, most also impact the design and/or remodeling of a treatment area. Ellen Tobin, of Cancer Care Strategies, a focus group research firm, has conducted over 3,000 focus groups nationally, including many with this author. Based on that experience and this author's expertise and discussions with cancer program administrators, the following are trends that impact the new center design and continue to hold true:

- Develop a facility to house all outpatient services for the cancer patient that supports multidisciplinary care. Cancer centers need to house the full continuum of care (Exhibit 1). Consolidation of cancer services in a physical facility provides improved access; opportunities for interdisciplinary interaction among medical, nursing, and support staff; high public visibility; and serves as a reminder to the public and physicians of the program. It can also be the visible reminder of philanthropic support
- Intensive complex chemotherapy treatments are now being delivered in the outpatient setting, including bone marrow transplants, which require more complex treatment facilities. Stem cell pheresis and outpatient bone marrow treatments will become commonplace in the future. Design incorporating the future of healthcare is necessary to prevent a building from becoming obsolete
- Patients want to be treated in highly accessible, home-like settings for family-oriented, patient-centered cancer care. Cancer treatment areas tend to be gloomy. They need to be made more appealing. The center needs to appear warm and caring while being professional and clinical when necessary. However, the psychological needs of the patient and family must be considered as well. A center should provide a true balance between patient and family-centered design and operational efficiency necessary for the delivery of high quality professional healthcare services within a cost-conscious environment
- Consideration must be made to have a healing environment that facilitates healing through relaxation, color, light, sound, and sensation. The use of natural light should be encouraged whenever possible. Windows, skylights, and indoor lighting that mimics natural light should be used throughout the facility. The use of ambient light to mimic natural light, live and silk plants, wood-like interiors, and doors to hide the "clinical" pieces of the treatment are important. Outpatient clinics should take advantage of the views available. Every effort should be made to place the clinics in areas with windows and views. As early as 1860, Florence Nightingale said that "the convalescence of patients would be hastened if hospitals were built to afford them fresh air, sunlight, calm

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and quiet, views of nature, and a setting filled with beautiful objects, especially of brilliancy of color"

- Cancer is a disease that affects the whole family. Allowing family members to interact with the patient and during care is important
- Develop a location for site-specific programs, such as a comprehensive breast center
- Have a resource/education center. The resource center should have cancer information in the form of Internet access, books, videotapes and a librarian for information. Public education and support group activities are best held in a cancer center
- Have a resource/education center. The resource center should have cancer information in the form of Internet access, books, videotapes and a librarian for information. Public education and support group activities are best held in a cancer center
- Patients coming to a cancer center want a separate entrance for screening activities (such as mammography). Many cancer centers not only treat those with cancer, but also have screening clinics and educational programs for the healthy person. Separate entry points for those receiving treatment are recommended. Parking adjacent to the building allows those with difficulty ambulating to access the building
- Have adequate medical office space for physicians who practice in the center
- Clinical research is becoming a standard for cancer programs. Up to 15 percent of all patients are expected to be placed on a clinical trial. Adequate support space for programs is required.

[Previous](#)

[Next](#)

The Academy Journal

[HOME](#) [CONTENTS](#) [ARCHIVES](#) [CALL FOR PAPERS](#)

Page 5 of 10

In Ms. Tobin's research, she has also found the following characteristics:

- Patients are frightened and apprehensive
- They are immunologically compromised
- They have varying needs for privacy based upon the acuity of illness as well as the treatment type and length
- Although some patients indicate they are likely to be social, many patients crave isolation. This includes visual, physical, and acoustic separation
- Patients want to be secure in the knowledge that the nurses and medical staff are readily available
- Patients are sensitive to privacy, lighting, and temperature control and have requirements for windows with views
- Wayfinding is important. Patients state that, in some centers, the act of getting into the cancer center is almost as stressful as the treatment.

The concept for any cancer center is multifaceted. First and foremost, the center needs to adequately house all treatment areas and allow for expansion. Cancer centers today should be designed with sensitivity to the unique physical and emotional needs of patients and their families and support network. A center should provide a true balance between patient- and family-centered design and operational efficiency necessary for the delivery of high-quality professional healthcare services within a cost-conscious environment. It needs to provide a place for education for patients and family. Cancer centers need to be designed with the necessary functional features associated with state-of-the-art equipment, professional spaces, prevention and screening, and diagnostic/treatment areas. Physicians and other professionals using the facility are integral to the design of a functional building. Their input is necessary throughout the design process.

The two case studies that follow are based on two nationally recognized community cancer centers designed by The Stichler Group. They are indicative of the types of facilities now being designed for the treatment of cancer in the community setting, utilizing the research previously mentioned.

[Previous](#)

[Next](#)

Cancer Care in the Next Millennium

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Interest Area of The
American Institute
of Architects

The Academy Journal

HOME CONTENTS ARCHIVES CALL FOR PAPERS

Page 6 of 10

Case Studies: Klabzuba Cancer Center and Hoag Cancer Center

The concepts of design of community cancer centers will be described in the context of two large community programs. These programs are typical of those being developed around the country in community settings. The two facilities to be discussed include the Klabzuba Cancer Center in Fort Worth, Texas, and Hoag Cancer Center in Newport Beach, California. Each of these facilities is a leader in the region for cancer care. Both wanted to consolidate and expand their cancer care services and provide for future growth.

Harris Methodist Fort Worth is a 600-bed tertiary hospital in Fort Worth, Texas. In 1993, the decision was made to begin design and construction of a new facility to care for those with cancer as well as the "worried well" in response to a business plan for the cancer program. Prior to this decision, focus group research was undertaken to determine just what the public, patients, and physicians saw as the needs of the facility.

The resultant building is the Klabzuba Cancer Center, a six-story, 167,750-square-foot, state-of-the-art community cancer center that was completed in February 1996 at a construction cost of \$20.8 million and a project cost of \$32 million.



[Figure 1](#): Exterior of Klabzuba Cancer Center

Hoag Hospital is a 400-bed community hospital in Newport Beach, California. Since the 1980s, Hoag has been a leader in community cancer care and was one of the first community hospitals to develop a full complement of cancer services in a community setting. To consolidate and expand its cancer program and to support new services, the Hoag Cancer Center was developed. This approximately 65,000-square-foot, three-story cancer center was completed in 1991 at a construction cost of \$16.2 million and a project cost of \$23 million. The Hoag Cancer Center has become a leader and model for community cancer care across the country. As the decade ends, Hoag Cancer Center is still considered a state-of-the-art facility.



[Figure 2](#): Exterior of Hoag Cancer Center

Consolidation of Care Services

All services to care for cancer patients should be consolidated into one location with easy access. This includes not only

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treatment areas such as for radiation therapy, but educational areas and research offices. Services should come to the client, rather than vice versa.

Each center includes chemotherapy, radiation therapy, a resource library, conference center, administrative offices, and physician office space. In Klabzuba, a breast center was also included. In that facility, four separate entrances were provided to separate the distinct needs of the people using the center. One entrance was for breast center patients; one was for those visiting the library resource center or coming for education; the main entrance was for general cancer patient visits; and one entrance was located close to the hospital for staff. There was also a connection to the hospital for bringing inpatients in for care.

The Hoag Cancer Center is recessed into the existing slope of a hillside. The primary point of access for the public and the chemotherapy patients is via the second floor. Additionally, separate parking areas and entrances are provided for radiation-therapy patients, staff, and deliveries at the first-floor level and for physicians and other staff at the third-floor level. A pedestrian link connects the facility to the main hospital campus for staff and inpatient access. Each of these centers served as a focus for philanthropic support for the programs offered in the cancer center, as designated by the name of each center. Each continues to be a visible reminder of the cancer care being delivered and, thus, of continuing philanthropic support.

[Previous](#)

[Next](#)

The Academy Journal

[HOME](#) [CONTENTS](#) [ARCHIVES](#) [CALL FOR PAPERS](#)

Page 7 of 10

Centers Deliver Intensive Outpatient Treatments

Traditionally, outpatient chemotherapy/outpatient cancer medicine departments have used chairs for patients receiving treatments. This is not appropriate for every patient and not conducive to the intensive treatments that currently occur in cancer centers. Each outpatient chemotherapy department took into consideration the intensity of treatment now being given to outpatients. Hoag initially designed individual rooms for chemotherapy and outpatient bone marrow transplant support with support systems to care for the sickest patients. Since then, many of the rooms have been converted into pods of chairs to support the growing needs of the center.



[Figure 3](#): Outpatient Medicine Unit at Klabzuba Cancer Center

Klabzuba has a mixture of individual rooms with beds for patients and pods of chemotherapy chairs. Klabzuba administration had focus groups performed and found that patients asked to be with greater than 4 and fewer than 10 patients while receiving chemotherapy. They said, "If there are one or two people, I feel I have to talk to them. If there are 10 and we are all lined up in a row, I will feel like it is a factory." They also wanted the availability of beds in case they were too sick to sit up. Areas for stem cell pheresis were also designed to handle the nurses and equipment needed for these patients. Pharmacy support in the area was developed to assist in the chemotherapy administration.



[Figure 4](#): Outpatient Chemotherapy Unit, Hoag Cancer Center

Radiation therapy departments also took into consideration the severity of patients. Holding areas for gurneys with oxygen and suction were available. At Klabzuba, pediatric patients from the adjacent children's hospital were to be treated, so recovery areas were also designed. In each facility, the nursing care was an integral part of the design. Decentralized nurse stations saved the nurses steps. Built-in cabinets to hold chemotherapy and biohazardous waste kept these out of sight of the patient.

[Previous](#)

[Next](#)

Cancer Care in the Next Millennium

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The Academy
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A Professional
Interest Area of The
American Institute
of Architects

The Academy Journal

HOME CONTENTS ARCHIVES CALL FOR PAPERS

Page 8 of 10

Cancer Centers Should Be Home-Like

Both cancer centers were designed to offer a warm, friendly, serene setting for cancer patients and their families while providing state-of-the-art cancer treatment.

Klabzuba Cancer Center provides a natural and holistic healing environment through a variety of design features. A large central atrium brings light and warmth to all six floors. Interior designs, through the use of a custom water feature, live plants, and specialty art work, enhance the feeling of bringing nature indoors. Four major pieces of art were commissioned to reflect the natural environment of Texas. The water feature in the main lobby simulates the soothing sound of a flowing brook and provides a central focus for donor recognition.



[Figure 5](#): Lobby, Klabzuba Cancer Center

Throughout the facility, there is a warm elegance resembling that of an upscale hotel rather than a medical facility. Bringing in rich, natural woods in the furniture and wall panels, tiled floors and tile on the wall behind the water feature, live trees, and attractive lighting all help add to the open, airy, calming effect of nature. In treatment areas, either carpet or simulated wood floors (with sheet vinyl-like care requirements) carried out the feeling.

A similar feel has been achieved at Hoag. The lobby is inviting and similar to a hotel lobby rather than a clinical site. A three-story triangular atrium with skylights in the center of the facility ushers natural light into the core of all three floors, adding special warmth and brightness to the treatment areas. A beautiful lobby and waiting area features a wall inset aquarium and a reception desk for registration of radiation oncology patients.



[Figure 6](#): Lobby view of Hoag Cancer Center

Radiation therapy departments are usually located in the basement due to shielding requirements. Patients complain that they feel like they are walking into a dungeon when they enter vaults.

[Figure 7](#): Linear accelerator at

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Klabzube Cancer Center

In both Klabzuba and Hoag, natural light is allowed in. In Klabzuba, light us let in from above the corridor adjacent to the vaults. In Hoag, light is brought in through a cutout adjacent to the accelerator vaults. The radiation vaults feature the warmth of a colorful back-lit scene of a floral garden/forest area that minimizes the threat of the imposing equipment. Even the ceilings have a patterned texture, as patients often look up during their treatments.

[Previous](#)

[Next](#)



The Academy Journal

HOME CONTENTS ARCHIVES CALL FOR PAPERS

Page 9 of 10

Cancer Is a Disease Affecting the Whole Family

Each center, while addressing the important clinical needs of cancer patients, was designed for the provision of "holistic" care, in which cancer patients are viewed as a whole person, taking into account their physical, emotional, and spiritual needs. In addition to the patient, his/her family and other caregivers and support network are viewed as an important part of the whole and are encouraged to actively participate in the care and treatment of their loved one. Each center has accommodations for family members/significant others who accompany the patient, with adequate space in the treatment areas for someone to be with the patient at all times. Hoag has a coffee bar and snack area for patients or family members, while Klabzuba has a snack area away from the treatment area where family members can relax.

Important to the care of the patient and the family are counseling areas where patients and family can meet with staff regarding numerous issues. Patients and families undergoing genetic counseling, research studies, and counseling require private space for these discussions. Not only does the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) require privacy for such encounters, patients demand it. Each center described herein provided such space for private family meetings.

Develop a Resource/Education Center

The educational needs of cancer patients and their families are a high priority. In focus groups, cancer patients state they prefer to receive information from a cancer center and come on site for education. As a result, Klabzuba Cancer Center offers a state-of-the-art resource library that provides print material from national organizations, books related to cancer, and videotapes for checkout. Consumers can also view videotapes in one of three viewing stations located in the library. Computerized informational sources are also available, either through the use of CD ROM or on-line searches through the Internet and national on-line data bases. Educational space is provided in four settings. The first is a classroom that seats 100 and is used for physician education or large public educational programs. Multidisciplinary conferences are held here for cancer conferences and treatment rounds. A state-of-the-art audiovisual system with a T-1 line is in the room. There are also two smaller classrooms for small support groups. Each of these rooms is accessible through a separate entrance.

Mixed media can be utilized, including slides, overheads, and videotape, as well as on-line capabilities. In addition to the main classroom, there are two smaller conference rooms for small group meetings, such as support groups. The educational center can be accessed from an entrance separate from the main

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entrance and does not interfere with the patient care areas.



[Figure 8](#): Cancer resource center at Klabzuba Cancer Center

Hoag developed a different concept. There is a small educational resource center off the lobby that is very accessible. Specific information is available in each treatment area. A large conference center is available similar to the center at Klabzuba. A state-of-the-art system allows mixed media use. In addition, the floor of one conference room is developed for aerobics and yoga classes. Complementary therapies such as yoga, meditation, and nutrition are a major part of the program at many cancer centers. This center embraced that proactively with its education center.

One in four Americans will develop cancer in his/her lifetime. It is important to design centers that treat the patient with the highest clinical standards and recognize the psychological impact the cancer center can have. In this manner, we are partners in the care the patients receive by assisting the clinicians in designing a center that cares for the body and soul of the patients. 🙌

[Previous](#)

[Contents](#)

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