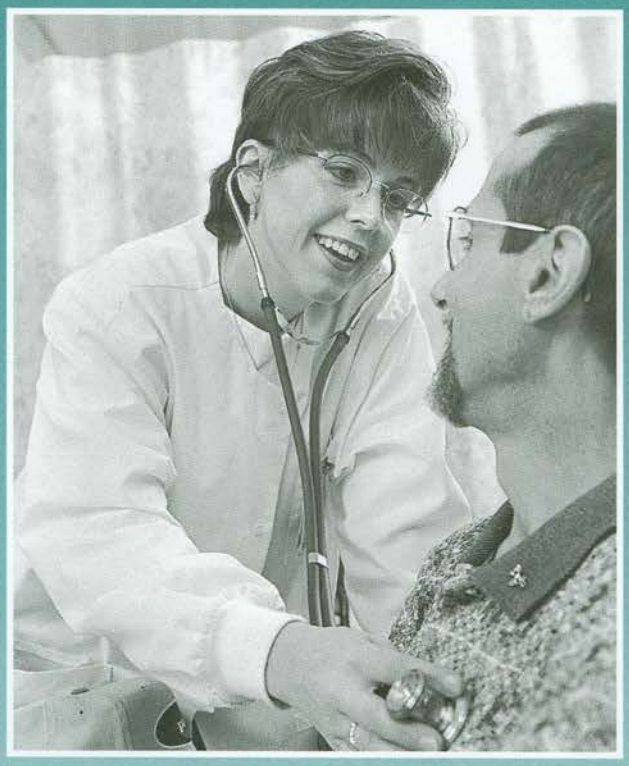
1996

Annual Report (1996): Cancer Program

Lehigh Valley Health Network

Cancer Program

1996 Annual Report



John and Dorothy Morgan Cancer Center

Lehigh Valley Hospital and Health Network

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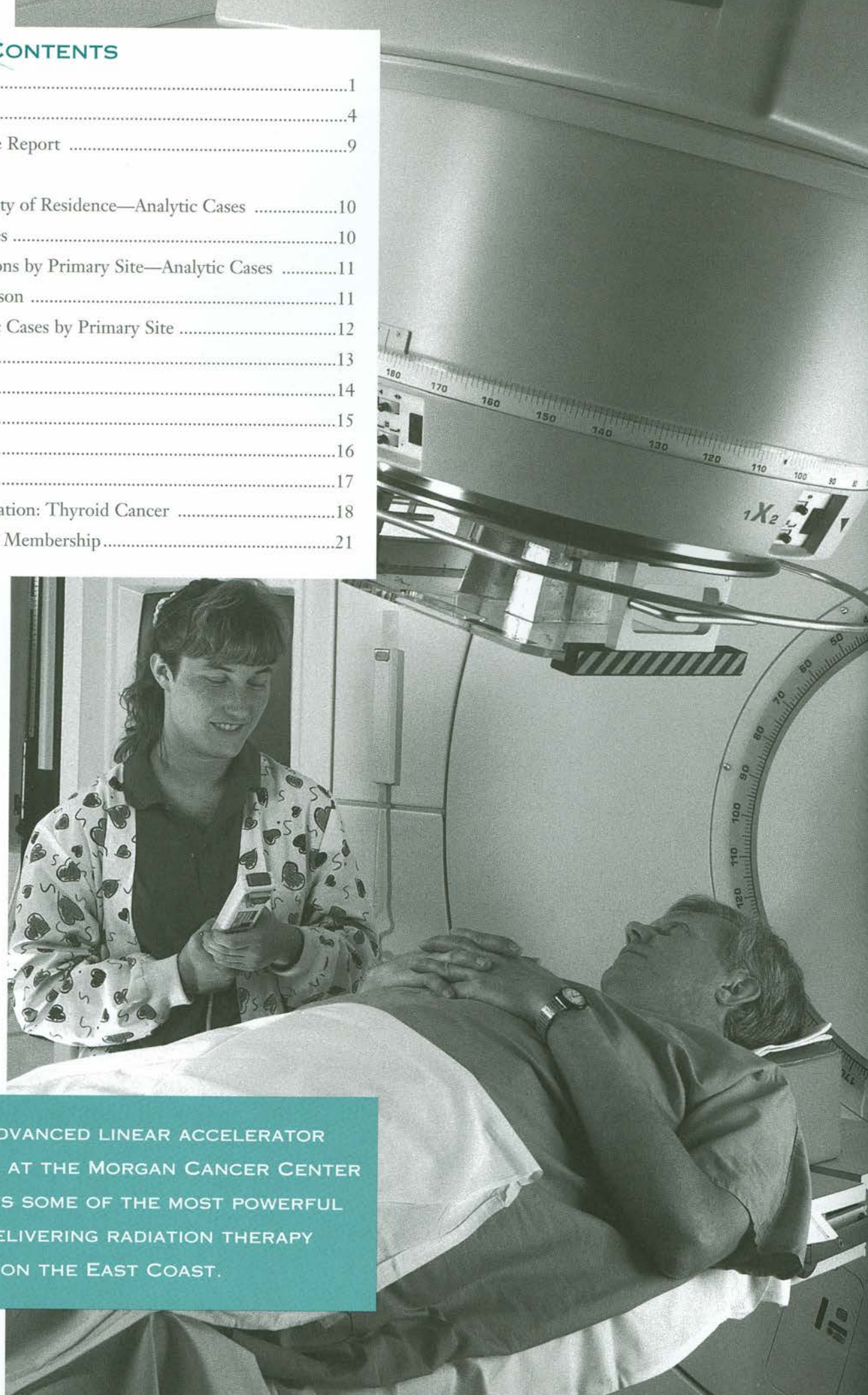


The advanced linear accelerator technology at the Morgan Cancer Center represents some of the most powerful units delivering radiation therapy on the East Coast.

Director's Letter

The year 1996 saw the John and Dorothy Morgan Cancer Center at Lehigh Valley Hospital (LVH) take several more steps towards fulfilling its vision of becoming the resource for cancer care in the region. After 26 years in upstate New York at Albany Medical College as medical student, house officer, fellow and faculty, I joined the center with a profound sense of stewardship as the first full-time director of this growing cancer program.

The very existence of the Morgan Cancer Center demonstrated to me the progress already made by the leadership of Lehigh Valley Hospital and Health Network (LVHHN) toward the goal of improved cancer control in the Lehigh Valley. Envisioned and created by the community, it is a cancer center for the community. My own strong sense of stewardship for this vision has resulted in a cancer center mission grounded in the fundamental principles of cancer control: establishing community-based services aimed at cancer prevention; access to state of art diagnostic, evaluation and treatment services; and the provision of support and rehabilitation opportunities for patients and families affected by malignant diseases and blood disorders.

THE MORGAN CANCER CENTER ENVISIONED AND CREATED BY THE COMMUNITY, IS A CANCER CENTER FOR THE COMMUNITY.

Gregory Harper, M.D.
Director

This comprehensive cancer control mission is supported by patient care services, a commitment to both professional and public cancer education, the advancement of cancer treatment through clinical investigation and a commitment to developing partnerships with the academies at Penn State University's College of Medicine and Johns Hopkins Oncology Center, as well as our neighboring health care providers in the Lehigh Valley and our colleagues in PennCARE℠.

In 1996 we furthered that commitment by implementing additional high-tech treatment capabilities in radiation oncology, establishing a center for pain management and laying the foundation for a new, patient-centered breast health service aimed at easing the journey of women faced with breast cancer. Moreover, the genesis of other advancements took hold: a hematopoietic stem cell transplant program, the renovation of an inpatient center for cancer and blood disorders, and the growth of new cancer specialties in gynecologic oncology, surgical oncology, and head and neck oncology.

Since joining the LVHHN team, I have enlisted the help of key colleagues to develop the cancer center mission and a new structure to support it. As Associate Director for Research, Herbert C. Hoover, Jr., M.D., will direct our overall clinical research mission. After 25 years of providing leadership for clinical oncology research at LVH, David Prager, M.D., has resigned his posts with the National Surgical Adjuvant Breast and Bowel Project (NSABP) and the Eastern Cooperative Oncology Group (ECOG) but will remain active in the groups and will continue to participate in the clinical trials mission. Dr. Hoover has been named the NSABP principal investigator for

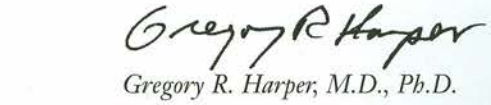
LVH and I will serve as senior investigator of the ECOG. Moreover, Dr. Hoover is in the forefront of developing effective tumor vaccines for the treatment of colorectal cancer and is director of the tumor biology and vaccine laboratory at LVH.

In addition to establishing membership in the Radiation Therapy Oncology Group to enhance our clinical research mission, Victor Risch, M.D., Ph.D., will lead the cancer center's education mission as Associate Director for Cancer Education. Having nurtured our multidisciplinary cancer treatment conferences, Dr. Risch is well suited to develop our continuing medical education program and to work with LVH's Center for Education to meet the needs of our primary care and specialty colleagues in cancer education.

Mark Young, M.D., will serve as the Associate Director of Cancer Control, a role complemented by his duties as the Leonard Parker Pool Chair of Community Health and Health Studies at LVH. Working through the Center for Health Promotion and Disease Prevention, as well as the Coalition for a Smoke Free Valley, Dr. Young is committed to decreasing the impact that smoking and tobacco products have on the most common cause of cancer death among both men and women — lung cancer. In addition, research on cancer prevention behaviors will be conducted by MESH — a new program of the Community Health and Health Studies department that seeks to Measurably Enhance the Status of Health in the Lehigh Valley community. Results from a risk factor survey, developed by the Centers for Disease Control, will enable MESH and the cancer center to develop intervention programs where needed.

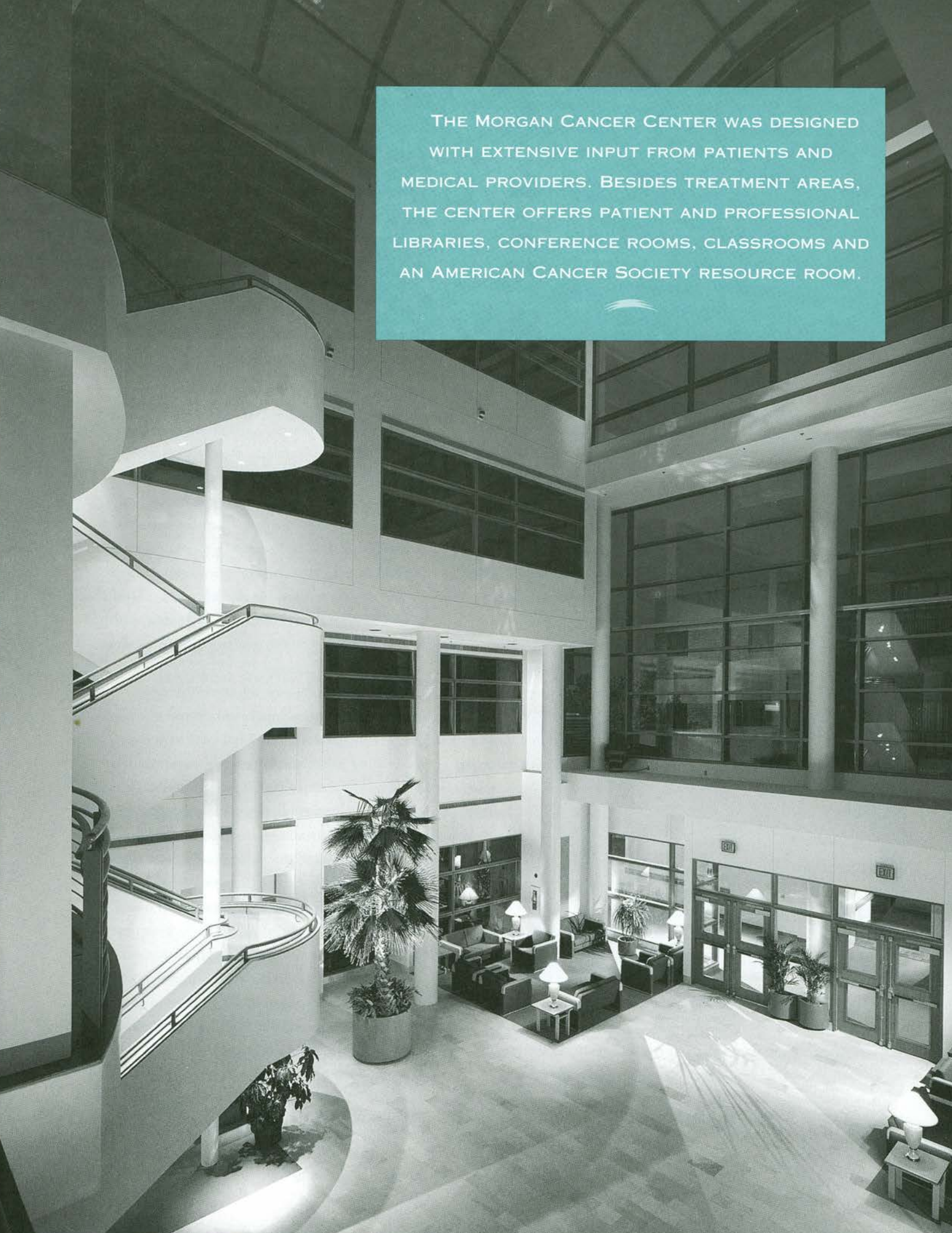
Robert Riether, M.D., Chairman, and Dennis Giangiulio, M.D., Vice Chairman of the Cancer Committee will serve as the principal medical staff liaisons to the Morgan Cancer Center and have the responsibility of ensuring LVH maintains its accreditation as a teaching hospital for the American College of Surgeon's Commission on Cancer. In addition, Dr. Riether and I have created an enriched interdisciplinary approach to cancer disease management through the development of disease management groups who will oversee the design and implementation of cancer care guidelines and who will monitor both adherence to established guidelines and also review costs and clinical outcomes of cancer services provided at LVH.

Significant challenges and opportunities have emerged as the Morgan Cancer Center moves into another year. Central to these is the continued evolution of the cancer center's core mission of community-based cancer control. It is a privilege for me to direct the activities associated with the cancer center and I'm excited about the possibilities facing us as we work on behalf of our community to reduce the burden of cancer borne by the patients and families of the Lehigh Valley.



Gregory R. Harper, M.D., Ph.D.
Director, John and Dorothy Morgan Cancer Center
Lehigh Valley Hospital and Health Network

THE VERY EXISTENCE OF THE MORGAN CANCER CENTER DEMONSTRATED TO ME THE PROGRESS ALREADY MADE BY THE ORGANIZATIONAL LEADERSHIP OF LEHIGH VALLEY HOSPITAL AND HEALTH NETWORK TOWARD THE GOAL OF IMPROVED CANCER CONTROL IN THE LEHIGH VALLEY.



The Morgan Cancer Center was designed with extensive input from patients and medical providers. Besides treatment areas, the center offers patient and professional libraries, conference rooms, classrooms and an American Cancer Society resource room.

Overview

The John and Dorothy Morgan Cancer Center of Lehigh Valley Hospital (LVH) is among the nation's most advanced ambulatory cancer treatment facilities. It was created to accommodate the needs of cancer patients and their medical providers under one roof to ensure a multidisciplinary approach by physicians and other health professionals.

Designed with extensive input from patients, the center opened in late 1993 and grew to handle more than 1,500 analytical cases annually. It offers chemotherapy treatment areas, radiation therapy rooms, a dedicated pharmacy, patient and professional libraries, conference rooms, classrooms, private meeting areas and an American Cancer Society resource room. Advanced treatment technologies include stereotactic radiosurgery, high dose rate brachytherapy and three-dimensional, computerized treatment planning.

The center's affiliation with John Hopkins Oncology Center gives patients access to clinical trials and resources that explore and provide the latest treatment approaches.

Additionally, the center has developed a unique approach to conducting cancer conferences or tumor boards. Instead of conducting a retrospective review of a handful of cases in general tumor boards for educational purposes only, the Morgan Cancer Center uses this venue as a collaborative treatment planning conference for cancer cases.

Under the guidance of the Cancer Committee, six specialty tumor boards are conducted each month on a weekly, biweekly or monthly basis: colon/rectal, breast, pulmonary, urology, neurology and gynecologic oncology. In addition, a weekly general tumor board is held, during which malignancies of special interest, recurrent and metastatic tumors and cancers of other organ sites are discussed.

A similar format is followed for each conference and it is this format that is unique to LVH. Physicians present a significant patient history, up to and including the cancer diagnosis. The multidisciplinary team in attendance then reviews in detail the radiographic, cytologic and histologic studies of the case, discusses potential treatment options, and compares those options to established patient management guidelines. Each patient also is reviewed for eligibility in a clinical trial. The team then recommends a treatment plan, based on the stage of the patient's disease, medical, and psychological history.

After the conference, a letter detailing treatment recommendations and clinical trial eligibility, as well as a copy of the clinical trial, is sent to the treating physician. Follow up is conducted to determine how tumor board recommendations were used by the treating physician and if established guidelines for care were followed.

In 1996, physicians presented 1,015 cases at 208 tumor boards with participation from 6,177 health care professionals from a variety of oncologic and related disciplines, of whom 3,800 were physicians. Of the cases presented, nearly 75 percent were presented prior to having completed a definitive course of treatment; hence, discussion at tumor board and the development of recommendations were helpful to the physician and patient in planning a full course of treatment.

To further enhance the care recommended and provided to patients, the Morgan Cancer Center

Disease Oriented Programs

- BREAST
- COLORECTAL
- ENDOCRINE
- GASTROINTESTINAL AND HEPATOBILIARY
- GYNECOLOGY
- HEAD AND NECK
- HEMATOPOIETIC NEOPLASMS
- NEURO-ONCOLOGY
- PIGMENTED LESIONS
- THORACIC
- UROLOGIC

undertook a reorganization in 1996 to form Disease Management Programs. The main responsibility of each program is to develop appropriate guidelines and clinical pathways for the screening, early detection, diagnosis, treatment, and rehabilitation of patients with cancer, building upon previously developed management guidelines. Support for this initiative, as well as outcome analysis, is provided by the Oncology Clinical Indicators Program.

In 1995 and 1996, management guidelines were developed, approved and implemented for treating colon/rectal, lung, prostate and breast cancers. The process of guideline implementation and conformance monitoring is greatly facilitated by the information available through the Morgan Cancer Center Tumor Registry, which has a data base of 16,275 analytic cases. The Tumor Registry actively follows nearly 9,000 cases and maintains an average lost to follow rate of 6 percent.

Performance evaluations of the management guidelines began for breast cancer in 1996 with monitoring of the other areas to follow in 1997. While the evaluation noted a high rate of guideline conformance, it also identified two areas of variance. Interventions were formulated and the compliance rate increased.

Further coordination of breast cancer care occurred when the Morgan Cancer Center laid the foundation for a new Breast Health Services Program. The new approach was designed, with the counsel of patients and physicians, to enhance, expand and integrate existing breast screening and diagnostic programs with the convenience of multiple locations. The comprehensive program provides education, risk assessment, second opinion, treatment planning (mammography, ultrasound and stereotactic biopsy), access to oncologic consultation and clinical trials, psychosocial support and community outreach through a multidisciplinary approach.

Education

VICTOR RISCH, M.D., PH.D., ASSOCIATE DIRECTOR

The Morgan Cancer Center devotes many resources to educational programs for professionals, patients and the community.

Key professional education programs in 1996 included: Oncology Core Course, Chemotherapy Course, Radiation Oncology Annual Conference and Current Trends in Cancer Care Annual Conference. Special lectures included: Esophageal Cancer, Lung Cancer, Chemotherapy for Pancreatic Cancer, Nutritional Needs of the Oncology Patient, Talking With the Terminally Ill, and reviews of various treatment agents.

Key patient and community education activities during 1996 included expanding the patient library, conducting certification training in breast self-examination and giving a "Genetics in Cancer" lecture. The Morgan Cancer Center also hosted a Breast Cancer Awareness Day open house featuring

lectures and breast self-examination demonstrations, a "Careers in Oncology" evening, and a "Looking for Laughter" program for cancer survivors.

Future goals for the Education Division include increasing input into residency training programs and redesigning the nursing education curriculum.

Research

HERBERT C. HOOVER, JR., M.D., ASSOCIATE DIRECTOR

The Clinical Trials Office supports the development of and participation in cooperative group treatment and prevention trials, as well as industry-sponsored studies.

The staff is responsible for monitoring compliance with Cooperative Oncology Group and industry requirements for IRB approvals for all trials available at LVH.

To ensure a cancer patient's access to the most appropriate care, the Clinical Trials Office encourages participation in clinical trials by reviewing the eligibility of all patients presented at cancer conferences and providing feedback to the treating physician.

During 1996, Morgan Cancer Center enrolled 49 patients in clinical research studies. Of those, 18 entered an Eastern Cooperative Oncology Group trial, seven participated in a National Surgical Adjuvant Breast and Bowel Project, four enrolled in an industry-sponsored study and two entered the Breast Prevention Clinical Trial.

Morgan Cancer Center also enrolled 18 patients in an epidemiologic study done in conjunction with the University of Pennsylvania Medical Center. The study evaluates the relationship between long-term combination oral contraceptive use and the subsequent development of epithelial ovarian cancer. Additionally, this study will allow the efficient evaluation of other possible risk factors for ovarian cancer.

Cancer Control

MARK YOUNG, M.D., ASSOCIATE DIRECTOR

Cancer Control is charged with developing effective community education and outreach strategies in collaboration with physicians to promote public awareness of cancer prevention and early detection to reduce the burden of cancer among the under served populations. Annual activities include a skin cancer screening program in conjunction with the American Academy of Dermatology during National Skin Cancer Awareness Month in May and a prostate cancer awareness program during National Prostate Cancer Awareness Week in September.

Of the 157 people who participated in the 1996 skin cancer screening, 16 cancers were detected. A total of 2,183 people have been screened since the program began in 1989.

Two early cancers were detected during the 1996 prostate screening in which 236 men participated. A total of 3,481 men have participated in the program since it began in 1990.

The cancer center also sponsors Cancer Answers, a hospital-based information hotline for referring physicians to recommend to their patients. The line, staffed by an oncology nurse, offers information to the general public on subjects ranging from second opinion referrals to warning signs and general cancer awareness information. Cancer Answers assisted more than 2,000 callers in 1996.

Clinical Services

Medical and Surgical Oncology

Medical oncology at LVH provides a full range of neo-adjuvant, adjuvant and palliative systemic therapies for solid tumors and hematologic neoplasms. When a surgical approach is necessary, current techniques include laser, free-flap and reconstructive, laparoscopic, and stereotactic biopsy and radiosurgeries.

Plans for a comprehensive hematopoietic stem cell transplant program took form in 1996 with renovations of the inpatient facility, construction of a processing laboratory and development of ambulatory services. The construction of a Biological Therapy Center also began in 1996. The center will be used to research and develop tumor vaccines.

Oncology Nursing

This clinical service is staffed by 13 oncology-certified nurses and includes an inpatient unit, outpatient infusion area and physicians' clinical offices. Clinical specialists also contribute to patient education and support activities. In 1996, oncology nursing developed an infrastructure to support the integration of leadership, services and educational activities across the continuum of care. The outpatient infusion area also expanded its autologous blood collection for preoperative patients to include LVH's downtown location. In addition, the infusion area continues to provide outpatient chemotherapy, intravenous infusions, blood/blood product transfusions and medication administration.

Psychosocial Support

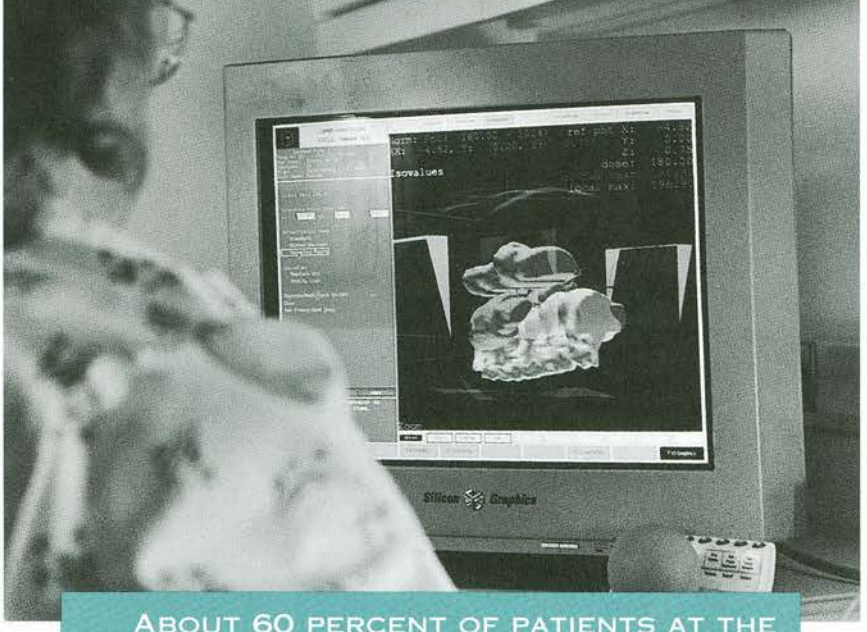
Morgan Cancer Center provided clinical support services for more than 15,000 people in 1996. These include behavioral and counseling services, cancer support teams, support groups and survivorship activities for people with cancer and their families.

In addition to the more traditional psychotherapeutic interventions, the cancer support team — made up of an oncology nurse, oncology social worker and former patient — provides emotional support, education, information and coordination of care with other hospital and community services. The Morgan Cancer Center staff facilitates a number of support groups involving adult and adolescent patients, family members and friends, and long-term survivors. Discussion topics focus on cancer treatments, day-to-day living experiences, advocacy and bereavement.

The Morgan Cancer Center is one of four contractors in Pennsylvania that has implemented the Family Caregiver Cancer Education Program. The program focuses on meeting the needs of family and friend caregivers, and patients in the home care setting throughout a 17 county area. Staff activities include conducting local instructor and family caregiver courses, distributing a state-published manual, "Helping People Cope: A Guide For Families Facing Cancer," and maintaining the toll-free information line, 1-800-PA-CANCER. In response to the rapidly increasing Latino population, a Spanish version of the Family Caregiver Education Program was implemented during 1996. The program reached nearly 5,700 people in 1996 and was responsible for distributing more than 25,000 pieces of cancer-related literature.

Pain Management

The Center for Pain Management underwent a physical redesign in 1996 to accommodate its growing patient population and expanded service. The center focuses on the evaluation and treatment of patients with chronic pain. Various modalities employed to treat pain include: medication management, anesthetic nerve blocks, epidural steroid injections, bio-feedback and relaxation therapy, acupuncture, spinal cord stimulation, nutritional counseling, and physical and exercise therapy.



ABOUT 60 PERCENT OF PATIENTS AT THE MORGAN CANCER CENTER BENEFIT FROM THE THREE-DIMENSIONAL, COMPUTERIZED TREATMENT PLANNING SYSTEM INSTALLED IN 1996.

Radiation Oncology

LVH's radiation oncology department provides external beam radiation therapy (teletherapy) using advanced linear accelerator technology. The equipment represents some of the most powerful units delivering radiation therapy on the East Coast. Comprehensive brachytherapy services also are available and in 1996 were expanded to include a remote high dose rate (HDR) brachytherapy unit. HDR has dramatically altered the way brachytherapy is delivered, from a three-day, inpatient procedure to an outpatient procedure.

Also in 1996, the radiation oncology department began using a three-dimensional, computerized treatment planning system. This allows for the outline of critical structures in all dimensions, thus protecting healthy tissues from receiving high doses of radiation and, as a result, decreasing treatment morbidity. Use of this technology is expanding, with about 60 percent of patients benefitting from three-dimensional treatment planning.

The department also provides stereotactic radiosurgery treatment using technology to treat lesions with an accuracy of +/- 0.2 mm in three-dimensional space. Stereotactic radiosurgery treatments are routinely delivered to patients with otherwise inoperable primary and metastatic lesions within the brain, as well as to patients with benign conditions, such as benign brain tumors or anterior venous malformations. A team consisting of a radiation oncologist, radiation physicist and neurosurgeon administer a high precision beam of radiation in a single outpatient treatment session. LVH is the only hospital in the region offering this procedure.

Rehabilitation

The effects of cancer and its treatment have short- and long-term implications. As such, the main emphasis of rehabilitative services at Morgan Cancer Center is to positively impact a patient's ability to function in a normal role at home and in the community.

Home Care and Hospice

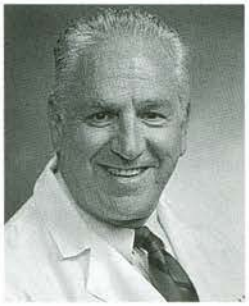
Lehigh Valley Home Care and Lehigh Valley Hospice are integral parts of the continuum of care provided to cancer patients. Providing nearly 200,000 visits annually, Lehigh Valley Home Care is one of the largest regional hospital-based home care programs in the state. Cancer Care, a specialized program offered by Home Care, is designed for patients undergoing curative treatments.

Lehigh Valley Hospice provides specialized services designed particularly for cancer patients by a professional staff, many of whom are registered nurses certified in oncology. An inpatient hospice unit within LVH began operation in 1996 in response to community need. The unit is designed to provide care in a home-like setting and emphasizes symptom relief through medical and nursing care, in addition to supportive care for families.

Cancer Committee Report

During 1996, the Cancer Committee began a process of restructure and reorganization with the approval and adoption of the Commission on Cancer's "Cancer Program Standards." As a result, the purpose, duties and membership of the Cancer Committee were amended to assure:

- the program and services of the John and Dorothy Morgan Cancer Center and Lehigh Valley Hospital meet, at a minimum, the standards of the Commission on Cancer;
- active contribution by the medical staff to advance the mission of LVH's cancer program;
- the activities and duties of the Cancer Committee and the Morgan Cancer Center are integrated with each other.



Robert Riether, M.D.
Chairman

Structure

Significant changes in the content of the cancer program and role of the Cancer Committee were included in the newly adopted standards. To accommodate these changes, the Cancer Committee adopted a new cancer program structure with a focus on disease management programs. As a result, medical staff input into cancer program design and management is assured through participation in the Executive Committee, Cancer Committee and Disease Oriented Programs. Changes to the Committee's purpose, duties and membership were made to further accommodate requirements of the Cancer Program Standards. Restructuring will continue into 1997.

Services/Programs

The Cancer Committee developed a physician staging system for primary cancers for all sites for which there are AJCC staging criteria available. This system will provide staging documentation on patients' medical records and will be helpful in developing treatment plans.

The committee also approved the management guidelines of colon/rectal, breast, prostate, pancreatic and thyroid cancers. Reports of conformance monitoring for each site were reviewed, plans of action to correct areas of deficiency and promote areas of strength were developed and returned to the Oncology Clinical Indicators Program for implementation.

Quality Improvement Program

The Cancer Committee monitored the quality of data abstracted by the Tumor Registry. Through the electronic edit check program, 2,922 abstracts were validated in 1996 with a 2.7 percent average error rate, which was within the acceptable range.

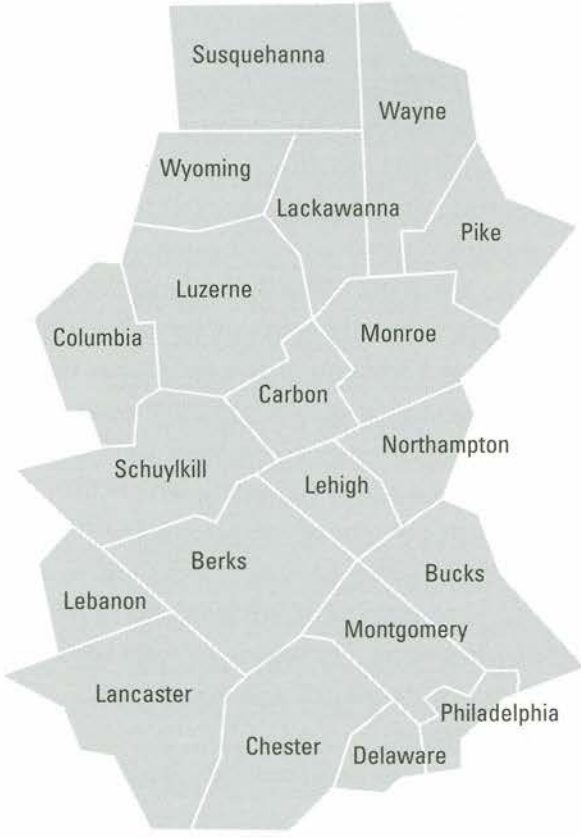
The committee also reviewed Tumor Registry edit checks and field edits of National Cancer Data Base data submission for 1989 and 1994 analytic cases. For 1989, the registry submitted 1,359 cases with a case error rate of 3.75 percent and 57,078 fields with an error rate of 0.08 percent. For 1994, the registry submitted 1,570 cases with a case error rate of 5.92 percent and 65,940 fields with an error rate of 0.14 percent. The committee noted that the majority of errors involved surgery codes and staging by site.

The committee recommended a detailed review of the AJCC staging rules, which also was performed in 1996.

Incidence by County of Residence-Analytic Cases

The changing trend in the incidence of new cancer cases initially diagnosed and/or treated at Lehigh Valley Hospital, first noted among 1995 cases, continues in accession year 1996. Total number of analytic cases has decreased particularly in cancers occurring in the breast, prostate and lymph nodes. A corresponding volume increase in the number of cancer cases diagnosed and treated in a staff physicians office is observed. These cases will be accessioned into the registry as analytic cases at a future date, which will be determined by the Commission on Cancer.

At the same time, a decrease in the number of non-analytic cancer cases is noted in the accompanying table.



County of Residence	1992	1993	1994	1995	1996
Allegheny	0	2	0	0	0
Berks	79	91	86	83	83
Bucks	28	22	45	19	25
Carbon	112	105	85	91	78
Centre	2	1	1	0	0
Chester	0	0	0	0	1
Clarion	0	0	0	1	0
Clinton	0	0	0	0	1
Columbia	1	1	0	0	0
Cumberland	0	3	0	1	0
Delaware	0	0	2	0	0
Fayette	0	1	0	0	0
Jefferson	1	0	0	0	0
Lackawanna	3	0	4	4	5
Lancaster	0	2	4	0	1
Lebanon	0	0	2	1	0
Lehigh	1108	1148	1005	1020	983
Luzerne	34	30	38	44	44
Mercer	0	0	2	2	0
Monroe	42	46	30	40	64
Montgomery	25	33	36	38	35
Northampton	182	161	150	177	163
Northumberland	0	0	1	0	0
Philadelphia	1	0	1	0	0
Pike	4	3	3	0	3
Schuylkill	43	38	42	36	39
Susquehanna	0	0	0	0	1
Wayne	1	1	3	0	2
Westmoreland	1	0	0	0	0
Wyoming	0	0	1	0	0
York	0	1	1	0	0
Out of State	44	23	28	66	40
TOTALS	1711	1712	1570	1623	1568

Number of Non-Analytic Cases

Year	Number of Cases	Diagnosis & Treatment in Staff Physician Office
1992	153	-
1993	223	-
1994	223	4
1995	222	129
1996	164	187

1996 New Accessions by Primary Site
Analytic Cases

Head and Neck (N=30)	Male	Female
Tongue	4	0
Gum	1	2
Mouth	4	1
Palate	1	0
Salivary Glands	0	1
Tonsil	0	1
Nasopharynx	1	1
Maxillary Sinus	0	2
Larynx	8	3
Subtotal	19	11

Digestive Organs (N=290)	Male	Female
Esophagus	14	4
Stomach	13	5
Small Intestine	4	2
Colon & Rectum	112	94
Anus & Anal Canal	2	1
Liver & Intrahepatic Bile Ducts	5	1
Gallbladder & Extrahepatic Bile Ducts	2	7
Pancreas	12	12
Subtotal	164	126

Respiratory Organs (N=196)	Male	Female
Bronchus & Lung	111	75
Heart, Mediastinum & Pleura	8	2
Subtotal	119	77

Breast (N=256)	Male	Female
Breast	3	253
Subtotal	3	253

Female Genital Organs (N=154)	Male	Female
Cervix	0	33
Endometrium	0	64
Ovary	0	41
Vulva	0	11
Vagina	0	1
Other Female Genital Organs	0	4
Subtotal	0	154

Male Genital Organs (N=208)	Male	Female
Penis	1	0
Prostate	203	0
Testis	4	0
Subtotal	208	0

Urinary Tract Organs (N=106)	Male	Female
Kidney	20	7
Renal Pelvis	2	0
Ureter/Urethra	1	1
Bladder	46	29
Subtotal	69	37

Central Nervous System (N=54)	Male	Female
Meninges	9	7
Brain	17	14
Other Ill-defined CNS Sites	5	2
Subtotal	31	23

Endocrine Glands (N=45)	Male	Female
Thyroid	7	25
Other Endocrine Glands	9	4
Subtotal	16	29

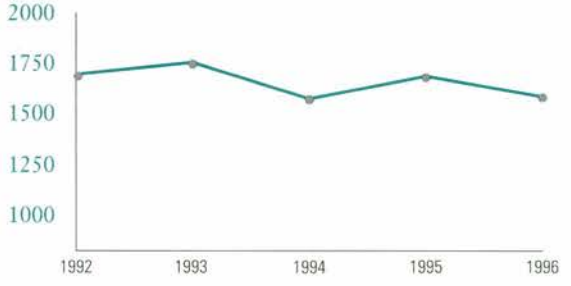
Skin (N=96)	Male	Female
Reportable Sites and Deeply Invasive Basal & Squamous Cell Tumor and Melanomas	59	37
Subtotal	59	37

Other Sites (N=133)	Male	Female
Hematopoietic and Reticuloendothelial Systems	16	15
Soft Tissue	4	6
Lymph Nodes	25	17
Other Ill-defined Sites	4	2
Primary Unknown	20	24
Subtotal	69	64

GRAND TOTAL 1568

Five Year Comparison

TOTAL NUMBER OF ANALYTIC CASES



1996 Non-Analytic Cases by Primary Site

Head and Neck	
Maxillary Sinus	2
Nasopharynx	1
Tongue	1
Subtotal	4

Digestive Organs	
Esophagus	1
Stomach	1
Colon & Rectum	20
Liver & Intrahepatic Bile Ducts	1
Pancreas	2
Other Biliary Tract	1
Small Intestine	1
Subtotal	27

Respiratory Organs	
Bronchus & Lung	18
Subtotal	18

Breast	
Female Breast	34
Subtotal	34

Female Genital Organs	
Cervix	3
Endometrium	3
Ovary	5
Vagina	1
Vulva	1
Subtotal	13

Male Genital Organs	
Prostate	11
Subtotal	11

Urinary Tract Organs	
Kidney	4
Bladder	8
Subtotal	12

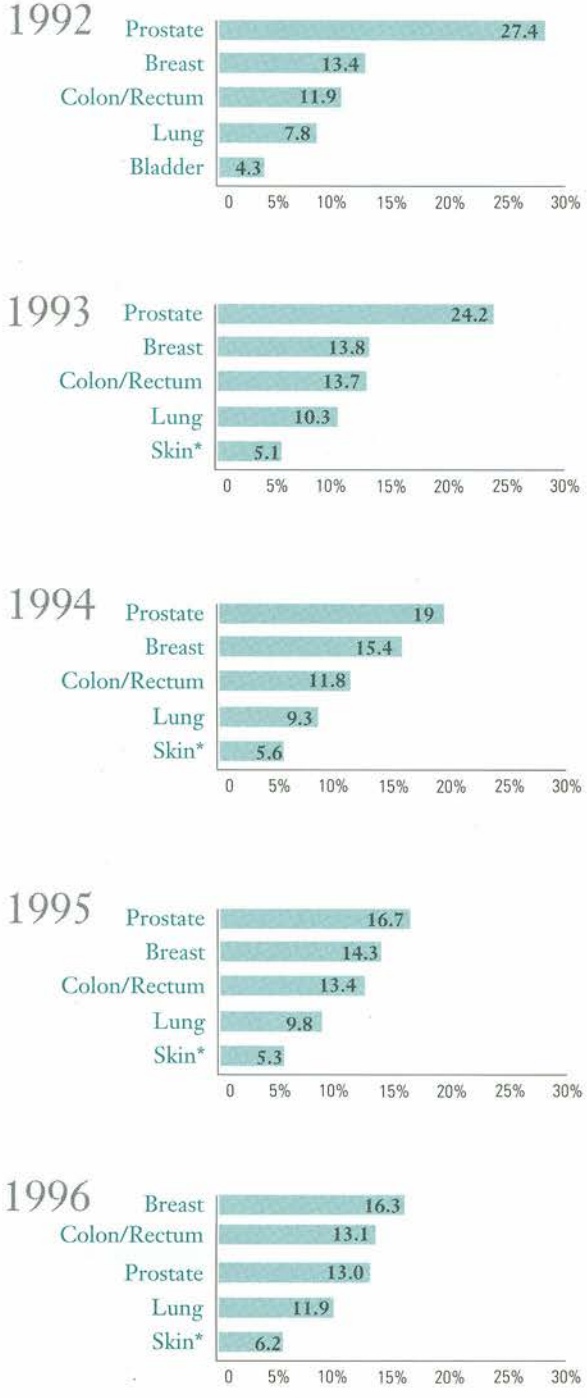
Skin	
Reportable Sites and Deeply Invasive Basal & Squamous Cell Tumor and Melanomas	12
Subtotal	12

Central Nervous System (CNS)	
Meninges	3
Brain	3
Subtotal	6

Endocrine Glands	
Thyroid	4
Other Endocrine Glands	1
Subtotal	5

Other Sites	
Hematopoietic and Reticuloendothelial Systems	7
Soft Tissue	2
Lymph Nodes	8
Other Ill-defined Sites and Primary Unknown	5
Subtotal	22
GRAND TOTAL	164

Top Five Primary Sites by Year



*Includes reportable basal and squamous cell carcinomas and melanomas

Breast

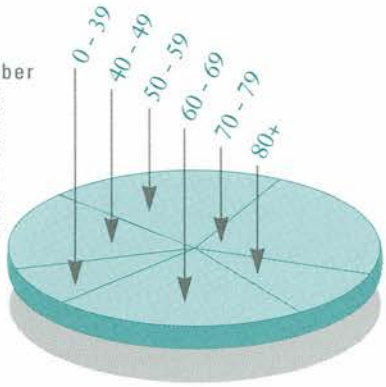
Mark Gittleman, M.D., Chair,
Breast Disease Management Group

Breast cancer accounted for 16.3 percent of new cases detected at Lehigh Valley Hospital (LVH) in 1996. Fifty-five percent of those cases occurred in women 60 years of age or older. A comparison of AJCC stage of disease at diagnosis between LVH and the National Cancer Data Base (NCDB) revealed that a greater percentage of early stage disease (AJCC Stage Group 0 and 1) cases were detected at LVH than NCDB. At LVH a greater percentage of cases were clinically and/or pathologically staged, thus enhancing data analysis. Comparison of the use of breast conserving treatment (i.e. lumpectomy/ partial mastectomy with or without axillary nodal dissection) revealed greater use of this approach at LVH than other NCDB reporting hospitals.

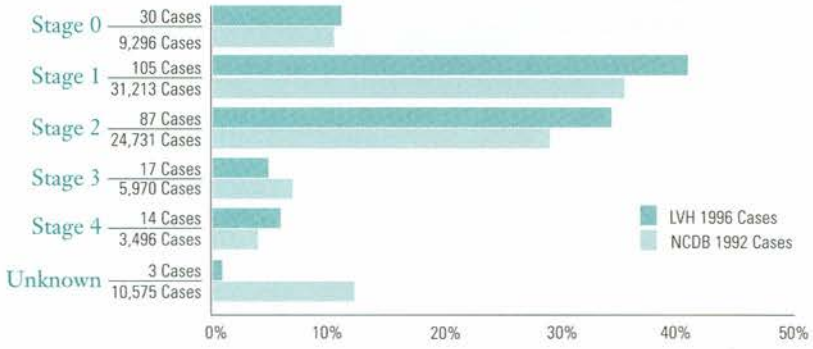
1996 Breast Cancer Cases

Age at Diagnosis

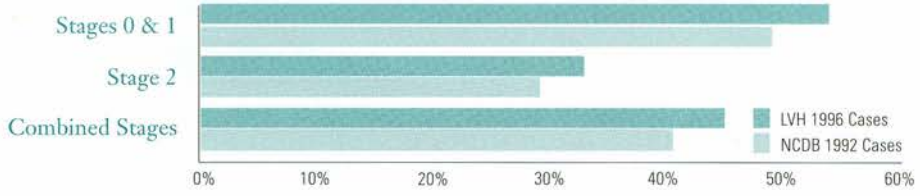
Age Range	Number
0-39	20
40-49	42
50-59	53
60-69	57
70-79	58
80+	26



Comparison of AJCC Stage at Diagnosis



Comparison of Breast Conserving Treatment, AJCC Stages 0, 1 and 2



1996 Breast Analytic Cases

Initial Treatment by AJCC Stage

Treatment	Stage 0	Stage 1	Stage 2A	Stage 2B	Stage 3A	Stage 3B	Stage 4	Stage Unknown	Total
Surgery	18	48	34	13	1	6	2	1	123
Surgery + RT	12	40	10	11	1	2	1	0	77
Surgery + Systemic	0	2	3	2	1	1	1	0	10
RT + Systemic	0	0	0	0	0	0	4	0	4
Surgery + Systemic + RT	0	12	5	9	3	1	3	1	34
Systemic	0	1	0	0	0	0	0	0	1
RT	0	1	0	0	0	1	2	0	4
None	0	1	0	0	0	0	1	1	3
TOTAL	30	105	52	35	6	11	14	3	256

*Systemic includes Chemotherapy & Hormone Therapy

Colon/Rectal

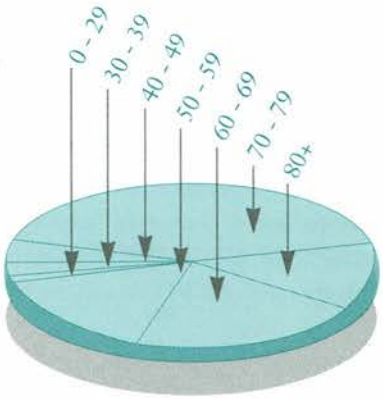
Robert Riether, M.D., Chair,
Colon/Rectal Disease Management Group

While the incidence of colorectal cancer has fallen substantially in recent years according to the American Cancer Society (1996), cancer of this site has accounted for an average 13 percent of new cancer cases at Lehigh Valley Hospital (LVH). The distribution of early and advanced stages of disease is similar among LVH and National Cancer Data Base (NCDB) cases. Of interest are differences in patient management among the two populations. The majority of LVH patients are treated by two approaches: surgery as monomodal therapy and a combined approach using surgery and radiation therapy. With NCDB cases, the combined approach most often used was surgery and chemotherapy.

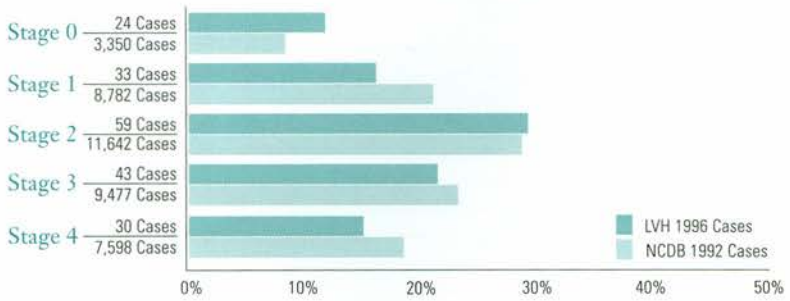
1996 Colon/Rectum Cases

Age at Diagnosis

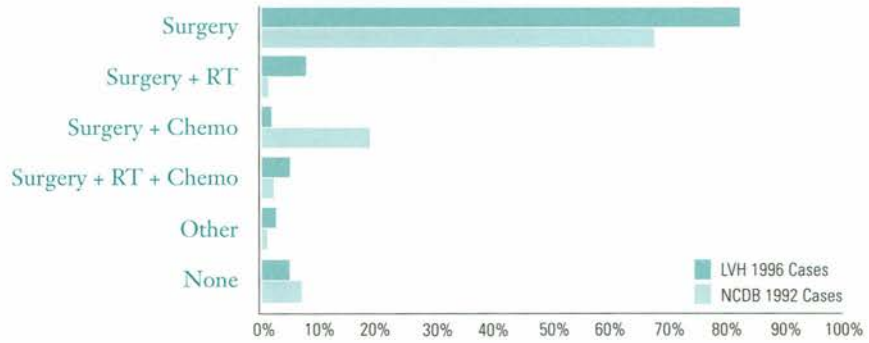
Age Range	Number
0-29	1
30-39	3
40-49	10
50-59	24
60-69	46
70-79	88
80+	34



Comparison of AJCC Stage at Diagnosis



Comparison of Patient Management



1996 Colon/Rectum Analytic Cases

Initial Treatment by AJCC Stage

Treatment	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage Non-Existing	Stage Unknown	Total
Surgery	22	30	47	35	20	2	11	167
Surgery + RT	0	3	6	5	0	0	1	15
Surgery + Chemo	0	0	0	1	1	0	0	2
Surgery + Chemo + RT	0	0	4	2	0	0	2	8
RT	0	0	0	0	3	0	1	4
None	2	0	2	0	6	0	0	10
TOTAL	24	33	59	43	30	2	15	206

Prostate

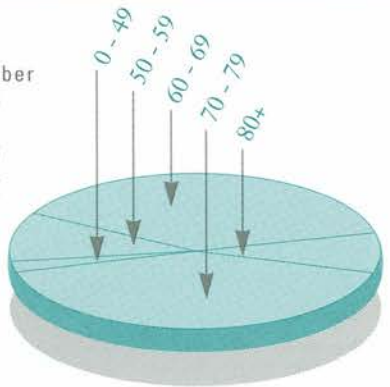
Richard Lieberman, M.D., and Edward Mullin, M.D., Chairs,
Genitourinary Disease Management Group

Prostate cancer comprises 13 percent of 1996 cancer cases at Lehigh Valley Hospital (LVH) and represents a decrease in the analytic case load from the prior five years. Fifty percent of cases were detected in men 70 years of age and older. A greater percent of cases at LVH, when compared to cases analyzed by National Cancer Data Base (NCDB), were diagnosed at an early stage of disease (AJCC Stage Group 0, 1 and 2). Patient management strategies were similar among LVH and NCDB cases. At LVH, a decrease in the percent of cases treated by observation and an increase in the use of definitive radiation therapy was noted from the previous year.

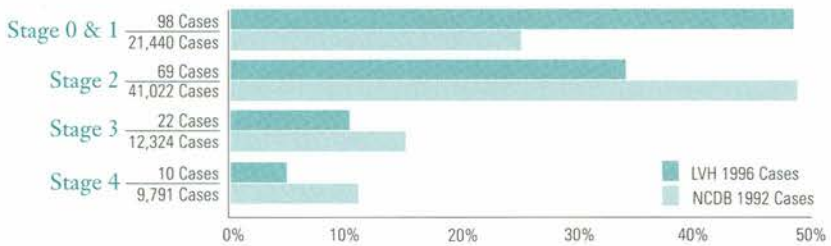
1996 Prostate Cancer Cases

Age at Diagnosis

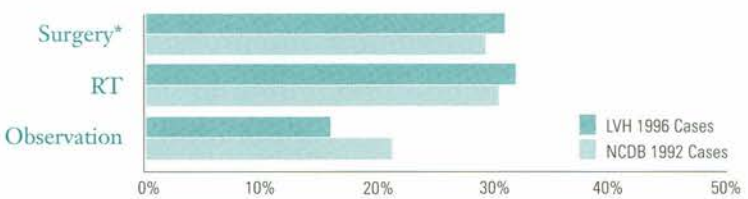
Age Range	Number
0-49	3
50-59	21
60-69	78
70-79	84
80+	17



Comparison of AJCC Stage at Diagnosis



Comparison of Patient Management



*Surgery=prostatectomy

1996 Prostate Analytic Cases

Initial Treatment by AJCC Stage

Treatment	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage Unknown	Total
Surgery	1	8	40	13	2	0	64
Surgery + RT	0	0	4	4	2	0	10
Surgery + Hormones	0	1	1	0	0	1	3
Hormones	0	1	1	0	2	0	4
RT	3	46	13	2	0	2	66
RT + Hormones	0	10	6	3	3	0	22
Other	1	0	0	0	0	0	1
Observation	8	19	4	0	1	1	33
TOTAL	13	85	69	22	10	4	203

Lung

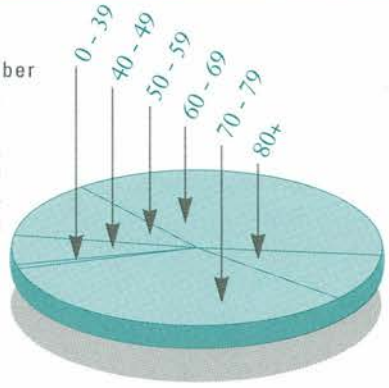
Raymond Singer, M.D., Chair,
Pulmonary Disease Management Group

The number of new cases of lung cancer at Lehigh Valley Hospital (LVH) continues to demonstrate a gradual increase over the past five years. Similar AJCC stage distributions exist among LVH and National Cancer Data Base (NCDB) cases. Although similar management strategies are seen in both patient populations among all tumor histologies at LVH, slightly greater use is made of surgery and radiation therapy as individual definitive therapies.

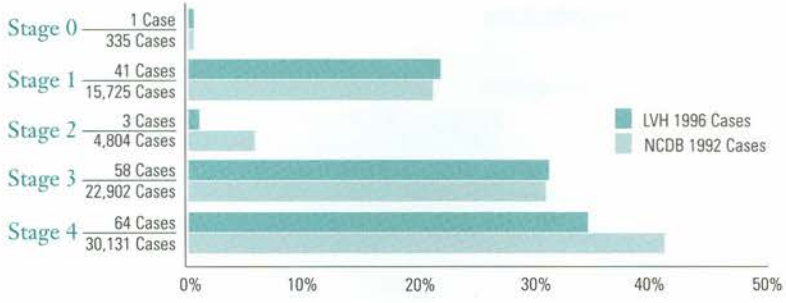
1996 Lung Cancer Cases

Age at Diagnosis

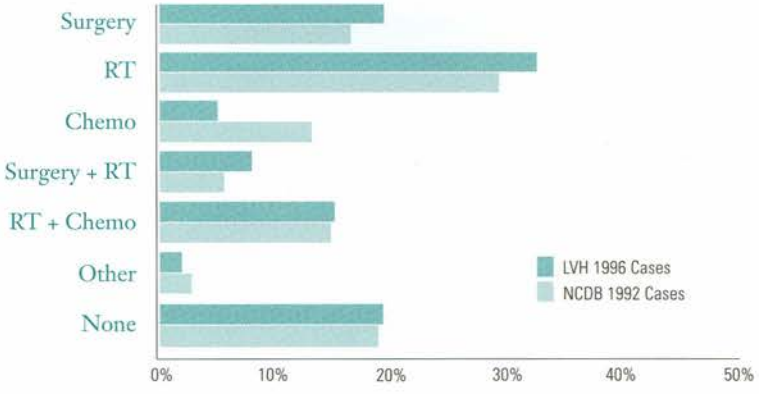
Age Range	Number
0-39	2
40-49	11
50-59	22
60-69	69
70-79	64
80+	18



Comparison of AJCC Stage at Diagnosis



Comparison of Patient Management



1996 Lung Analytic Cases

Initial Treatment by AJCC Stage

Treatment	Stage 1	Stage 2	Stage 3A	Stage 3B	Stage 4	Stage Non-Existing	Stage Unknown	Stage 0C	Total
Surgery	30	1	1	1	1	2	0	0	36
Surgery + RT	1	1	9	0	4	0	0	0	15
Chemo + RT	2	0	4	6	12	0	3	0	27
Surgery + Chemo + RT	0	0	0	0	2	0	0	0	2
Chemo	0	0	0	1	7	0	0	0	8
RT	5	1	10	14	22	0	8	0	60
Other	0	0	0	1	1	0	0	0	2
None	3	0	5	6	15	0	6	1	36
TOTAL	41	3	29	29	64	2	17	1	186

Skin

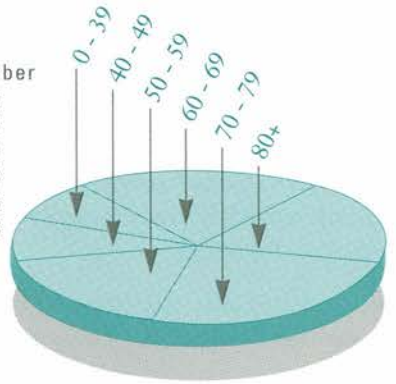
Alan H. Schragger, M.D., Chair,
Skin Disease Management Group

Skin cancer was detected in 6.2 percent of 1996 analytic cancer cases at Lehigh Valley Hospital (LVH). People 60 years of age and older were diagnosed with 61.0 percent of the skin cancers at LVH. Forty-eight percent of cases were found at AJCC Stage Groups 0 and 1. Surgery alone was the treatment of choice for nearly all cases. This figure is comparable to that reported by the American Cancer Society (1996).

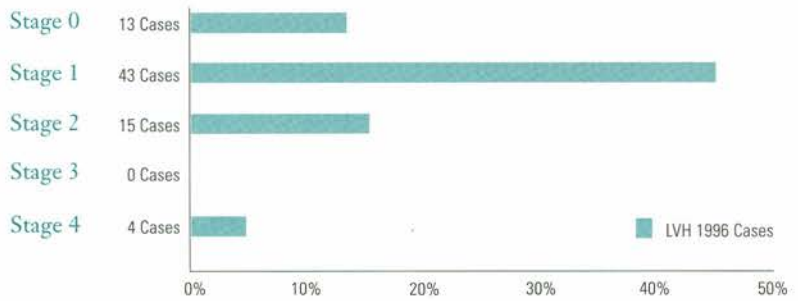
1996 Skin Cancer Cases

Age at Diagnosis

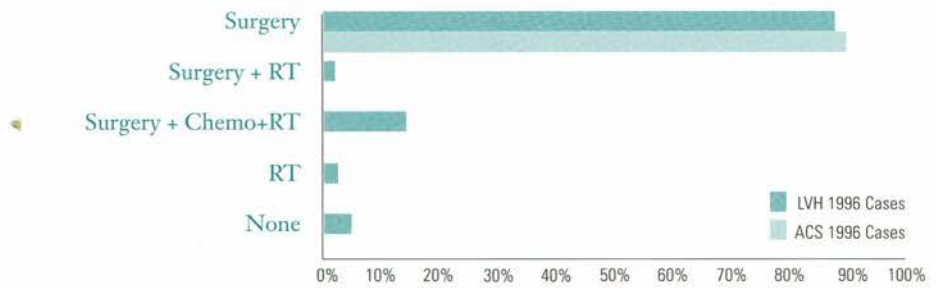
Age Range	Number
0-39	10
40-49	8
50-59	19
60-69	23
70-79	23
80+	13



Comparison of AJCC Stage at Diagnosis



Comparison of Patient Management



1996 Skin Analytic Cases

Initial Treatment by Stage

Treatment	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage Non-Existing	Stage Unknown	Total
Surgery	12	42	13	0	1	14	3	85
Surgery + RT	0	0	0	0	2	0	0	2
Surgery + Chemo + RT	0	0	1	0	0	0	0	1
RT	0	0	1	0	1	1	0	3
None	1	1	0	0	0	2	1	5
TOTAL	13	43	15	0	4	17	4	96

Patient Care Evaluation: Thyroid Cancer

George W. Hartzell, Jr., M.D.

Analytic thyroid cancer cases (accession years 1985 through 1990) were evaluated. The 102 thyroid cases were compared with cases in the National Cancer Data Base (NCDB) along these variables: age at diagnosis, percent of cases by diagnostic year and histologic subgroup, stage of disease and type of surgery. Survival rates were calculated and presented in graphic form.

The purpose of the comparison was to detect significant similarities and differences that might be addressed in the form of guidelines for treatment.

A comparison of histologic subgroup and age at diagnosis was made between Lehigh Valley Hospital (LVH) and NCDB (Figures 1 and 2). This comparison revealed a difference in the incidence of medullary and undifferentiated carcinomas in the two populations.

In examining histologic differences by best stage of disease (Tables 1.1 and 1.2) a lower percentage of LVH patients with Stage 3 disease had papillary and follicular carcinoma than found among NCDB cases.

Treatment similarities among both populations was demonstrated in Tables 2.1 and 2.2. In both groups, lobectomy with isthmusectomy was the surgical procedure most frequently performed. Among LVH patients, a higher percentage with follicular thyroid cancer were treated with surgery alone in comparison to NCDB cases.

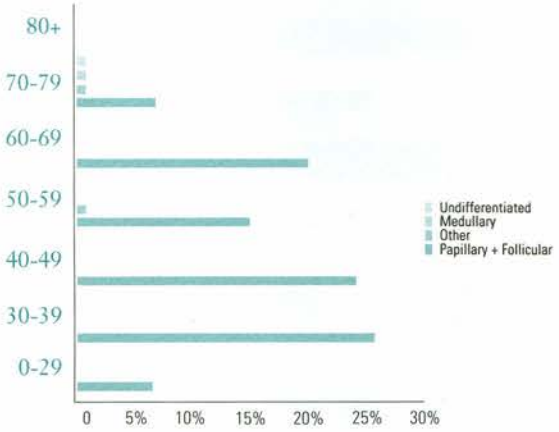
Five-year survival analysis was performed by the relative method according to stage of disease at diagnosis. LVH findings (Tables 3.1 and 3.2) were similar to NCDB with a slightly lower rate of survival among patients with Stage 4 papillary cancer.

Although the findings of this evaluation demonstrate many similarities between LVH and NCDB thyroid cancer incidence and management, it was determined guidelines for care should address indications for each surgical procedure, as well as indications for a combined modality approach to care.

As a result of this study, guidelines for care were developed and implemented on October 1, 1996. Guidelines include recommendations for treatment according to stage of disease and histology. The effectiveness of these guidelines will be evaluated in 1997.

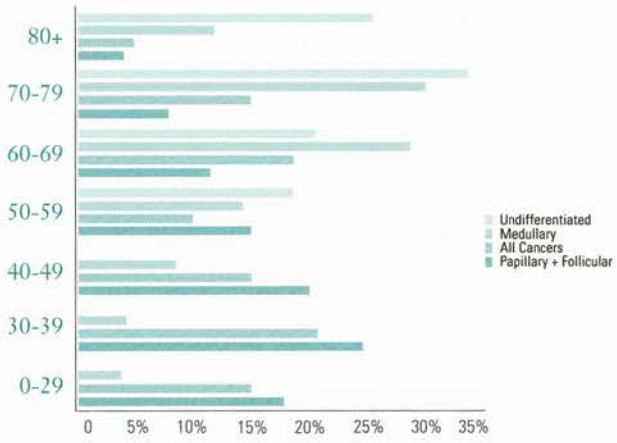
Histologic Subgroup by Age at Diagnosis

Figure 1. LVH Thyroid Data. Years 1985 to 1990



Histologic Subgroup by Age at Diagnosis

Figure 2. NCDB Thyroid Data. Years 1986/1987, 1992



Thyroid Cancer

Percentage of Thyroid Cases by Stage

Table 1.1. LVH Data.

Histology	Stage 1	Stage 2	Stage 3	Stage 4	Unable to Stage	Total Cases
Papillary	69.0	19.0	8.3	2.4	1.2	84
Follicular	40.0	33.3	6.7	6.7	13.3	15
Medullary	-	-	100.0	-	-	1
Undifferentiated	-	-	-	100.0	-	1
Other	-	-	-	-	100.0	1

Percentage of Thyroid Cases by Stage

Table 1.2. NCDB Data

Histology	Stage 1	Stage 2	Stage 3	Stage 4	Unable to Stage	Total Cases
Papillary	62.1	17.5	16.7	3.7	-	2949
Follicular	51.8	28.6	13.2	6.4	-	1630
Medullary	15.1	35.2	35.9	13.8	-	159
Undifferentiated	-	-	-	100.0	-	33

Percentage of Thyroid Cancer Cases by Surgery/Histology

Table 2.1. LVH Data.

Histology	None Unknown	Lobectomy with Isthmusectomy	Total Thyroidectomy without Lymph Nodes	Total Thyroidectomy with Lymph Nodes	Total Thyroidectomy with Radical or Modified Lymph Nodes	Other	Total Cases
Papillary	1.2	36.9	28.6	16.7	14.3	2.4	84
Follicular	-	53.3	33.3	13.3	-	-	15
Medullary	-	-	-	100.0	-	-	1
Undifferentiated	-	-	-	-	-	100.0	1
Other	-	-	-	-	100.0	-	1

Percentage of Thyroid Cancer Cases by Surgery/Histology

Table 2.2. NCDB Data.

Histology	None Unknown	Lobectomy with Isthmusectomy	Total Thyroidectomy without Lymph Nodes	Total Thyroidectomy with Lymph Nodes	Total Thyroidectomy with Radical or Modified Lymph Nodes	Other	Total Cases
Papillary	6.7	34.2	28.3	18.4	7.6	4.8	3512
Follicular	5.3	41.6	34.5	10.3	4.7	3.6	1956
Medullary	9.1	19.9	24.2	17.2	25.3	4.3	186
Undifferentiated	40.4	31	16.7	-	2.4	9.5	42

Thyroid Cancer

SURVIVAL COMPARISON OF PAPILLARY CARCINOMA

*Table 3.1. LVH Data: *Relative 5-Year Survival Rates by Best AJCC Stage, N=84*

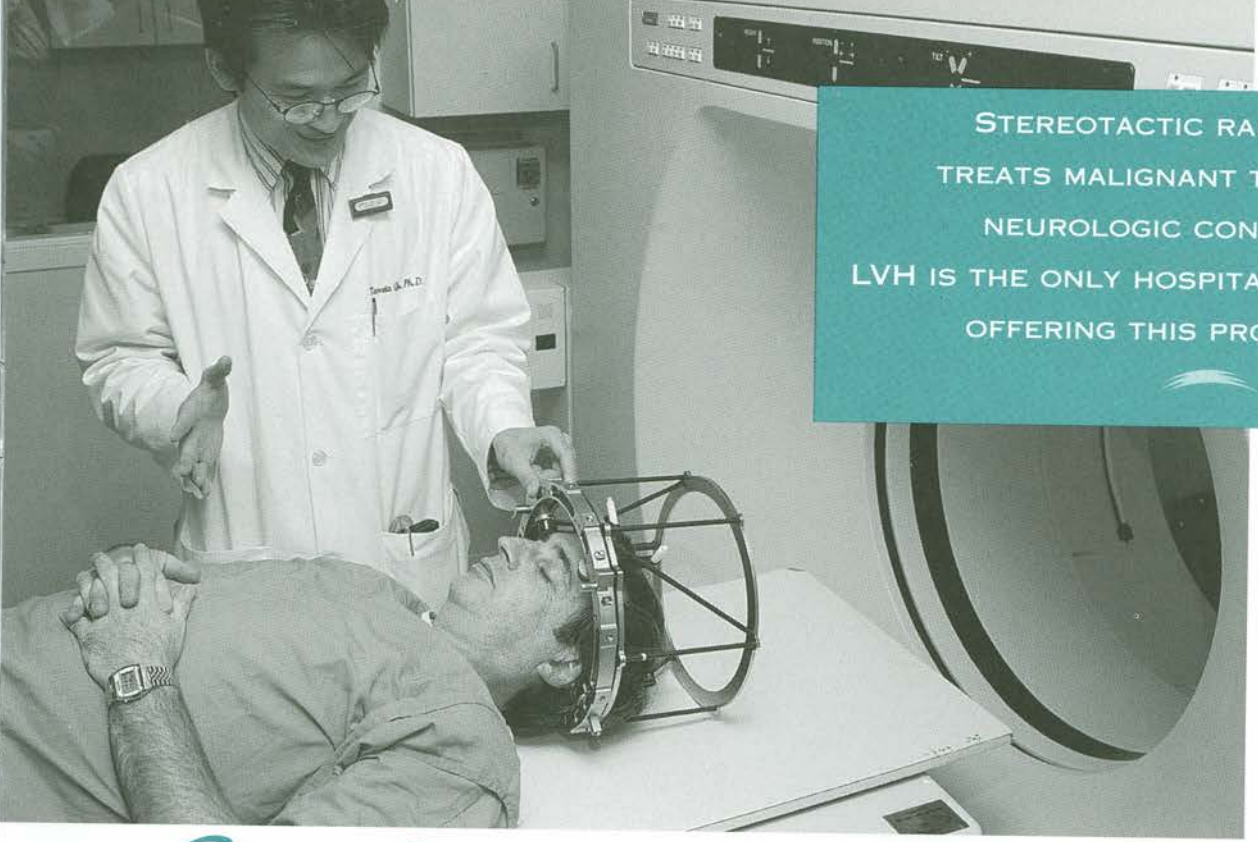
Interval Year	Stage 1 %	Stage 2 %	Stage 3 %	Stage 4 %	Stage Unknown %
0	100.0	100.0	100.0	100.0	100.0
1	100.0	100.0	87.0	100.0	100.0
2	100.0	100.0	87.0	51.5	100.0
3	98.8	100.0	69.6	51.5	100.0
4	98.8	100.0	69.6	51.5	100.0
5	86.8	95.1	69.6	51.5	100.0
Relative 5-year Survival Rate	96.86%	95.16%	69.67%	51.58%	100.00%
Average Age at Diagnosis	43.6	56.94	59	65	52

*Relative Survival Rate is based on 1980 Standard Year for Expected Rates.

SURVIVAL COMPARISON OF PAPILLARY CARCINOMA

*Table 3.2. NCDB Data: *Relative 5-Year Survival Rates by Best AJCC Stage*

Interval Year	Stage 1 %	Stage 2 %	Stage 3 %	Stage 4 %	Stage Unknown %
0	100.0	100.0	-	100.0	-
1	99.9	99.9	-	79.0	-
2	98.0	98.0	-	76.0	-
3	98.0	96.0	-	69.0	-
4	97.0	96.0	-	66.0	-
5	97.0	95.0	-	63.0	-



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