

# CyberKnife® at St. Luke's Episcopal Hospital



*The mission of  
the Cancer Center at St. Luke's  
is to provide high quality,  
personalized cancer care  
to each patient  
through a full range  
of integrated,  
state-of-the-art services,  
ministering to the whole patient:  
body, mind, and spirit.  
St. Luke's delivers  
Faithful, Loving Care.™*

**On the Cover:** The new CyberKnife® System is an advanced robotic radiosurgery technology with a continual image guidance system that delivers unprecedented targeting accuracy and a unique ability to automatically correct for intra-fraction target motion without interrupting the treatment or having to reposition the patient. The beams move in real time with 3D respiratory motion. The system reduces the planning margins to those clinically relevant with the CyberKnife® providing unparalleled healthy tissue preservation.

Typically requiring only five or fewer outpatient visits, the CyberKnife® System offers many cancer patients an effective, non-invasive and pain-free alternative to surgery and other prolonged, time-consuming therapies.

The CyberKnife® System is located in the Cancer Center's newly expanded St. Luke's Radiation Therapy and CyberKnife® facility at 2491 S. Braeswood at Kirby, Houston, TX, one mile from St. Luke's Episcopal Hospital in the Texas Medical Center.

See inside article on page 10 by L. Steven Carpenter, MD, Radiation Therapy

## FROM THE MEDICAL DIRECTOR

The cancer program at St. Luke's Episcopal Hospital has had a very successful 2008 year. Of greatest significance to the hospital was the recent recognition given to the Cancer Center at St. Luke's by the Commission of Cancer of the American College of Surgeons. St. Luke's received the Outstanding Achievement Award, placing it in an elite group comprising only 19% of the 478 hospitals in the United States surveyed in 2008. Only five cancer programs in Texas and two programs in Houston received this award in 2008. This award recognizes programs that strive for excellence in providing quality care to cancer patients. The Commission's review of our program in November of 2008 earned us commendations in nine areas, including cancer committee leadership, cancer data management, clinical services, research, community outreach, professional education and staff support and quality improvement. Substantial credit goes to Dr. Mark LaRocco, vice president, for his administrative leadership; to Carol Ahlschlager, CTR, supervisor of our outstanding cancer registry; to Elizabeth Walker, cancer program coordinator; and to the entire oncology team.

Deserving of generous praise is the growth of research at St. Luke's. Dr. Philip Salem, director of cancer research, has provided wisdom and direction for this effort and has generously channeled American Cancer Society funds to support this research. We plan to participate in an international, multi-institutional randomized trial to compare surgery with CyberKnife® radiosurgery treatment of Stage I lung cancer. Our cancer prevention research nurse of eleven years, Sopar Seributra, RN, CCRP, continues follow-up on 24 women enrolled in the STAR Breast Cancer Prevention Trial. Ms. Seributra has been promoted to the position of Nurse Coordinator of Cancer Research and will be responsible for several new interesting clinical trials opening soon, as well as working with Dr. Salem to continually enhance the cancer research program.

In addition, we have opened discussions with Baylor College of Medicine about offering more opportunities for patients to participate in national cooperative trials. Dr. William Fisher continues to spearhead the focus on pancreatic cancer, and one of his goals is to have at least four trials open at all times in order to provide options covering the major clinical stages of this devastating disease. Dr. Fisher has also contributed to our cancer program by moderating weekly pancreatic tumor boards.

The Cancer Center at St. Luke's continues to support between 12-13 tumor boards per month: Gynecological Oncology Tumor Board, Pancreatic Tumor Board, Hematological Malignancies Tumor Board, General Oncology Tumor Board, Breast Cancer Conference and Kelsey-Seybold Tumor Board. During 2008, 170 tumor boards were held and 462 cancer cases were presented. We thank all the moderators: Dr. Matthew Anderson, Dr. William Fisher, Dr. Kelty Baker, Dr. Philip Salem, Dr. Luis Camacho, Dr. Paul Holoye, Dr. Susan Escudier, Dr. Eric Bernicker and Dr. Guiyang Hu for their contributions to these multidisciplinary conferences.

Quality improvement initiatives are managed by our Oncology Collaborative Practice Team under the chairmanship of Dr. Eric Bernicker. He and dedicated committee members, including Dr. Lawrence Foote and Dr. Susan Escudier, are commended for their faithful and diligent efforts in this vitally important aspect of the cancer program.

Another key component of our cancer program is the Palliative Care Service. The new director for this service is Dr. Cynthia Blizzard, who with her team plan significant growth in the scope and value of this service to the hospital. They provide compassionate, comprehensive, evidence-based palliative care at all stages of disease. Another important resource to the cancer program at St. Luke's is the Pain Management Service directed by Linda Cole, MSN, MS, RN, CCRN, CNS, advanced clinical nurse.

We anticipate significant growth for the cancer program in 2009 with the expansion of the radiation therapy services. While we have been at full



capacity for the past several years in our current location, in August of 2009, St. Luke's® Radiation Therapy and CyberKnife® opened adjacent to the current building and triples our space. We offer cancer treatment using the first robotic linear accelerator in Houston, a technology called CyberKnife®, which is available in several major cities throughout the United States and internationally. For this expansion, we are very grateful to St. Luke's Episcopal Hospital and the leadership of Dr. Mark LaRocco, vice president; for the consistent support of Connie Boyd, RN, MS, administrative director, neuroscience and oncology; and for the untiring efforts of Valerie Baron, RN, director of outpatient centers. An essay on CyberKnife technology is in this annual report.

We will also be adding high dose rate, remote, afterloading brachytherapy (HDR). Among its many treatment applications, this will allow us to treat selected breast cancer patients with MammoSite®/Contura™ over the period of a single week rather than the traditional five to seven weeks. Other technological additions will include improvements in image-guided radiation, respiratory gating, and stereotactic body radiotherapy. Joining the radiation staff with me will be Dr. Hsin Lu and Dr. Manoj Reddy.

A valuable partner to the Cancer Center at St. Luke's is Kelsey-Seybold Clinic. Patients there have access to more than 300 physicians throughout the greater Houston area. Dr. Tejash Patel directs an enthusiastic team of medical oncologists, and their monthly tumor board is consistently one of the most valuable meetings in the Texas Medical Center.

The private practice physicians who care for the oncology patients and generously support the tumor boards, conferences, medical staff meetings, and quality assurance of the Cancer Center at St. Luke's have earned our gratitude many times over throughout the years.

In this annual report we honor Mr. Kurt Berk, who has been a member of the cancer committee for three years, a St. Luke's oncology volunteer for 14 years, and chairman of the Oncology Service Line of the St. Luke's Auxiliary volunteer service. Mr. Berk has mentored CanCare and new auxiliary volunteers at St. Luke's and also provided valuable support for the outpatient oncology services. He was recently recognized for more than 4,500 hours of volunteer service at St. Luke's, for which we are very grateful.

Other cancer programs strengths include St. Luke's oncology pharmacists, oncology social workers, oncology research nurse, the oncology infusion center and an inpatient rehabilitation unit. In support of our cancer program, the pathology and radiology services are vital assets due to their expertise and willingness to provide expert and efficient service.

In each of our annual reports, we highlight a specific tumor site and provide a report of outcomes and survival. This year Dr. Matthew Anderson has written a review of our chosen focus on uterine cancer. This is an active area of investigation for Dr. Anderson, and discoveries in his lab may eventually be translated into useful agents for uterine sarcomas.

Finally, the surgeons and medical oncologists at St. Luke's and the oncology nursing staff give great distinction to our hospital. They offer vast clinical experience and are dedicated to research and teaching. This, combined with a personalized level of care, gives distinction to St. Luke's Episcopal Hospital and its Cancer Center. We are honored that the quality of cancer care at St. Luke's leads more than 2000 new cancer patients a year to seek care here. Our commitment is to continue to merit their trust.

A handwritten signature in black ink, appearing to read "L. Steven Carpenter". The signature is fluid and cursive.

**L. Steven Carpenter, MD**

*Interim Medical Director, Cancer Center at St. Luke's*

- CoC Outstanding Achievement Award–Cancer Program 2008:** The Cancer Center at St. Luke’s earned the Commission on Cancer’s Outstanding Achievement Award following a triennial accreditation survey held in November 2008. The Cancer Center achieved the maximum of nine commendations with no deficiencies out of the 36 standards during the accreditation survey by the Commission on Cancer of the American College of Surgeons.
- New Interim Medical Director of the Cancer Center at St. Luke’s:** L. Steven Carpenter, MD, became the Interim Medical Director of the Cancer Center at St. Luke’s when Brian J. Miles, MD, resigned in April 2008. Dr. Carpenter has been a supporter of the Cancer Center at St. Luke’s for many years and has been instrumental in the great success of the Radiation Therapy at the Cancer Center, St. Luke’s Diagnostic and Treatment Center–Kirby Glen site.
- Patient Volumes Rise:** The oncology outpatient volume rose by 1,511 patient encounters in 2008. Total: 18,665 patient encounters in 2008 versus 17,754 patient encounters in 2007. Rapid and continued oncology outpatient volume increase is due to growth and rising volumes in radiation therapy services at Kirby Glen and an engaged medical staff referring patients. The addition of Hsin Lu, MD, and Manoj A. Reddy, MD, to the Radiation Oncology medical staff in 2009 will ensure continued support for volume increases.
- New Radiation Therapy and CyberKnife® Facility Under Construction:** The expansion of the Radiation Oncology Center is under way across from the existing Cancer Center at St. Luke’s Outpatient Oncology Infusion and Radiation Therapy Centers at Kirby Glen. The new three-vault Radiation Therapy and CyberKnife® facility will house the existing IMRT linear unit, a new Trilogy IGRT linear unit, and a Cyberknife® stereotactic radiosurgery unit.
- 2007 Cancer Registry Statistics Published in 2008 Annual Report of 2007 Facts and Figures:** The Cancer Registry abstracted 2,511 cancer cases in 2007, the most current statistics maintained by the Cancer Committee at year end 2008. This was an increase from the previous year that had 2,426 cases. The Cancer Registry continues mandatory and timely reporting to the State and to the National Cancer Data Base (NCDB). Quality management of data monitoring by physicians is ongoing. Collaborative Staging has been incorporated into the staging forms and physicians have been inserviced. The Cancer Registry database reached 28,580 diagnosed cancer cases covering a 15-year period. As a reminder, last year’s (2007) major cancer sites include: 524 cases of breast cancer; 276 cases of prostate cancer; 230 cases of lung cancer; 216 cases of gynecologic cancers; and 208 cases of colon/rectum cancer.
- Cancer Research Accrual:** The Cancer Center at St. Luke’s served 208 participants in clinical trials in 2008. Major accruals are attributed to Brian Miles, MD, for participation in the SPORE clinical trial and William Fisher, MD, who has several clinical trials accruing patients for pancreatic research protocols.
- Blue Distinction Award for Treatment of Complex and Rare Cancers from Blue Cross/Blue Shield:** The Cancer Center at St. Luke’s was among the first cancer centers in the nation to receive the “Blue Distinction for Complex and Rare Cancers” award from Blue Cross/Blue Shield. The award recognizes St. Luke’s Episcopal Hospital as a health institution with cancer specialists, technologies and facilities that excel in treatment of complex and rare cancers.
- Cancer Screenings and Early Detection:** A skin cancer screening held at the outpatient Cancer Center at St. Luke’s provided screening for 80 people. One prostate cancer screening was held at St. Luke’s The Woodlands Hospital with 45 participants and no positive findings. A significant mammography breast cancer screening program for underserved and uninsured was launched in late 2008. The Cancer Center at St. Luke’s is supporting breast cancer screening for women from the Breast Cancer Network of Strength organization and others as appropriate, who will be screened in small groups at the Women’s Center at the O’Quinn Medical Tower. The Pink Ribbons Project is providing funding for transportation of the women.
- Tumor Boards and Cancer Conferences:** 170 tumor boards and cancer conferences were held during 2008. All the tumor boards sponsored by the Cancer Center at St. Luke’s are approved for one hour of CME Category I. St. Luke’s medical staff members presented approximately 462 cancer cases in the multidisciplinary forums, and more than 643 physicians attended the conferences during the period January to December 2008.
- Lung Cancer Survival Study:** The 2008 Cancer Program Annual Report of 2007 Facts and Figures featured lung cancer patient survival studies. St. Luke’s Episcopal Hospital’s statistics on lung cancer reflect outcomes similar to national statistics. A new General Oncology Tumor Board will focus on the presentation of lung cancer cases, as well as other types of cancer.
- Outreach Events:** Successful outreach events that engaged St. Luke’s employees, as well as volunteers, cancer survivors, and participants, included Survivorship Houston 2008, Breast Health Coalition of Texas, Susan G. Komen Race for the Cure, CanCare Survivor’s Day Luncheon, and Saks Fifth Avenue Key to the Cure. All the events promoted community services from St. Luke’s and contributed to the early detection and prevention of cancer within various deserving groups in the community.

### TUMOR BOARDS AND CANCER CONFERENCES

A total of 170 tumor boards and cancer conferences were held during calendar year 2008. All the tumor boards sponsored by the Cancer Center at St. Luke's are approved for one hour of CME Category I by St. Luke's and the Texas Medical Association.\* The Radiology/GI Conferences are not CME-approved, but are very well attended. St. Luke's medical staff members presented approximately 462 cancer cases throughout the year in the multidisciplinary forums with over 643 physicians attending the conferences during the period of January to December 2008. Specialty tumor boards and cancer conferences include:

- **Gynecological Oncology Tumor Board**—Weekly
- **Pancreas Tumor Board**—Weekly
- **Hematological Malignancies Tumor Board**—Monthly
- **General Oncology Tumor Board**—Monthly
- **Kelsey-Seybold Tumor Board**—Monthly
- **Breast Cancer Conference**—Monthly
- **GI/Radiology Conference**—Weekly

\*St. Luke's Episcopal Hospital is accredited by the Texas Medical Association to provide continuing medical education for physicians.

St. Luke's Episcopal Hospital designates these educational activities for a maximum of 1 AMA PRA Category 1 Credit™ per tumor board occurrence. Physicians should only claim credit commensurate with the extent of their participation in the activity.

### ONCOLOGY CERTIFIED NURSING EDUCATION

St. Luke's oncology nursing staff is actively engaged in continuing education. Through the generosity and sponsorship of the Glenn Michael Walters Fund, the oncology nurses participate in oncology certification programs with the Oncology Nursing Society. These certifications help ensure that the staff is well equipped with the best oncology patient care skills, safety standards and techniques.

Oncology nurses learn hospital policies and procedures as they relate to oncology. The nurses are then skill-certified by Rosalyn Jones-Waters, RN, BSN, OCN, Oncology Nursing Quality Coordinator. Frequent inservice training reinforces their skills and training.

### ONCOLOGY NURSING INSERVICES

Rosalyn Jones-Waters, BSN, RN, OCN, organized and developed educational inservices for the nursing staff and ancillary staff. A series of lectures included the following:

- “Diagnosis and Management of Acute Leukemia,” by Kirk Heyne, MD
- “The Importance of Clinical Trials in Cancer Medicine,” by Luis Camacho, MD
- “Sickle Cell Disease: An Overview of the Disease Process, Complications and Morbidity,” by Lawrence E. Foote, MD

### PALLIATIVE CARE EDUCATIONAL SERIES

The Palliative Care Team offered a monthly educational series to hospital staff covering key topics:

- “Management of Dyspnea at End of Life,” presented by Mike Oder, BNP-BC, CHPN.
- “Multiple Losses: A Compounded Grief,” presented by Diana Ruffin, RN.
- “Cultural Diversity: Perspectives from Different Faith Traditions at the End of Life,” presented by the Palliative Care Team and Chaplains
- “Medical Futility,” presented by Lyra Sihra, MD
- “Nutrition at the End of Life,” presented by St. Luke's nutritionists
- “Speech and Swallowing at the End of Life,” presented by the Palliative Care Team

### SPECIAL GUEST LECTURES TO PHYSICIANS AND COMMUNITY

The following physicians presented oncology lectures to the public and hospital staff:

- “Getting Breast Cancer at Any Age,” by Susan Escudier, MD, for the Leukemia and Lymphoma Society.
- “What Is Cancer?” by Luis Camacho, MD, a presentation for CanCare volunteers and healthcare professionals in the community.

### CANCER REGISTRY PROFESSIONAL EDUCATION

Carol Ahlschlager, CTR, supervisor of the Cancer Registry; Lupe Funk, cancer registrar; and Michelle Cassity, CTR, participated in the Commission on Cancer's webinar on “Collaborative Staging: Keep on Top of the

Latest Changes” in February 2008. Lupe Funk attended a Texas Cancer Registry seminar on “Multiple Primary and Histology Rules—CS Overview” held on March 22, 2008 in Houston, Texas. In April 2008, Michelle Cassity, CTR, attended the National Cancer Registry Association's 34th Annual Educational Conference in Minneapolis, Minnesota.

### CLINICAL RESEARCH EDUCATION

Sopar Seributra, RN, CCRP, and Elizabeth Walker, BA, CCRP, certified by the Society of Clinical Research Associates, participated in several educational research seminars in the Texas Medical Center in Houston, Texas, that included:

- “Research Integrity,” by the Society of Clinical Research Associates
- “Outlook for Medical Oncology and Research,” from the Healthcare Advisory Board
- “ASTRO Conference Round-Up,” by the Advisory Board
- “Research Today—On the Market Tomorrow,” by St. Luke's Research Department
- “Perfect Protocol Summaries: St. Luke's Episcopal Hospital IRB Submission Process,” by St. Luke's Research Department
- “HIPAA: What Every Clinical Researcher Should Know,” by Charles Burbank, CHP, CHSS, St. Luke's Corporate Compliance.
- “The Pursuit of Excellence in Today's Challenging Clinical Trials Environment,” by The Methodist Hospital Research Department

The Cancer Committee at St. Luke's Episcopal Hospital is responsible for upholding current cancer program standards as set forth in the *Commission on Cancer Standards 2004 Revised Edition*. The *Commission on Cancer Standards 2009 Revised Edition* was published in January 2009 and will set the standards for 2009 activities within the cancer program.

The committee provides programmatic leadership in setting goals, as well as planning, initiating, implementing, evaluating, and improving all cancer-related activities at St. Luke's Episcopal Hospital. The committee enhances patient care through quality management initiatives; consultative and educational cancer conferences covering major cancer sites; an active supportive care system for patients, families and staff; accessibility of clinical research; and accurate and timely accession, staging and follow-up of cancer patient data in the Cancer Registry. The committee consists of board-certified physician specialists and non-physician hospital staff representing hospital administration, quality assurance, social services, nursing, palliative care, pharmacy, cancer registry, and other cancer-related fields. The Interim Medical Director serving as Cancer Committee Chair ensures that the committee includes physicians representing the five major cancer sites treated at St. Luke's.

**MICHAEL APPEL, MD**, GENERAL SURGERY

**KELTY BAKER, MD**, HEMATOLOGY

**OMAR BARAKAT, MD**, GENERAL SURGERY

**ERIC BERNICKER, MD**, CO-CHAIRMAN, HEMATOLOGY/ MEDICAL ONCOLOGY

**CYNTHIA BLIZZARD, MD**, PALLIATIVE CARE

**LUIS CAMACHO, MD**, HEMATOLOGY/ MEDICAL ONCOLOGY

**L. STEVEN CARPENTER, MD**, CHAIRMAN, RADIATION ONCOLOGY

**RAMESH DHEKNE, MD**, NUCLEAR MEDICINE

**SUSAN ESCUDIER, MD**, HEMATOLOGY/ MEDICAL ONCOLOGY

**WILLIAM FISHER, MD**, GENERAL SURGERY

**LAWRENCE E. FOOTE, MD**, HEMATOLOGY/ MEDICAL ONCOLOGY

**KIRK HEYNE, MD**, HEMATOLOGY/ MEDICAL ONCOLOGY

**PAUL Y. HOLOYE, MD**, HEMATOLOGY/ MEDICAL ONCOLOGY

**PHAN HUYNH, MD**, RADIOLOGY

**GILCHRIST JACKSON, MD**, GENERAL SURGERY

**SEWA S. LEGHA, MD**, MEDICAL ONCOLOGY

**HSIN LU, MD**, RADIATION ONCOLOGY

**BRIAN J. MILES, MD**, UROLOGY

**STEPHANIE MUNDY, MD**, INTERNAL MEDICINE

**PHILIP SALEM, MD**, CO-CHAIRMAN, MEDICAL ONCOLOGY

**LAURA SULAK, MD**, PATHOLOGY

**VIVEK YAGNIK, MD**, RADIOLOGY

**MARK LAROCCO, PhD**, VICE PRES, ADMINISTRATION

**CAROL AHLSCHLAGER, CTR**, CANCER REGISTRY, SUPERVISOR

**VALERIE BARON, RN**, DIRECTOR, OUTPATIENT CENTERS

**CONNIE BOYD, RN, MSc**, ADM DIR, NEUROSCIENCE/ONCOLOGY

**KURT BERK**, AUXILIARY VOLUNTEER

**MICHELLE CASSITY, CTR**, CANCER REGISTRY

**JAMES COMEAUX, RPh**, PHARMACY

**MARIANNE DWYER, BA**, HEALTHCARE PHILANTHROPY

**LUPE FUNK**, CANCER REGISTRY

**ALICIA BERGERON**, AMERICAN CANCER SOCIETY

**STACY JACOBS, RN**, PALLIATIVE CARE NURSE

**ROSALYN JONES-WATERS, RN, BSN, OCN**, ONCOLOGY QA/ NURSING

**NATASHA MCCLURE, RN, MBA**, NURSE MANAGER, ONCOLOGY

**MARILYN NICKLEBERRY, RN**, ONCOLOGY CASE MANAGER

**KIM PUTNEY, PharmD**, PHARMACY

**SOPAR SERIBUTRA, RN, CCRP**, RESEARCH NURSE

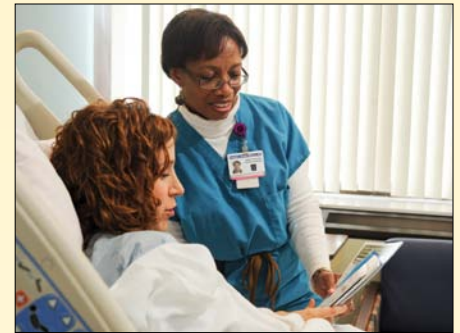
**ELIZABETH WALKER, BA, CCRP**, COORDINATOR, CANCER PROGRAM

**CHAVA WHITE, LMSW-AP, CCM**, SOCIAL SERVICE

The Oncology Collaborative Practice Team continues as the quality assurance subcommittee of the Cancer Committee. The committee is chaired by Eric Bernicker, MD, who is the Quality Improvement Coordinator appointed by the Cancer Committee. Members of the Oncology Collaborative Practice Team include physicians, nurses, administrators, pharmacist, social worker, and ancillary care personnel who enhance all aspects of cancer patient care through quality initiatives in the hospital and the outpatient facilities. Quality care initiatives in 2008 included the following:

- Chemotherapy and radiation therapy inpatient and outpatient care policies were updated: *Chemotherapy Lab Orders; Pre-Registration for Chemotherapy Agents; Extravasation of Chemo-therapeutic (Cytotoxic) Agents* and others.
- Blood collection and lab preparation processes were streamlined at the Outpatient Cancer Center.
- The Collaborative Staging Subcommittee developed a procedure for documenting collaborative staging that includes both the clinical and pathologic staging on the same form, as well as monthly quality review of the collected forms by a physician.
- Inpatient Oncology Nursing reported a 50% reduction in patient falls in 2008. Fall prevention is ongoing in 2009 with a goal of 100% prevention.
- Average length of stay for the oncology inpatient care unit was 6 days or fewer during 2008.
- Physicians' orders can be called in directly to the Oncology Outpatient Infusion Center and transferred to the electronic medical record CareManager, thus saving time and improving quality of care for patients.
- Electronic (HEO) blood transfusion orders were written and successfully initiated by hematologists and medical oncologists on the oncology inpatient care unit during 2008.

- A *Cancer Patient Resource Guide* was developed by the oncology inpatient social worker, Chava White, LMSW, and the Oncology Collaborative Practice Team. This guide is now being distributed by the social worker to inpatients as appropriate.



Rosalyn Jones-Waters shares helpful information with a patient.

- A Radiology Support Phone Line was added to improve communication about patients' procedures for attending physicians and radiologists.
- Erythropoiesis-Stimulating Agent (ESA) policies have been revised after 2008 FDA briefings suggested that certain agents may speed the growth of tumors.
- A new monthly Hematological Malignancies Tumor Board was established with Kelty Baker, MD, as moderator.

St. Luke's Cancer Registry is a case-specific database of detailed information about each patient's type of cancer and is a central component of St. Luke's Cancer Program. Monitoring survival statistics and disease recurrence improves the standard of care for cancer patients by pointing out areas of concern that need attention, as well as providing data to launch new research studies and clinical trials. The Cancer Registry provides data to research investigators in order to enhance the planning of clinical research trials. The data contribute to treatment planning, staging and continuity of care for patients.

The most current data reveal that in 2008, the registry abstracted 2,552 cancer cases and tracked former patients—maintaining a 92% follow-up rate. Laura Sulak, MD, pathologist, served as the Cancer Committee Coordinator of Quality Control of the Cancer Registry. In 2008, Dr. Sulak reviewed a minimum of 10% of all analytical cases and ensured accuracy of



From left, cancer registrars Lupe Funk; Carol Ahlschlager, CTR; and Michelle Cassity, CTR, display the Commission on Cancer 2008 Outstanding Achievement Award.

the data reporting. St. Luke's Cancer Registry is 100% compliant in reporting statistical data to the National Cancer Data Base and to the Texas Department of Health State Cancer Registry.

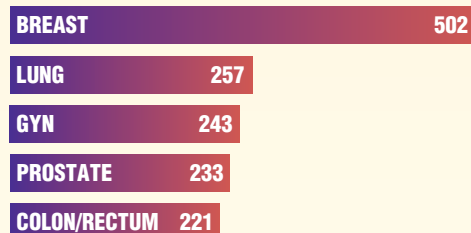
St. Luke's database has grown to 34,062 diagnosed cases since the reference date in 1992. St. Luke's cancer registrars remain actively involved in the Texas Tumor Registrars Association and participate in the National Cancer Registrars Association meetings. Active involvement in and organization of twelve (12) St. Luke's tumor boards and cancer conferences per month contribute to the Cancer Registry's vital role at the Cancer Center at St. Luke's. The Cancer Registry operations meet the current Standards of the Commission on Cancer.

2008 CANCER SITE REPORT

SITE	CLASS OF CASE			SEX		AJCC STAGE AT DIAGNOSIS							
	A	N/A	Reportable	M	F	0	I	II	III	IV	Unkn	NA	
<b>All Sites (2552)</b>	2129	323	100	1087	1365	185	513	415	237	215	255	309	
<b>Oral Cavity/Pharynx (31)</b>	25	4	2	16	13	1	6	2	2	2	11	1	
<b>Digestive System (544)</b>	454	68	22	304	218	6	88	105	80	81	55	39	
Esophagus (24)	20	3	1	21	2	1	2	1	2	4	8	2	
Stomach (38)	27	7	4	22	12	0	12	3	1	5	1	5	
Small Intestine (21)	16	5	0	12	9	0	2	1	3	0	1	9	
Colon (158)	128	22	8	77	73	4	23	35	36	22	5	3	
Rectum (63)	51	8	4	35	24	1	11	10	11	3	11	4	
Liver (67)	62	5	0	45	22	0	22	8	10	8	11	3	
Pancreas (125)	109	13	3	71	51	0	10	35	13	32	16	3	
Other Digestive (48)	41	5	2	21	25	0	6	12	4	7	2	10	
<b>Respiratory System (272)</b>	239	27	6	156	110	2	58	12	37	71	45	14	
Lung (257)	227	26	4	147	106	1	55	12	36	70	41	12	
Larynx/Other Resp (15)	12	1	2	9	4	1	3	0	1	1	4	2	
<b>Soft Tissue (13)</b>	11	1	1	7	5	0	0	0	1	1	6	3	
<b>Skin-Melanoma (19)</b>	16	3	0	9	10	6	2	2	3	1	2	0	
<b>Breast (502)</b>	448	39	15	4	483	105	142	101	29	6	59	6	
<b>Gynecology (243)</b>	208	26	9	0	234	18	93	14	41	22	14	6	
Cervix Uteri (34)	29	5	0	0	34	2	15	3	5	1	3	0	
Corpus Uteri (110)	101	9	0	0	110	0	66	7	14	7	5	2	
Ovary (59)	46	9	4	0	55	0	5	4	20	13	3	1	
Other Gyn (40)	32	3	5	0	35	16	7	0	2	1	3	3	
<b>Male Genital (240)</b>	194	37	9	231	0	0	5	148	17	7	17	0	
Prostate (233)	187	37	9	224	0	0	0	148	16	7	16	0	
Other Male/ Genital (7)	7	0	0	7	0	0	0	0	1	0	1	0	
<b>Urinary (198)</b>	173	20	5	136	57	47	68	10	15	13	16	4	
Bladder (104)	89	12	3	80	21	45	15	5	5	6	12	1	
Kidney (88)	79	7	2	52	34	0	53	5	9	6	4	2	
Other Urin (6)	5	1	0	4	2	2	0	0	1	1	0	1	
<b>Brain &amp; CNS (95)</b>	78	14	3	38	54	0	0	0	0	0	0	78	
<b>Thyroid (75)</b>	67	7	1	24	50	0	34	5	6	5	17	0	
<b>Lymphatic System (92)</b> Hodgkin's/Non-Hodgkin's	74	14	4	49	39	0	15	16	6	5	9	23	
<b>Blood/Bone Marrow (78)</b>	48	19	11	38	29	0	0	0	0	0	0	48	
<b>Unknown/Other (150)</b>	75	63	12	94	44	0	2	0	0	1	4	87	

References: American Cancer Society, Cancer Facts & Figures – 2008  
Analytic (A): diagnosed/treated at St. Luke's  
Non-analytic (N/A): diagnosed elsewhere

FIVE MAJOR SITES OF CANCER INCIDENCE AT ST. LUKE'S EPISCOPAL HOSPITAL IN 2008



## PREVENTION AND EARLY DETECTION

### PROSTATE CANCER SCREENING

The Cancer Center at St. Luke's offers case-by-case prostate cancer screening as needed at the outpatient oncology clinic location. There were 45 men screened at a free prostate cancer screening held at St. Luke's The Woodlands Hospital.

### SKIN CANCER SCREENING

The Cancer Center at St. Luke's sponsored free skin cancer screenings on May 10, 2008, as part of the annual Houston Citywide Skin Cancer Screening. The Houston Dermatological Society, the American Dermatology Association and St. Luke's sponsored the annual program. Several hospitals across Houston held the free skin cancer screenings as part of the citywide effort. St. Luke's board-certified dermatologists and St. Luke's registered nurses provided total and partial body skin cancer screening for 80 participants.

### BREAST CANCER SCREENING

The Cancer Center at St. Luke's is sponsoring breast cancer screenings for underserved and underinsured women in cooperation with the Breast Cancer Network of Strength. St. Luke's Women's Center will offer digital mammography to the participants during the noon hours several times a month. Transportation for the participants is provided by the Pink Ribbons Project. Radiology interpretation fees and digital mammography fees will be paid by the Cancer Center at St. Luke's. The screening began in late December 2008.

## PUBLIC EDUCATION

### SUSAN G. KOMEN RACE FOR THE CURE—2008—HOUSTON

The Cancer Center at St. Luke's provided back packs and first aid supplies for the first aid medical team of the Komen Race for the Cure held October 4, 2008, in downtown Houston. Sixteen St. Luke's registered nurses volunteered and served on the medical team. Some 30,000 people participated in this breast cancer awareness event. As a Gold sponsor for the event, St. Luke's Episcopal Health System distributed race towels and promoted the Race. Proceeds from the event are used to award grants for breast cancer research and community breast cancer screening projects in the Houston area.



St. Luke's volunteers, including nurses Penny Cutbirth and Carla Cole, participated in the Komen Race for the Cure



St. Luke's oncology nurse, Risa Chosed, RN, OCN, with medical students in action on the medical first aid team at the Komen Race for the Cure.

### "SERVICES AVAILABLE TO ONCOLOGY PATIENTS AT THE CANCER CENTER AT ST. LUKE'S" BROCHURE

An educational brochure was developed by the oncology social worker and the Oncology Collaborative Practice Team to assist patients with their stays in the hospital and with their post-discharge experience. The brochure lists resources for cancer patients to locate transportation, housing, charitable organizations, reliable cancer information websites, and local support services such as Cancer

Counseling, assistance with insurance and Medicare, and other services. In addition, the brochure explains the services available to patients while in the hospital and provides phone numbers for easy access.

### BREAST CANCER AWARENESS

In October 2008, St. Luke's online employee communication vehicle, *The Source*, published an educational article by Susan Escudier, MD, that explained breast cancer and educated the reader on pertinent facts about the disease as part of Breast Cancer Awareness month.

### HOUSTON CANCER SURVIVORS' DAY

This event was held on Sunday, June 2, 2008. St. Luke's nurses, led by Rosalyn Jones-Waters, RN, OCN, staffed a booth at the event, as well as counseled interested cancer survivors. They distributed educational information to cancer survivors as well.

### SAKS FIFTH AVENUE KEY TO THE CURE

The Saks Fifth Avenue Key to the Cure Kick-off Party was held in October 2008 at Saks Fifth Avenue in the Galleria area of Houston. Proceeds from the party and a percentage of sales for the following weekend are donated to the Cancer Center at St. Luke's. The funds are used for women's cancer research.

### AMERICAN CANCER SOCIETY "LOOK GOOD, FEEL BETTER"

Programs were held in the Cancer Center at St. Luke's at St. Luke's Diagnostic and Treatment Center—Kirby Glen location throughout 2008. The program presents female cancer patients with beauty tips about looking good and feeling positive during chemotherapy and radiation therapy treatments.

### AMERICAN CANCER SOCIETY GREAT AMERICAN SMOKEOUT

The Cancer Center, in collaboration with the American Cancer Society, sponsored a Great American Smokeout exhibit with educational materials on smoking cessation in November 2008. The awareness event was held on St. Luke's Skybridge. St. Luke's offers Break Free, a smoking cessation program, that can be accessed both through St. Luke's website and through cardiology outpatient services.

**THE SECOND ANNUAL ST. LUKE'S PALLIATIVE CARE MEMORIAL SERVICE**

The event was held at St. Luke's Denton A. Cooley Auditorium on Saturday, November 1, 2008, at 2:00 p.m. to join in remembrance and celebration of those who have touched our lives.

**CANCER CENTER AT ST. LUKE'S WEBSITE**

The website of the Cancer Center at St. Luke's continues to be enhanced and updated by physicians, nurses, cancer program staff and St. Luke's Web Center. Additionally, physicians contribute cancer awareness and educational articles to the monthly *St. Luke's eNewsletter* published by the Web Center, which has a circulation of 200,000.

**CANCER PATIENT SUPPORT NETWORK**

St. Luke's Auxiliary and Service Line Chairman, Kurt Berk, continue comfort visits to oncology inpatients and outpatients in St. Luke's Episcopal Hospital and St. Luke's Cancer Center at the Kirby Glen



*Kurt Berk, left, has demonstrated an outstanding commitment to serving St. Luke's oncology patients. Picutred right: Rev. Gary H. Jones, Director, Chaplaincy Services.*

outpatient location. Mr. Berk has contributed more than 4,500 hours of volunteer time over the past 14 years. Helen Weber, St. Luke's Auxiliary, provides the Comfort Cart to 20T inpatient oncology care unit and delivers complimentary sundries and supplies to patients and their families. Other Auxiliary volunteers who visit cancer patients at St. Luke's include Neal Valk, Francisca Nicolson, and Bill McCall (CanCare). In both the inpatient and outpatient care areas, the oncology volunteers have given patients more than 1000 guardian angel pins a year.

During 2008, CanCare volunteers began visiting patients at St. Luke's Episcopal Hospital and at the Cancer Center at St. Luke's--Kirby Glen location.

Pastoral Care chaplains visit patients on the inpatient and outpatient oncology patient care units.

The Cancer Center at St. Luke's provides sleep caps to cancer inpatients and St. Luke's Auxiliary donates scarves, turbans and prayer blankets for patients.

Organizations such as the Leukemia and Lymphoma Society, Sickle Cell Association of the Gulf Coast, Cancer Counseling, the American Cancer Society, and the National Cancer Institute provide literature and a continuum of support and services once patients and their families are discharged from the hospital.

**ONCOLOGY PATIENT EDUCATION LIBRARIES AND RESOURCE CENTERS**

Patient education libraries are located on St. Luke's oncology inpatient care unit and at the oncology outpatient infusion center and radiation therapy center. The libraries offer patients information from the National Cancer Institute, the American Cancer Society, and other organizations. Oncology nurses and the ancillary staff also provide individualized cancer education to patients and family members. Computers are available for patients to use for web searches of relevant information.

- AMERICAN COLLEGE OF SURGEONS COMMISSION ON CANCER ACCREDITATION: 2008-2011 AS A TEACHING HOSPITAL CANCER PROGRAM
- 2008-2009 RECIPIENT OF THE COMMISSION ON CANCER OUTSTANDING ACHIEVEMENT AWARD
- MULTIDISCIPLINARY CANCER COMMITTEE
- MEDICAL DIRECTOR OF THE CANCER CENTER AT ST. LUKE'S
- CANCER REGISTRY WITH AUTOMATED DATA MANAGEMENT AND PATIENT FOLLOW-UP, AND NATIONAL CANCER DATA BASE AND STATE OF TEXAS CANCER REGISTRY PARTICIPANT
- PATIENT CARE EVALUATION AND QUALITY CARE OUTCOMES STUDIES
- CANCER PREVENTION, EDUCATION, AND SCREENING PROGRAMS
- ONCOLOGY PATIENT EDUCATION LIBRARIES AND RESOURCE CENTERS LOCATED ON THE ONCOLOGY INPATIENT CARE UNIT AT ST. LUKE'S EPISCOPAL HOSPITAL AND AT THE CANCER CENTER AT ST. LUKE'S OUTPATIENT SERVICES LOCATION
- TWELVE MULTIDISCIPLINARY CANCER CONFERENCES AND TUMOR BOARDS, EACH DESIGNATED BY ST. LUKE'S EPISCOPAL HOSPITAL FOR 1 HOUR OF AMA PRA CATEGORY 1 CREDIT™ THROUGH THE TEXAS MEDICAL ASSOCIATION
- PROFESSIONAL EDUCATIONAL OPPORTUNITIES FOR THE MEDICAL AND NURSING STAFFS
- CLINICAL TRIALS AND CANCER RESEARCH PROGRAM AFFILIATED WITH NSABP, SPORE, INDUSTRY AND OTHERS
- COMMUNITY OUTREACH PROGRAMS: EDUCATION, EARLY DETECTION AND SCREENING
- ONCOLOGY SERVICE AUXILIARY VOLUNTEERS FOR PATIENT VISITATIONS
- FULL RANGE OF SERVICES FOR DIAGNOSIS AND TREATMENT OF CANCER
- BOARD-CERTIFIED PHYSICIANS AND ONCOLOGY SPECIALISTS
- ONCOLOGY CERTIFIED NURSING STAFF--MAGNET NURSING AWARD
- DEDICATED 34-BED ONCOLOGY INPATIENT CARE UNIT AND 13-STATION CANCER CENTER AT ST. LUKE'S OUTPATIENT ONCOLOGY INFUSION CENTER
- SERVICE LINE MANAGEMENT FOR CONTINUUM OF CARE
- ST. LUKE'S RESIDENCY PROGRAM AND ACADEMIC AFFILIATIONS WITH BAYLOR COLLEGE OF MEDICINE AND THE UNIVERSITY OF TEXAS MEDICAL SCHOOL AT HOUSTON
- PALLIATIVE CARE SERVICE
- PAIN MANAGEMENT NURSE
- DIETITIAN FOR ONCOLOGY INPATIENTS AND OUTPATIENTS
- REHABILITATION SERVICE
- ONCOLOGY SOCIAL SERVICE PROFESSIONAL
- MAMMOGRAPHY PROGRAM ACCREDITED BY THE AMERICAN COLLEGE OF RADIOLOGY AND STATE OF TEXAS
- PATHOLOGY DEPARTMENT AND LABORATORY ACCREDITED BY THE COLLEGE OF AMERICAN PATHOLOGISTS AND DEPARTMENT OF HEALTH AND HUMAN SERVICES CLIA LABORATORY CERTIFICATION
- ST. LUKE'S EPISCOPAL HOSPITAL ACCREDITED BY THE JOINT COMMISSION FOR ACCREDITATION OF HEALTHCARE ORGANIZATIONS (JCAHO)

*“At St. Luke’s Episcopal Hospital and Baylor College of Medicine, current issues are being studied—such as the appropriate extent of surgical staging and the patterns of gene expression found in all forms of the disease—both at the basic science and clinical levels.”*

Uterine cancer is the most common cancer diagnosed in the female reproductive tract. In 2009, more than 42,000 new cases of uterine cancer will be diagnosed, accounting for approximately 6% of all cancer diagnoses in women. About 95 percent of these originate in the endometrium, the inner lining of the uterus. However, cancers can arise in other parts of the uterus, including its muscular walls (leiomyosarcomas) as well as the connective tissue supporting the endometrial lining (endometrial stromal sarcomas). More than 7,780 women are expected to die from uterine cancer this year alone.



**Matthew Anderson, MD**  
*Assistant Professor,  
 Gynecology/Oncology,  
 Baylor College of Medicine  
 Moderator, Gynecological  
 Oncology Tumor Board  
 at St. Luke’s*

An emerging concept is to classify cancer arising in the endometrium into two categories. Type I occurs most commonly in pre- and peri-menopausal women and is often associated with a history of estrogen exposure. Histologically, Type I cancers tend to appear somewhat similar to normal endometrium and are therefore described as “endometrioid.” These cancers are associated with abnormal proliferations of the endometrial lining known as endometrial hyperplasias, and they are often first noted after a woman begins to experience problems with abnormal patterns of vaginal bleeding. This bleeding can take the form of irregular periods or even post-menopausal bleeding. Risk factors for Type I endometrial cancers include high circulating levels of estrogen or even certain estrogen-related products such as tamoxifen, a history of endometrial hyperplasia, obesity, never having carried a pregnancy (nulliparity), polycystic ovary syndrome and diabetes. Both a younger age at onset of periods (menarche) and older age at menopause also predispose women to this category of endometrial cancers.

In contrast, Type II cancers are thought to occur by a different mechanism and may be less likely to present with the typical symptoms. Type II uterine cancers do not appear to be associated with increased exposure to estrogen and are more likely to occur in older post-menopausal women. Type II cancers include a number of high-risk histotypes that can originate in the endometrium, including papillary serous and clear carcinomas. Poorly differentiated or “high-grade” endometrioid cancers are also included in this category. Type II uterine cancers also occur at a higher frequency in African-American women. Given their propensity to recur even when diagnosed at an early stage, Type II cancers carry a much poorer prognosis than Type I cancers.

Because most cases of endometrial cancer are discovered at an early stage, the 5-year survival rate of these early-stage cases, particularly well-differentiated Type I cancers, is very high: greater than 95 percent. However, survival rates for women diagnosed at later stages or with Type II cancers are lower. In large part, a woman’s experience depends on a number of factors other than stage-at-diagnosis.

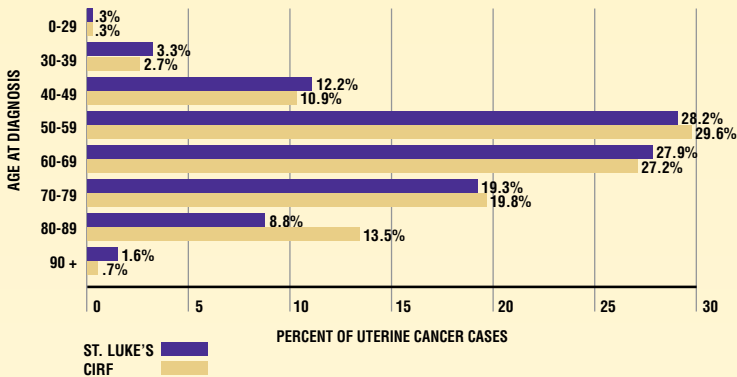
Traditionally, the primary treatment for endometrial cancer has been hysterectomy accompanied by removal of both the ovaries and fallopian tubes. Depending on the extent of disease, surgical staging may also be advisable, particularly for endometrial cancers that invade deeply into the walls of the uterus. More recently, however, certain aspects of this strategy have been called into question. One matter of controversy has been how extensively uterine cancers should be surgically staged. In the past, a sampling of pelvic and para-aortic lymph nodes was performed if staging was felt to be indicated. However, recent studies, particularly coming from clinical investigators at the Mayo Clinic, have demonstrated that more extensive dissections of lymphatic tissue in the pelvis and around the aorta/vena cava may be of benefit. These data challenge another past assumption: that the disease follows a clear and logical progression from lymph nodes in the pelvis to other areas. If the progression is confirmed to be less than clear and logical, this insight would suggest that more extensive staging beyond the level of a simple “sampling” may be important for determining whether or not chemotherapy and/or radiation should be part of the treatment plan.

There is also additional data that suggests that such dissections may also improve outcomes independently of other additional treatment. If so, the extent of surgical staging performed by a gynecologic oncologist might also have an important impact on a woman’s long-term survival.

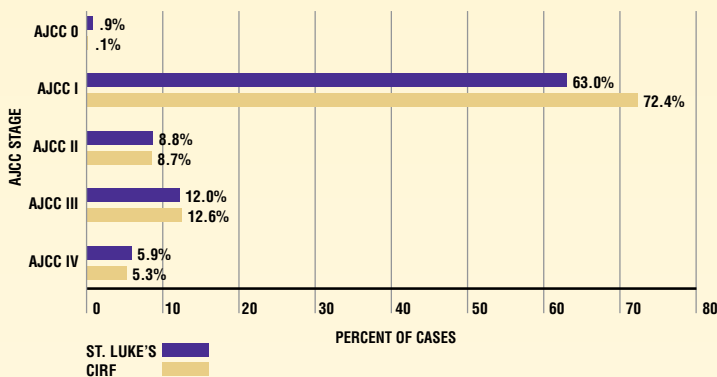
Thorough discussions about whether adjuvant treatment is suitable should be an important part of care for a woman diagnosed with uterine cancer. It has not been clearly demonstrated whether radiation is beneficial for local pelvic spread of disease, the extent or type of radiation that is most helpful, whether chemotherapy should be added to radiation regimens, or whether the use of chemotherapy by itself contributes to longevity when certain risk factors are present. These and other questions are the subject of ongoing investigation. Does adjuvant therapy decrease the risk of distant metastasis for uterine papillary serous carcinoma (UPSC), which looks like ovarian cancer but starts in the uterus? How can leiomyosarcoma (malignant) conditions be more effectively distinguished from leiomyoma (benign) conditions?

At St. Luke’s Episcopal Hospital and Baylor College of Medicine, these current issues are being studied, both at the basic science and clinical levels of investigation. Of special focus are the patterns of gene expression in all forms of the disease, which are all seen at the Houston hospitals comprising the Texas Medical Center, a major referral center. We have collaborated with M.D. Anderson Cancer Center, Harvard and UCLA in identifying novel gene markers, which we hope will lead to improving our ability to distinguish between benign and malignant conditions, in turn leading to more effective therapies for women with advanced stage disease. Another M.D. Anderson-led study that is ongoing at St. Luke’s is examining the role that insulin and diabetes play in the development of endometrial

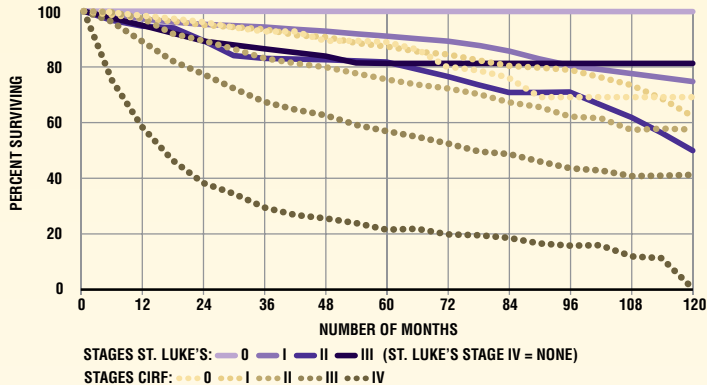
**FIGURE 1**  
ST. LUKE'S VS. CIRF STATISTICS OF  
AGE AT DIAGNOSIS OF UTERINE CANCER 1998-2008



**FIGURE 2**  
ST. LUKE'S VS. CIRF STATISTICS OF  
STAGE AT DIAGNOSIS OF UTERINE CANCER 1998-2008



**FIGURE 3**  
ST. LUKE'S VS. CIRF SURVIVAL BY AJCC STAGE,  
CORPUS/ENDOMETRIUM CANCER 1998-2008



cancer. In addition, we hope to collaborate with Texas Children's Hospital to expand clinical-trial options to the broader adult population diagnosed with uterine sarcomas.

Lastly, significant progress has been made in our approach to treating uterine cancer, especially in our application of minimally invasive procedures—whether by laparoscopy or robotic means. This has produced several advantages, not the least of which is a much shorter patient recovery time: 2-4 weeks, in contrast to the

6-8 weeks required in traditional surgery. It also allows full staging of the disease, as well as full removal of the malignancy. Most women in the early stages of the disease are thus achieving full cure.

### ST. LUKE'S AND NATIONAL CIRF EXPERIENCE

For the calendar year 2008, St. Luke's cancer registry identified 110 cases of uterine cancer, and over the ten-year period 1998-2008, St. Luke's Episcopal Hospital has treated a total of 691 women with uterine cancer. In 2008, gynecological cancer of all types was the third highest cancer diagnosed and treated at St. Luke's Episcopal Hospital. More cases of gynecological cancer were treated at St. Luke's than colorectal cancer, which had been ranked third highest in occurrence for the past sixteen years.

In most respects, our data concerning age at diagnosis, stage at diagnosis and survival rates parallel the nationwide data that the Cancer Information Reference File (CIRF) has gathered over the 10-year period. As shown in Figure 1, both St. Luke's and CIRF report the greatest number of patients diagnosed in their 50s through 70s. Relatively few have been diagnosed during their 20s and 30s, and these may well represent cases in which a genetic contribution has played a role (an issue we are currently investigating). St. Luke's statistics also mirror the most current National Cancer Data Base statistics regarding stage at diagnosis, age at diagnosis and survival.

We are pleased to see that the majority (62 percent) of women treated here have been diagnosed at an early stage of the disease when it is most effectively treated (see Figure 2). This is consistent with national data, as is the survival data—very high at the early stage (see Figure 3). To some degree, however, these data also reflect our status as a referral center with practicing academic and private practice physicians who tend to attract cases at a somewhat more advanced level.

In addition to data shown in the charts, we wish to note the demographic makeup of our patients: While most 74% (435) are categorized as White, an ethnicity breakdown shows that 8% (51) of these were Hispanic. Another 16% are African-American, with 3% identified as Asian. These data confirm our commitment to serving the diverse spectrum of women throughout our community.

### SUMMARY

At St. Luke's, a multidisciplinary team of physicians and caregivers collaborate to manage the care of each woman with uterine cancer. A tumor board devoted to gynecological cancer cases is available to assist physicians with consultations, disease staging, discussions of treatment options as well as disseminating current information regarding new options and emerging standards of care. Our team-oriented approach to care helps individual members of the team keep each other aware of advances in research and promising results of treatment.

In general, St. Luke's 10-year data concerning age, stage at diagnosis and survival for its 691 uterine cancer patients is in line with national data that the CIRF has gathered on a total of 12,467 patients over a 10-year period.

By a variety of means, the physicians and staff at St. Luke's strive to improve survival rates through basic- and clinical research, early diagnosis, minimally invasive surgery, advanced therapies, and the application of discoveries made at the clinical research level. Our goal is to serve a wide spectrum of women and to contribute to local and worldwide advances being made against uterine cancer.

*In contrast to other radiosurgery systems, the CyberKnife® is non-invasive and unique in the ability to track tumors as they move with the patient's respiration or other body functions.*

The Cancer Center at St. Luke's is pleased to have the first and only CyberKnife® Robotic Radiosurgery System in Houston. In the fall of 2009, St. Luke's Radiation Oncology Services moved into a new radiation oncology facility—St. Luke's Radiation Therapy and CyberKnife®—located across from the St. Luke's Diagnostic and Treatment



three-dimensional shape of the tumor, and the radiation doses have steep lateral gradients, minimizing the effects on surrounding normal tissue. (Traditional radiosurgery has been given in only one dose; however, Medicare has now expanded the radiosurgery definition to include up to five treatment sessions.)

The first application of radiosurgery is gener-

ally credited to Dr. Lars Leksell in Stockholm, Sweden. In the early 1950s, he was using a stereotactic neurosurgical head frame to guide surgical instruments deep into the brain.

These procedures were often used to interrupt brain pathways involved in pain or in such movement disorders as Parkinson's disease. Dr. Leksell demonstrated that he could create similar brain lesions in a non-invasive manner using many small beams of radiation guided by his head frame. He tried a variety of radiation sources and eventually designed a device that would become known as the Gamma Knife.®

**RADIATION VS. RADIOSURGERY**

Gamma Knife and radiosurgery procedures do not employ scalpels, but imply destructive changes in the body using surgical precision. A variety of additional brain applications were developed including control of benign and malignant tumors and elimination of blood vessel abnormalities (AVMs).

Application of radiation for many cancers includes delivery of the radiation to broad areas of the body, including entire organs or prophylactic doses to regional lymph nodes. This traditional delivery of radiation typically requires five to eight weeks of daily treatments. Many tumor manifestations are discretely defined. Treatment of these more limited volumes provides patients with several advantages, including less dose to adjacent normal body structures, dramatically shorter courses of radiation, and dramatically more effective doses of radiation. These short courses of radiation (less than six treatments) are generally referred to as *radiosurgery*.

*Radiosurgery* delivers high doses of radiation via many narrow beams of radiation. The beams are guided to their intended location using a stereotactic technique (describing a location in three-dimensional space by means of x, y, and z coordinates) or by using enhanced image guidance. This radiation closely conforms to the

**CYBERKNIFE® VS. GAMMA KNIFE**

Over the last six decades, the field of radiosurgery has expanded to include a variety of medical equipment as well as application to all areas of the body. We believe that CyberKnife® represents an ideal culmination of these decades of progress.

While the Gamma Knife is well known and has been available for several decades, it carries several important disadvantages. The Gamma

Knife can treat only problems in the head, and the treatments must be performed after fixation of a metal frame to the skull with four screws—a source of significant pain for some patients. Small scars often remain on the skin of the forehead, and patients cannot drive themselves to treatment due to the use of intravenous sedation. In addition, the lack of uniform (homogenous) distribution of the radiation dose can sometimes cause problems.

In contrast to Gamma Knife, the CyberKnife® provides (1) submillimeter treatment accuracy without the need for invasive skull screws; (2) patients can drive themselves to and from treatment; (3) radiosurgery treatment can be applied to any area of the body; (4) patients are not limited to just one treatment; and (5) a greater range of tumor sizes can be treated. Being able to provide more than one treatment can greatly increase the safety in sensitive areas of the brain and body.

### UNIQUENESS OF CYBERKNIFE®

In contrast to other radiosurgery systems, the CyberKnife® is non-invasive and unique in the ability to track tumors as they move with the patient's respiration or other body functions. The CyberKnife® continually images the target with x-rays and permits instantaneous treatment plan modifications. The CyberKnife® system also creates a computer model of the manner in which the treatment target moves due to respiration; then the CyberKnife® robot moves in synchrony with it.

CyberKnife® has many clinical applications and advantages:

- It can be used for both benign and malignant tumors.
- In the brain, it can also treat functional disorders such as trigeminal neuralgia, a painful condition of a facial nerve.
- Due to the extreme accuracy, it can be used to treat painful metastasis of the spine after prior radiation.
- It can be used to eliminate small metastasis (oligometastasis) in certain patients.
- It can be used to obliterate vascular tumors (AVM or arteriovenous or malformation) of the brain or spine.
- It is usually a safer alternative for invasive ablative procedures such as radiofrequency ablation (RFA).
- It may produce an equivalent survival rate to surgery for early stage lung cancer.
- It offers a convenient alternative for prostate cancer by providing treatment in 5 days rather than the conventional 35 to 42 days.
- Giving large doses of radiation over a few days provides a much more effective type of radiation for tumors previously resistant to radiation.

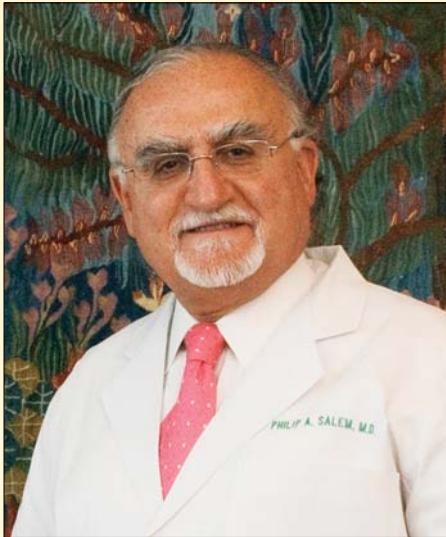
More than 60,000 patients have been treated worldwide with CyberKnife®, a 14% increase from calendar year 2007 to 2008.

In summary, the CyberKnife® Robotic Radiosurgery System takes advantage of intelligent robotics to enable treatment of tumors anywhere in the body and provides an additional option for many patients diagnosed with previously inoperable or surgically complex tumors.

Patients at St. Luke's benefit from a full spectrum of diagnostic technologies and treatment modalities that are continuously enhanced.

- Radiation therapy – IMRT (Intensity Modulated Radiation Therapy) and Trilogy® IGRT (Image Guided Radiotherapy)
- CyberKnife® Robotic Radiosurgery System
- PET/CT Technology
- Siemens CT-Scanners – 4-, 16-, and 64-Slice; GE 8- and 16-Slice in Radiation Oncology
- Siemens High Field Strength 3 Tesla MRI Scanner
- Gene Therapy Research
- Endoscopic ultrasound (EUS)
- DaVinci Robotic Surgery
- Digital Mammography
- Breast MRI following ACoS Guidelines
- Radiofrequency Ablation
- State-of-the-art operating room suites and dedicated inpatient surgical units to consolidate specialized care for breast, colorectal, lung, gastrointestinal, and other surgery
- Sentinel lymph node mapping for breast surgery and for melanoma
- Stereotactic biopsy and fine-needle biopsy
- Magnetic resonance imaging (MRI)
- Laparoscopic surgical procedures
- Mastectomy with immediate reconstructive surgery
- Breast conservation surgery
- Targeted cancer therapies
- Chemotherapy, biochemotherapy, hormone therapy, chemoprevention

St. Luke's Cancer Center offers patients access to frontline cancer research by providing clinical trials led by physician investigators specializing in oncology. Investigators offer national clinical studies, as well as original hospital-based studies. Contact St. Luke's Cancer Research Program Office at 832-355-6777 if you have questions.



Philip A. Salem, MD, Director, Cancer Research Cancer Center at St. Luke's and Philip A. Salem Chair in Cancer Research.

**BREAST CANCER PREVENTION**

SLEH 2006 Study of Tamoxifen and Raloxifene in the Prevention of Breast Cancer (STAR – NSABP). Contact Sopar Seributra, RN, Nurse Coordinator for STAR Study at 832-355-6777. *PI–Philip A. Salem, MD, et al.* (Follow-up only. Closed to accrual.)

**PANCREAS**

A Phase II Double-Blind, Placebo Controlled, Multi-Center Adjuvant Trial of Efficacy, Immunogenicity, and Safety of G1-4000; An Inactivated Recombinant Saccharomyces Cerevisiae Expressing Mutant RAS Protein Combined with a Gemcitabine Regimen Versus a Gemcitabine Regimen with Placebo, in Patients with Post-resection R0/R1 Pancreatic Cancer with Tumor Sequence Confirmation of RAS Mutations. (H-20777) *PI–William Fisher, MD.* 2007. Contact BCM Elkins Pancreas Center at 1-877-PANC CTR. Open for accrual.

A Randomized, Phase II/III Study of TNFerade Biologic with 5-FU and Radiation Therapy for First-Line Treatment of Unresectable Locally Advanced Pancreatic Cancer. *PI–William Fisher, MD* (H-17553) 2006. Open for accrual.

A Multinational, Randomized, Double-Blind Study, Comparing The Efficacy of Aflibercept Once Every 2 Weeks Versus Placebo In Patients Treated with Gemcitabine for Metastatic Pancreatic Cancer *PI–William Fisher, MD* (H-22228) (Sanofi-Aventis) Open for accrual.

NLG-0205: A Phase II Study of Hyperacute-Pancreatic Cancer Vaccine in Combination with Chemotherapy and Chemoradiotherapy in Subjects with Surgically Resected Pancreatic Cancer. *PI–William Fisher, MD* (H-24846) (New Link Genetics) Open for accrual.

SCI-RP-PAN-P2-001: A Randomized, Double Blind, Placebo Controlled, Phase II Study Evaluating the Efficacy and Safety of Rp101 in Combination with Gemcitabine Administered as First-Line Treatment to Subjects with Unresectable, Locally Advanced, or Metastatic Pancreatic Adenocarcinoma. *PI–William Fisher, MD* (H-22698) (SciClone) Open for accrual.

A Phase III Randomized, Controlled Study to Evaluate the Safety and Efficacy of PANVACTM–VF in Combination with GM-CSF Versus Best Supportive Care or Palliative Chemotherapy in Patients with Metastatic (Stage IV) Adenocarcinoma of the Pancreas Who Have Failed a Gemcitabine-Containing Chemotherapy Regimen. *PI–William Fisher, MD.* (H-17145) 2005 Follow-up only. Closed to accrual.

A Phase III Randomized Open-Label Study Comparing Gemcitabine Plus Cetuximab (IMC-C225) Versus Gemcitabine as First-Line Therapy of Patients with Advanced Pancreas Cancer. *PI–William Fisher, MD.* (H-17233) 2005. Follow-up only. Closed to accrual.

Interferon-Based Adjuvant Chemoradiation for Resected Pancreatic Cancer. *PI–William*

*Fisher, MD.* (H-16238) 2005. Closed due to toxicity.

ADV-TK Gene Therapy in Combination with Chemoradiation for Pancreas Cancer. *PI–William Fisher, MD.*(H-14421) 2005. Closed.

A Phase III, Randomized Study of Gemcitabine (Fixed-dose Rate Infusion) and Oxaliplatin Versus Gemcitabine (Fixed-Dose Rate Infusion) Versus Gemcitabine (30-Minute Infusion) in Pancreatic Carcinoma. *PI–William Fisher, MD.* (H-15825). 2005. Follow-up only. Closed to accrual.

An Open Label Phase 2 Trial of Talabostat and Gemcitabine in Patients with Stage IV Adenocarcinoma of the Pancreas. *PI–William Fisher, MD* (H-19149) 2006. Follow-up only. Closed to accrual.

An Intergroup Randomized Phase II Study of Bevacizumab (NSC 704865) or Cetuximab (NSC 714692) in Combination with Gemcitabine and in Combination with Chemoradiation (Capecitabine and Radiation) in Patients with Completely Resected Pancreatic Carcinoma. *PI–William Fisher, MD* (H-19176) 2006. Follow-up only. Closed to accrual.

A Phase II Study of ARQ 501 in Combination with Gemcitabine in Adult Patients with Treatment Naïve, Unresectable, Pancreatic Adenocarcinoma. *PI–William Fisher, MD* (H-19234) 2006. Follow-up only. Closed to accrual.

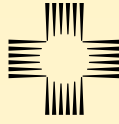
Pancreas Center Tissue Bank Specimen Collection. *PI–William Fisher, MD* (H-16215) –2005-2009 and Ongoing.

**PROSTATE**

SPORE Tumor Marker Data: St. Luke's urologists who are SPORE investigators participate in SPORE data collection and represent research excellence in prostate cancer clinical trials. St. Luke's Cancer Registry participates in data collection. Ongoing.

**THE CANCER CENTER AT ST. LUKE'S  
NUMBERS TO KNOW**

<b>CLINICS</b>	<b>PHONE</b>	<b>FAX</b>
St. Luke's Radiation and CyberKnife®	832-355-7118	832-355-7103
Outpatient Referral Clinic/Kirby Glen Physician Referrals and 2 <sup>nd</sup> Opinions	832-355-7139	832-355-6965
Outpatient Infusion Center at Kirby Glen	832-355-7119	832-355-6965
Mammography, Women's Center	832-355-8130	832-355-8123
<b>OFFICES</b>		
Medical Director, The Cancer Center at St. Luke's	832-355-7138	832-355-3352
Coordinator, Cancer Program	832-355-3490	832-355-3352
Clinical Nurse Coordinator, Kirby Glen	832-355-7139	832-355-6965
Cancer Registry	832-355-6701	832-355-3352
Cancer Research Nurse Coordinator	832-355-6777	832-355-3352
St. Luke's Oncology Inpatient Nurse Manager	832-355-2317	832-355-2059



ST. LUKE'S®

Episcopal  
Health System

6720 Bertner Ave.  
Texas Medical Center  
Houston, Texas 77030

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*St. Luke's Episcopal Health System ([www.stluketexas.com](http://www.stluketexas.com)) includes St. Luke's Episcopal Hospital in the Texas Medical Center, founded in 1954 by the Episcopal Diocese of Texas; St. Luke's The Woodlands Hospital; St. Luke's Sugar Land Hospital; St. Luke's Lakeside Hospital; St. Luke's Episcopal Health Charities, a charity devoted to assessing and enhancing community health, especially among the underserved.*

*St. Luke's Episcopal Hospital is home to the Texas Heart® Institute, which was founded in 1962 by Denton A. Cooley, MD, and is consistently ranked among the top 10 cardiology and heart surgery centers in the country by U.S. News & World Report.*

*Affiliated with several nursing schools and three medical schools, St. Luke's Episcopal Hospital was the first hospital in Texas named a Magnet hospital for nursing excellence, and has been honored four times with the Distinguished Hospital Award for Clinical Excellence™ by HealthGrades, a leading independent company that measures healthcare quality in hospitals. The Health System has been recognized by FORTUNE as among the "100 Best Companies to Work For" and by the Houston Business Journal as a top employer in Houston. St. Luke's Episcopal Health System also was honored as one of Modern Healthcare magazine's "100 Best Places to Work."*