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The Cancer Patient's Perspectives On Facilities Design



Carl Lintner
1997-1998 AIA/AAH Fellow
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Dallas

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This article is a summary of information the author gathered during his AIA/AHA fellowship in 1997-1998. Based on his experience as a student of architecture at Texas A&M University and his experience as a cancer patient, the author takes a look at cancer care through the eyes of both patient and designer. He researches, studies, and analyzes issues pertaining to the patient's environment during treatment. He then develops a consensus of items that can be modified to enhance patient comfort, relieve patient stress, and promote patient healing.

The research is broken down into three major areas:

- Existing cancer information—data related to general statistics, definitions, and trends in the treatment of cancer
- Interviews and surveys of patients and their families, medical professionals, and cancer survivors
- Site visits to seven of the top-ranked cancer centers in the nation, along with studies of other treatment facilities documented from research performed at Texas A&M University. Smaller, local treatment centers are also studied.

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Introduction

This article is a summary of information that I gathered during my AIA/AHA fellowship in 1997-1998. That study was based on both my education as a student of architecture at Texas A&M University as well as my experience as a cancer patient from the fall of 1993 to the winter of 1994. These two vantage points blessed me with the ability to see things through the eyes of both patient and designer. Utilizing these two skills, I was able to research, study, and analyze issues pertaining to the patient's environment during treatment. I was then able to develop a consensus of items that can be modified to enhance patient comfort, relieve patient stress, and promote patient healing.

My research was broken down into three major areas. The first portion of this pertains to research of existing cancer information. Within this section I gathered data related to general statistics, definitions, and trends in the treatment of cancer. These reports will help the reader become more acquainted with cancer on a current level.



[Figure 1](#): The MD Anderson Cancer Center, where the author was primarily treated, is located in the Texas Medical Center in Houston.

The next phase of my study involved performing interviews with and sending surveys to patients and their families, medical professionals, and cancer survivors. These connections helped me establish a broader view by seeing differences between my opinions and those of female patients and elderly survivors.

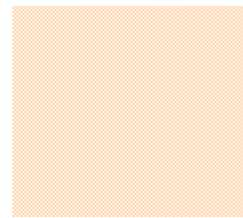
My final area of study included site visits to seven of the top-ranked cancer centers in the nation, along with studies of other treatment facilities documented from research performed at Texas A&M University with the assistance of Ms. Shae Hensley and Ms. Deborah Herzik.

Also studied was the interaction of smaller, local treatment centers working with and in between services of the larger comprehensive cancer centers generally located in a more urban locale. Throughout my visits, I noted areas where the patient was considered when the design was in development as well as particular elements that appeared to hinder progress of the patient, whether in comfort, stress, or healing.

U.S. News & World Report publishes [a list of the top 50 cancer care centers](#). I visited and toured seven of these facilities.

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New and Future Trends: New Advances with Mice Give Hope for a Cancer Cure

The 1990s seem to be a revolutionary period for the fight against cancer. Over the past three decades, cancer has proven time and time again to be more difficult to tackle than initially had been hoped. But within this past decade, research has developed drugs that show promise in preventing breast cancer, and most recently two separate drugs have been identified that, when used in combination, completely eradicate tumors in mice.

The new drugs, angiostatin and endostatin, work by disrupting the blood supply that tumors need to exist. What is most remarkable about this drug combination is that they make the tumors disappear and not come back. Many doctors were amazed by this discovery and believed it to be the most significant discovery for a cure on the current horizon, while at the same time others, who recall similar discoveries that worked well with mice but were less effective in actual human patients, are less enthused. Mice are traditionally the cancer test animals, and cures for mice don't always mean cures for humans.

The discoverer of these two new drugs, Dr. Judah Folkman, is still cautious about the future of his discovery. He too realizes that, until human patients take the drugs, it is dangerous to say what will happen. He did say, "if you have cancer and you are a mouse, we can take good care of you."

Table 1.
Leading Sites of Cancer Deaths—
1995

FEMALE	MALE
Lung 66,200	Lung 95,400
Breast 46,000	Prostate 40,400
Colon & Rectum 28,100	Colon & Rectum 27,200
Ovary 14,500	Pancreas 13,200
Pancreas 13,800	Lymphoma 12,200
Lymphoma 11,330	Leukemia 11,100
Leukemia 9,300	Stoma 8,800
Liver 6,500	Esophagus 8,200
Brain 6,000	Liver 7,700
Uterus 10,700	Bladder 7,500
Stomach	Brain

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5,900	7,300
Multiple Myeloma 5,000	Kidney 7,100
ALL SITES 258,000	ALL SITES 289,000
Source: <i>The New Cancer Sourcebook, 1996</i>	

What makes this treatment especially interesting is that after the initial tumor is gone, no other growths develop. Historically, after removing a single tumor and with no evidence of any remaining disease, the patient will frequently appear cured, but after only a few months an entire series of metastases (new tumors) will emerge and destroy the patient. This one-hundred-year mystery, which has troubled cancer surgeons, was believed by Dr. Folkman to be due to stimulators and inhibitors of blood vessel growth. He thought it might be possible for inhibitors to travel through the bloodstream, deterring new growth. When the initial tumor was removed, these inhibitors would no longer have a source, allowing the microscopic metastases to generate. He put his theory up on the message board and allowed his doctoral and postdoctoral students to ponder this hypothesis, encouraging them to try to prove it.

In 1991, postdoctorate student Dr. Michael O'Reilly and Dr. Folkman discovered angiostatin, a drug found in minute amounts in human blood produced by larger tumors that prohibited the growth of other tumors. This indeed was a revolutionary discovery, but without an agent to eliminate the original tumor, its productiveness was limited. Further research continued to either develop a stronger form of angiostatin or to discover its complementary component.

Shortly afterward, researchers discovered another protein fragment similar to angiostatin that was secreted by tumors. This was a piece of protein from collagen 18, which is found in all blood vessels but alone cannot affect cancer. It was even more potent than angiostatin and could actually shrink the existing tumor to minuscule size. It was then named *endostatin*. Further tests showed that tumors never became resistant to endostatin, which meant that large doses given to the mice had no adverse effects on them. If a mouse was taken off endostatin, the tumor would return, so Dr. Folkman kept them on the drug for the rest of the animal's lives. The mice tumors remained small, and in correlation the mice remained healthy.

Part of the reason the cancers did not become resistant to these new drugs is because, unlike other cancer treatments (e.g: chemotherapy, radiotherapy) they don't act on the cancerous area. Cancerous cells constantly reshuffle their genetic information, which allows them to spin off abnormal cells that can resist treatment. But since endostatin and angiostatin act on normal blood vessels (which are normal cells that don't reshuffle), they do not develop any resistance.

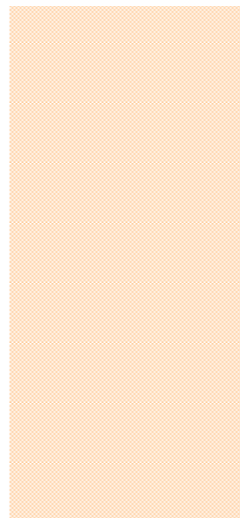
Dr. Folkman then realized he may be able to completely eliminate tumors in mice with the new drugs. Using angiostatin and endostatin together, he could shrink initial tumors while at the same time eliminating any chance of recurrence. He treated mice for 25 days with both drugs and found all of their tumors "eradicated." No side effects were seen, which is extremely rare. He even said that the mice were given up to four times the

necessary doses and no adverse effects were found.

While this information shows great hope that a cure for cancer is within our reach, much caution should be taken before leaping to any conclusions. Previously, hopes were high for chemotherapy drugs that performed well on cancers in mice but failed to live up to their expectations in human patients. Immune system therapies used on mice get rid of cancer but were disappointing when applied to people. Mice can be cured using gene therapy, but it has had only limited success in humans. For most cancer researchers, unsuccessful experiences have led them to be leery of "that four-letter word"--CURE.

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[Figure 1](#)
(16k)



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The MD Anderson Cancer Center



Figure 1: The MD Anderson Cancer Center, where I was primarily treated, is located in the Texas Medical Center in Houston.

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The Mayo Clinic



Figure 2: Comfortable furniture combined with individualized lamps make this waiting area at the Mayo Clinic in Rochester, Minnesota, a relaxing place for patients and families to stay while waiting for their appointments.

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The University of Michigan Comprehensive Cancer Center



Figure 3: The corridor above is located in the University of Michigan Comprehensive Cancer Center in Ann Arbor. Attractive use of backlighting and wall sconces illuminate the hallway well, while high contrast makes signage easily legible from long distances.

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University of California Jonnson Cancer Center



Figure 4: The atrium space located adjacent to patient treatment rooms not only provides a full view of the outdoors through their windows but gives a direct access to nature at the University of California Jonnson Cancer Center on the campus of UCLA.

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St. Joseph Regional Cancer Center



Figure 5: St. Joseph Regional Cancer Center in Bryan, Texas, gives patients a local option for treatment. Prior to construction, cancer patients in the Bryan/College Station area had to travel to surrounding cities, such as Waco and Houston, for treatment.

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