Gifted Physicians Dedicated Staff Healing Care Gifted

Dedicated Staff Healing Care Gifted Physicians Dedicated Staff Healing Care Gifted Physicians Ded

Dedicated Staff Healing Care Gifted Physicians Dedicated Staff Healing Care Gifted Physicians Dedicat

RIVERSIDE

CANCER SERVICES

12111 Warwick Boulevard
Newport News, Virginia 23601

2007 ANNUAL REVIEW

Riverside Cancer Services

you

Gifted Physicians

Dedicated Staff

Healing Care

2007 Oncology Committee Members

Joseph D. Layser, MD, Chair	*Radiation Oncology*
Michael Peyser, MD, Cancer Liaison Physician	*Surgical Oncology*
Steven Scott, MD	*Cardiothoracic Surgery*
Christine Marcuson, MD	*Dermatology*
Carl Lindemann, MD	*Family Practice*
Marshall Cross, MD	*General Surgery*
William Irvin, MD	*GYN Oncology*
Mark Ellis, MD	*Medical Oncology*
John Mattern, II, DO	*Medical Oncology*
Guy Tillinghast, MD	*Medical Oncology*
Mashour Yousef, MD	*Medical Oncology*
John C. Maddox, MD	*Pathology*
Michael Schwartz, MD	*Pathology*
Larry Davis, Pharm.D	*Pharmacy*
Lori Gillespie, MD	*Radiation Oncology*
Curtis Stoldt, DO	*Radiology*
Scott Burgess, MD	*Urology*
Richard Rento, MD	*Urology*
Faye Petro Gargiulo	*Vice President, Physician/Service Line Development*
Gwen Hartzog	*Vice President, Patient Care Services/CNO*
Carrie Schmidt	*Service Line Director, Oncology*
Paula Burcher	*Administrative Director, Radiology*
Beverly Voglewede	*Director, Radiation Oncology Services*
Michelle Wooten	*Dir. Med/Surg. Svcs/Oncology Services*
Ed Heckler	*Director, Rehab*
Celia Grinstead	*Nurse Manager, 5-West, Hem/Onc*
Kim Monroe	*Clinical Coordinator, Hem/Onc*
Arlene Messina	*Director, Performance Improvement*
Reverend Doug Watson	*Director, Pastoral Care*
Ora Mae Jackson	*Protocol Manager*
Yvonne Pike	*Breast Cancer Patient Navigator*
Angie Claud	*Prostate Cancer Patient Navigator*
Pat Emerson	*Lung Cancer Patient Navigator*
Charlene Thompson	*Social Worker, Care Management*
Kathy Buxton	*Care Manager, Home Health*
Jackie Ward	*Educator, Staff Development*
Sharron Nichols	*Nurse Manager, Riverside Hospice*
Ann Tatterson	*Director, Riverside Hospice Agencies*
Paige Williams	*Registered Dietician, Dietary*
Fran Holcomb	*Cancer Education/Outreach Nurse*
Brad Kirby	*Cancer Registry Supervisor*
Pauline Shofner	*Cancer Registrar*
Carol Richards	*Cancer Registrar*
Valerie Burge-Hall	*Representative, American Cancer Society*

Table of Contents

For additional information regarding Riverside Cancer Services, please call (800) 520-7006.
For comments or questions regarding this Annual Report or the Cancer Registry, please call (757) 594-3054.

Cancer Services Annual Report 2006

Riverside Health System is proud to provide this report of Cancer Services for the year 2006. As you can readily see, the program is extensive, and continues to grow both in patient volume and services provided. This can only be accomplished with the support of administrative leadership, and I would like to thank Bill Downey, Golden Bethune and Faye Gargiulo for providing that leadership.

The most visible program expansion occurred in the Neurosciences Center where stereotactic radiosurgery services are now provided. This program provides precision high dose radiation to highly targeted areas and sparing nearby normal tissues thereby reducing normal side effects.

The surgical program has been expanded to include Dr. Brian Billings who is fellowship-trained in colorectal surgery coming here from the Mayo Clinic in Rochester, MN. The GYN oncology program has expanded to include Dr. William Irvin who recently moved into his new office in the Cancer Care Center.

The navigation program is growing with the addition of Pat Emerson as lung cancer patient navigator and Angie Claud as prostate cancer patient navigator. Yvonne Pike remains as the program leader and breast cancer patient navigator. The research program expands under the direction of Ora Mae Jackson. Cancer education and outreach continues to provide valuable services to patients with limited resources and remains under the direction of Fran Holcomb.

I would also like to give special thanks to Carrie Schmidt for overseeing the cancer program and Brad Kirby who supervises the Cancer Registry and works to ensure that we meet American College of Surgeon standards for community cancer program. We were inspected within the last year and met all criteria including multiple commendations. My thanks also go to the hundreds of Riverside employees who provide services for our patients.

Joseph Layser, MD
Chair, RRMC Oncology Committee
Medical Director, Riverside Cancer Care Center Radiation Oncology

The last 3 years have been a time of tremendous growth in the Riverside Cancer Program. With the addition of many specialties to the Riverside Medical Group, Riverside Health System has created a Cancer Program that boasts the complete range of clinical cancer disciplines. We are convinced that the outcome of this fully integrated cancer program will be more effective cancer diagnosis and treatment. The Riverside Cancer Program has been profiled in local and national publications, and is becoming well known for its use of cutting edge-technologies, such as the Gamma Knife and Synergy-S Radiosurgery Systems and the use of Robotic-assisted surgery in a variety of cancer types.

In addition, the Riverside Cancer Program has distinguished itself through its dedication to a patient-centered approach to care of cancer patients. The Patient Navigator Program, which helps guide patients through the cancer diagnostic and treatment experience, has shown tremendous growth in the last 2 years. In addition, the Integrative Oncology Program combines the best of modern oncology, including the use of National Cancer Institute-sponsored clinical trials, along with complementary services such as nutritional counseling, patient and family education and services, and massage therapy, music therapy and pet therapy. The Cancer Care Center at Riverside, which received a national architectural award for its innovative design, houses many elements of the Riverside Cancer Program, and Mr. Brad Kirby, our Cancer Registry Supervisor, was named the National Tumor Registrar of the Year in 2007. Ultimately, the Riverside Cancer program was approved, with distinction, by the American College of Surgeons in 2007, and Dr. Michael Peyser received the Outstanding Cancer Liaison Physician Award from the Commission on Cancer for 2007.

I continue to look forward to a bright future for the Riverside Cancer Program, as it continues to distinguish itself as the leader in cancer care for the patients in our region.

Mark Ellis, MD
Medical Director, Riverside Cancer Care

Riverside Cancer Services

American College of Surgeons Accreditation: Riverside Regional Medical Center has been accredited as a Community Hospital Comprehensive Cancer Program by the American College of Surgeons' Commission on Cancer since 1982. Riverside Regional Medical Center was recently re-accredited in December 2006 and received approval with no contingencies and 7 of 9 possible commendations from the College. Accreditation by the ACOS indicates that the five key elements of a cancer program are in place:

1) state of the art clinical services;
2) a multidisciplinary cancer committee;
3) a cancer registry to monitor the quality of care;
4) patient oriented case-conferences; and
5) a quality improvement program for improving patient outcomes.

Oncology Committee: Riverside Regional Medical Center's Oncology Committee is a multi-disciplinary team that convenes every other month to provide leadership and professional guidance to the cancer care program.

Cancer Registry: To adhere to state, federal and ACOS guidelines, RRMC's Cancer Registry has been maintaining its database of cancer cases since 1979. Data from the registry is submitted to the Virginia Cancer Registry and the National Cancer Data Base (NCDB), which serves as a comprehensive clinical surveillance center for the entire country. Information on each case is submitted annually to keep the information current. The NCDB combines the data from 1,438 hospitals in all 50 states to provide insight into the long-term outcomes of treatments. This helps researchers and physicians better investigate and evaluate advances in diagnostics and treatment. This Annual Report contains a review of all 2006 accessions (new cases), as well as site-specific studies on lung and ovarian cancer.

Cancer Case Conferences (Tumor Boards): Tumor Boards provide an opportunity for physicians to prospectively review cases with the multidisciplinary team. In addition to the weekly general tumor board, breast cancer conference, and the neurosciences case conference, an additional lung cancer conference was added in 2006. In addition to helping determine treatment plans, case conferences serve as important education offerings for the physicians and other members of the healthcare team.

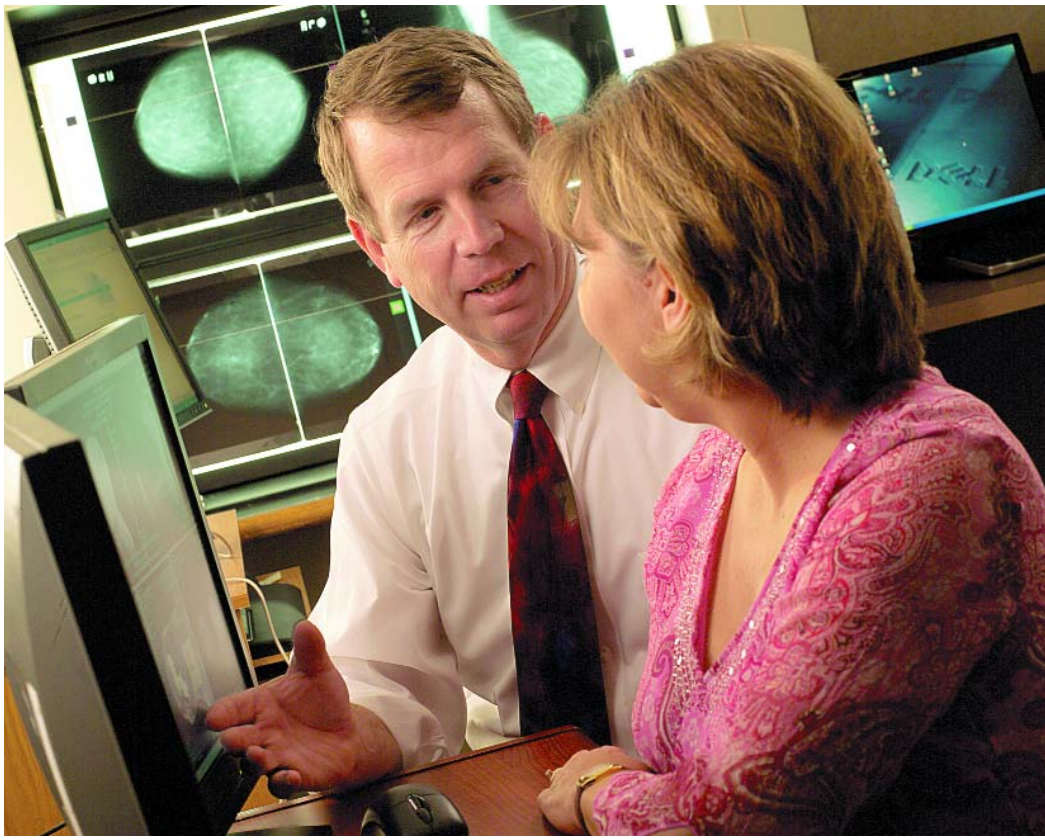
Research and Clinical Trials: Offering access to clinical trials is an important aspect of any cancer care program. While not appropriate for every patient, clinical trials can sometimes offer access to treatments that would be otherwise unavailable. The ACOS requires that 2% of the patients each year be enrolled in clinical trials, and Riverside is proud to once again exceed that benchmark.

Diagnostic Services

Imaging: Riverside offers a wide range of diagnostic imaging services across five locations (Riverside Regional Medical Center, Riverside Diagnostic and Breast Imaging Center - Oyster Point, Riverside Diagnostic Center - Williamsburg, Riverside Walter Reed Medical Center and Riverside Tappahannock Hospital). Riverside is proud to work with the physicians of Peninsula Radiologic Associates to bring you the following services:

- Mammography and Breast Imaging Services (screening, diagnostic, stereotactic, ultrasound, MRI, breast specific gamma imaging))
- X Ray
- Ultrasound
- CT
- MRI
- Nuclear Medicine
- PET/CT

Laboratory and Pathology: Riverside provides a complete range of laboratory and pathology services. The physicians of Peninsula Pathology Associates work closely with the referring physicians and surgeons to provide the most accurate diagnosis to allow for the most precise treatment plan. In addition to the expertise of the physicians on staff, Riverside has partnered with The Mayo Clinic in Minnesota as a reference lab for the more unique tests that may be required or for second opinions on some specimens.



Inpatient Services

Riverside Regional Medical Center, the Peninsula's only Level II Trauma Center, offers a wide range of inpatient services. For oncology patients, the most commonly utilized departments and services include:

Care Management: The Oncology Care Management team is there to help patients and their supporters navigate the often confusing array of tests, treatments and feelings. The care coordinator works with the entire inter-disciplinary healthcare team to focus on minimizing the length of necessary hospital stays, while maximizing access to the best care available and preparing the patient and family for discharge to home or another facility.

5-East Post Surgical Unit: 5-East is a general surgical unit, which specializes in the care of the post-operative patient. 5-East also offers a four bed step-down unit for patients requiring an increased level of nursing care following surgery. The nursing staff on 5-East are experts in helping a patient recover as rapidly as possible from a surgical intervention, including wound care issues, anesthesia recovery, pain management and getting the patient back to the activities of daily living.

Outpatient Services

5-West Oncology Unit: 5-West is a medical unit which specializes in the care of the oncology patient. Specialized offerings include two lead-lined rooms for patients who have received cesium implants and radioactive iodine therapy. Additionally, all of the RNs are certified in chemotherapy, and there are 2 Oncology Certified Nurses on the unit.

Hematology/Oncology Unit: The Hematology/Oncology Intensive Care Unit ("Hem/Onc") is a six-bed specialty care unit designed for the critically ill oncology patient. As on 5West, the nursing staff is chemotherapy certified, and the unit boasts 6 Oncology Certified Nurses. The Hem/Onc staff members are also trained in critical care nursing, and are able to accommodate the most complex oncology patients, including intra-peritoneal chemotherapy.

Surgeons: Riverside's surgeons are talented physicians who have spent years studying how to best operate on specific areas of the body. Depending on the type of cancer a patient has, they could see one of the following: Ear Nose & Throat (ENT) Surgeon, General Surgeon, Colorectal Surgeon, Gynecologic Oncologist, Neurosurgeon, Plastic Surgeon, Surgical Oncologist, Thoracic Surgeon or Urologist.

Surgical Services: For many cancer patients, their only inpatient stay is immediately following surgery. Riverside's Surgical Services – from pre-operative testing, to the Operating Room to the Post-Anesthesia Care Unit (PACU) - is there to ensure that the right patient has the right procedure in the most safe and effective manner, and recovers as quickly as possible.

Home Care: Riverside Home Care offers a variety of services to patients in the Peninsula, Middle Peninsula and Northern Neck regions including home health, infusion, pharmacy and hospice services. Admission begins with a referral form the physician and a visit from an RN, physical or speech therapist to identify needs, establish goals for treatment and begin planning for continued care when home care services are no longer required.

Hospice: The Hospice program affirms life and regards dying as a natural process. The hospice program exists to provide support and care for patients, their families and caregivers in the last phases of incurable disease so the patient might live as fully and comfortably as possible. Hospice services neither hasten nor postpone death.

Medical Oncology / Peninsula Cancer Institute:
Medical Oncology is a critical component of any cancer program. Riverside is thrilled to partner with the physicians of Peninsula Cancer Institute to offer medical oncology services, including outpatient chemotherapy at three sites (Newport News, Gloucester and Williamsburg).

Radiation Oncology: Riverside Cancer Care Center, Riverside Middle Peninsula Cancer Center and Williamsburg Radiation Therapy Center provided radiation oncology services to approximately one thousand new patients in 2006. A full range of external beam radiation and brachytherapy services, with the latest treatment options such as Intensity Modulated Radiation Therapy (IMRT), Prostate Seed Implants and Mammosite, are available for the Newport News, Williamsburg and Middle Peninsula communities. The focus of the new Riverside Cancer Care Center in 2006 encompasses new technology development for radiation oncology known as Image Guided Radiation Therapy (IGRT).

Riverside and University of Virginia Radiosurgery Center: Offering both Gamma Knife® and Synergy–S® technology, the Riverside and University of Virginia Radiosurgery Center opens up the world of knifeless surgery to patients with tumors in the brain, spine and other areas of the body. Using precise beams of intense radiation, the center allows outpatient surgery to previously inoperable tumors. Riverside is proud to offer the only Gamma Knife® in the Tidewater region, and is proud to be the only health system to offer both Gamma Knife® and Synergy-S® technology in the Commonwealth of Virginia.

Support Services

Bereavement Support: Riverside Hospice's Bereavement Aftercare Program provides support to adults as they adjust to life following the death of a loved one. Support and education are offered to help individuals learn about the grief process, and a support group meets twice a month.

Cancer Resource Library: Now located on the first floor of the Riverside Cancer Care Center, the new and expanded library is for patients, family members, community members and staff who want to learn more about cancer issues. The library offers resources on specific types of cancer – including prevention, diagnosis and treatment issues. There is also a wide array of books on the important psychosocial concerns of facing a cancer diagnosis. Additionally, there are two computers where individuals can research issues online, as well as a children's section.

Cancer Services – Outreach and Community Education: Riverside's Cancer Services offers a wide range of support, outreach, education and early detection programs to the community. Working with medical staff, oncology nurses, allied health care professionals and community partners, such as The American Cancer Society and the Leukemia and Lymphoma Society, Cancer Services sponsors numerous educational and screening events throughout the year. Programs include: community health fairs, prostate, cervical, breast and skin cancer screenings, Look Good Feel Better classes, Tell A Friend programs, nutritional programs and continued work with the Healing Eagle Free Clinic.

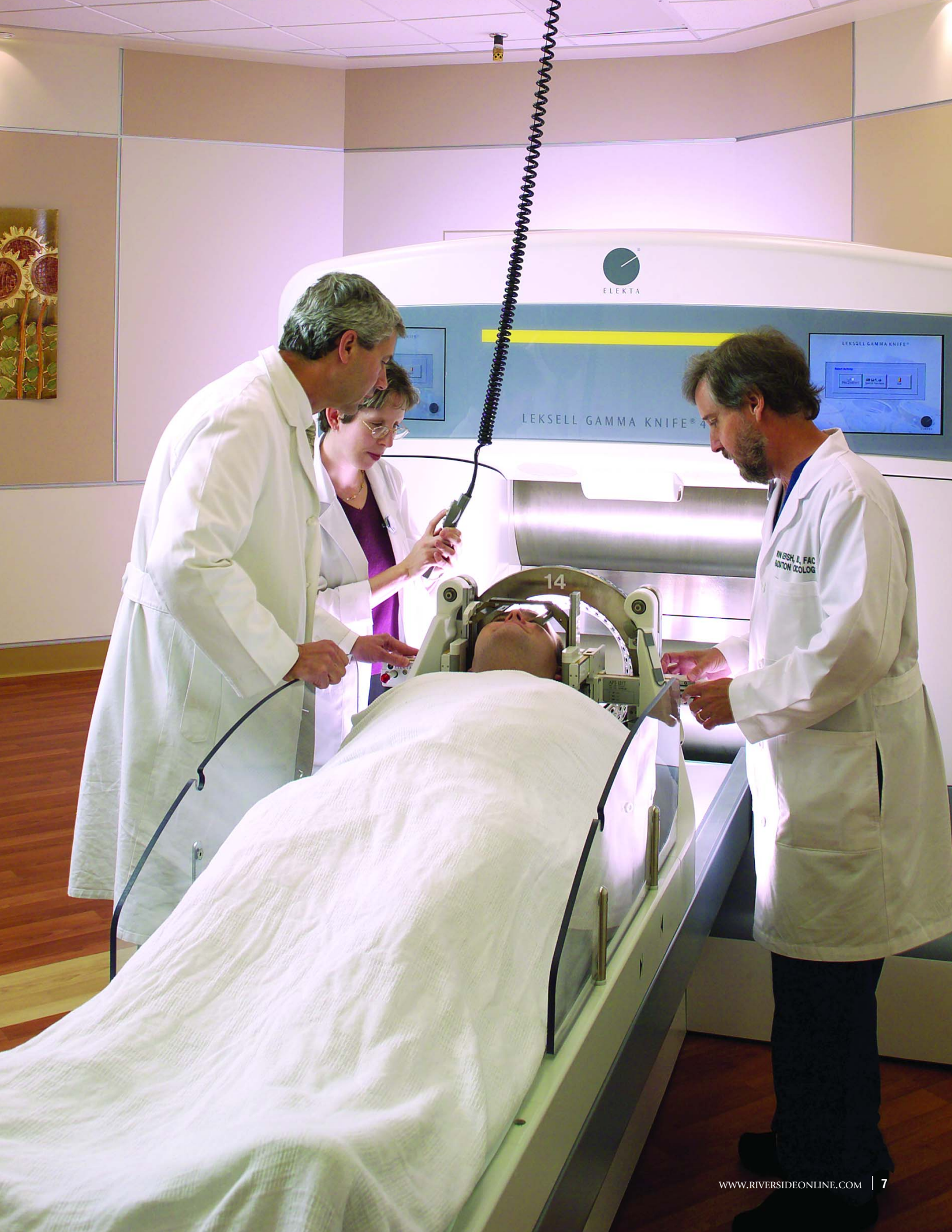
Connections with Community Organizations: Riverside Cancer Services recognizes its role in the broader cancer community, and works actively with numerous local and national cancer organizations. In addition to its work with local health departments, Riverside works with American Cancer Society, Leukemia and Lymphoma Society, Susan G Komen Foundation, Colon Cancer Prevention Coalition, many local church groups, and the Lackey, Healing Eagle and Gloucester-Matthews Free Clinics.

Grant Programs: Riverside is proud to be the recipient of two major grants that allow access to breast and cervical cancer screenings for women who might not otherwise be able to get screened. The Every Woman's Life Grant is a part of the Centers for Disease Control and Prevention's Breast and Cervical Cancer Early Detection Program as managed through the Virginia Department of Health. Additionally, Riverside also receives funds from the Susan G. Komen Foundation for the Breast Health Alliance Program. Between the two programs, Riverside is able to provide these critical screenings to uninsured or underinsured women who meet the necessary age and income guidelines. Additionally, those women who detect a breast cancer can be enrolled in Medicaid to receive treatment.

Pastoral Care: The Riverside Chaplains are there to support cancer patients, families and friends in making use of faith or spiritual values to work with the challenges of cancer. Pastoral Care may include conversation, prayer, liturgy, worship, sacraments, scripture reading, reflection and referral. The pastoral care service is interfaith, personal, and specific for the individual and family in need. In addition to the community clergy and volunteers who support the program, Riverside's Pastoral Care consists of five full-time chaplains, including one chaplain dedicated to cancer care.

Patient Navigation: Patient Navigators are there for patients and their loved ones from diagnosis through the entire treatment process. As most cancer patients discover, the diagnosis and treatment process is often confusing, and involves many physicians, nurses, therapists and locations, not to mention the overwhelming emotional component in addition to being sick. Patient Navigators are there to simplify the journey, and to be the one person you can always call with a question. They also help patients and caregivers know what to expect from various procedures and treatments. Currently, Riverside offers Patient Navigation to any patient in the breast, prostate or lung cancer programs. The hope is to expand that to additional diagnoses in coming years.

Support Groups: There are numerous support groups to support the cancer patient and their loved ones. Call Cancer Services for an up to date schedule of times and locations of the various groups.


ELEKTA
LEKSELL GAMMA KNIFE® 4
14

Review of 2006 Accessions

As Riverside's cancer programs have continued to grow, Riverside's Cancer Registry has continued to document and track the growing population of cancer patients diagnosed and/or treated at the hospital. Over 30,000 patients are included in the Riverside Regional Medical Center Cancer Registry, and this patient data can be examined to identify patterns of frequency in the community as well as survival data and staging data. The Cancer Registry compiles the incidence of cancer by site for the hospital and forwards these statistics to the Virginia Cancer Registry and the National Cancer Data Base (NCDB) for use with statewide and national studies.

The Riverside Regional Medical Center Cancer Registry identified 1,342 new cancer cases for 2006. 1,033 (77%) of these cases were diagnosed and received treatment at Riverside Regional Medical Center during their first course of treatment. The remaining 23% presented to the hospital for pathology review, recurrence, or were diagnosed at Riverside and went elsewhere for their treatment.

In 2006, breast cancer remained the largest group of analytic cases, accounting for almost 19% of cancer cases. Of the 227 total cases, there were 27 cases that were diagnosed/treated elsewhere and were presenting as a recurrence. There were 200 analytic cases, which represents a 4.0% (192 to 200) increase from last year. Over 84% of the breast cancer patients were diagnosed with a localized stage (0, I, or II). The prognosis for patients is much better when the disease is localized. With the technological advances in breast cancer screening options (i.e. mammogram, ultrasound, breast MRI, breast-specific gamma imaging), the percentage of cases diagnosed and treated at an early stage should only increase in the future.

The most significant change in Riverside's cancer programs has been the incredible rise in prostate cancer cases treated at the facility from 2004 to 2006. From 2004 to 2006, the number of prostate cancer cases rose from 80 in 2004 to 104 in 2005 to an astounding 185 cases in 2006 (over a 231% increase!). This increase in surgical prostate cancer cases can be attributed to the acquisition of the da Vinci™ robot technology for prostate cancer. This technology utilizes a physician-controlled robot to remove the prostate, thus reducing complications and recovery time when compared with the traditional radical retropubic prostatectomy. Localized disease was responsible for 86% of prostate cancer cases treated at Riverside. Detecting prostate cancers early has been a priority for the Prostate Cancer Committee who has helped streamline processes from PSA test to treatment.

The next two leading cancer groups were lung cancer and colon cancer. Lung cancer cases increased by 12% (151 to 169) from 2005 to 2006. 71% of these lung cancer cases were diagnosed with regional or distant disease (stage III or IV), which is an increase from 2005. This can be attributed to the lack of a screening test, as well as many lung cancers being asymptomatic until the cancer has already spread to the lymph nodes and other parts of the body.

Colon cancer cases diagnosed and/or treated at Riverside decreased for the second consecutive year. Between 2004 and 2006, colon cancer cases have decreased by over 35%. Early stage and late stage disease for colon cancer was similar with stages 0, I, and II contributing 57% of cases, and stages III, IV, and unknown stage contributing the other 43%. Many times the symptoms of colorectal cancer do not present themselves until very late, but unlike lung cancer, colorectal cancer can easily be detected early through routine colonoscopy. Increased colonoscopy rates will lead to early detection and reduce the number of late-stage diagnoses in the future.

Bladder cancer is the fifth leading tumor group. Although there are 74 total bladder cases in the Cancer Registry for 2006, only 34 of these were considered analytic cases (diagnosed and/or treated at Riverside Regional). The remaining cases were diagnosed and/or treated at Riverside-affiliated surgery centers, which make it much more convenient for a patient to obtain care in their own community. 62% of these analytic cases were non-invasive (stage 0), meaning they are easily treatable with surgery alone.

The rest of the top ten cancer sites are as follows: non-Hodgkins lymphoma, uterus/endometrium, melanoma, thyroid, and rectum.

As a reminder, these statistics are facility-based, meaning they only pertain to Riverside Regional Medical Center. For national and state statistics, the National Institutes of Health and the American Cancer Society are the recommended resources.

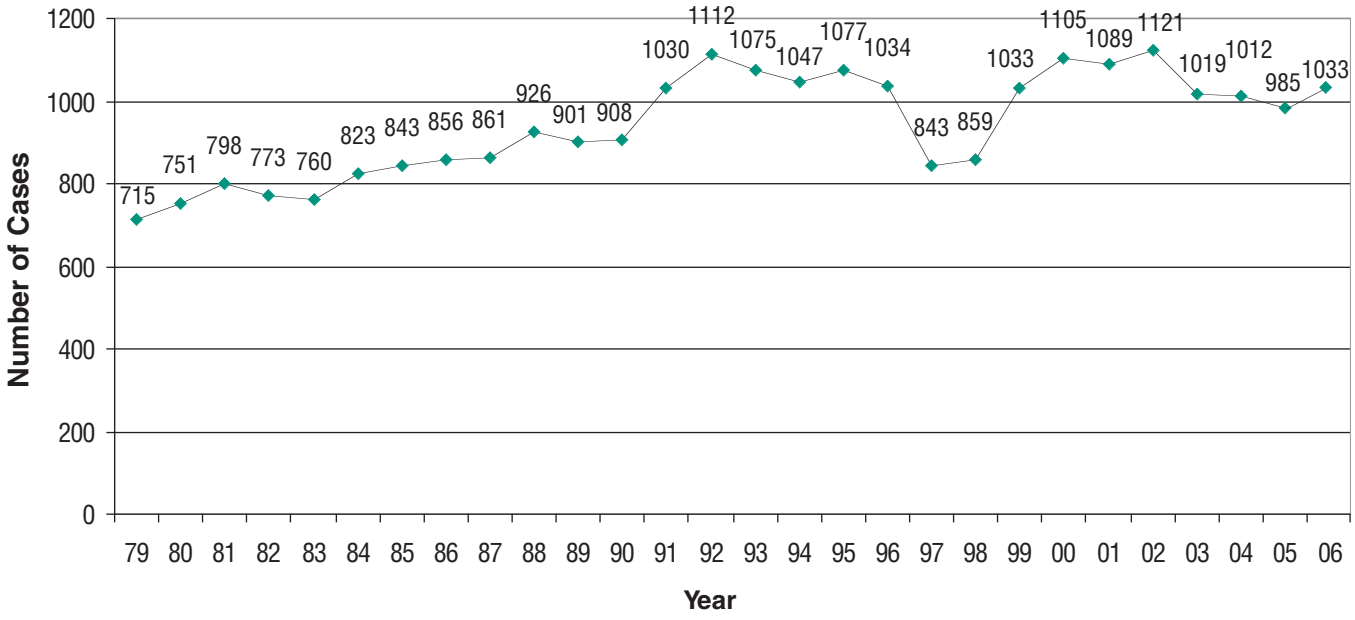
Bradley W. Kirby, MPH, CTR
Cancer Registry Supervisor, Oncology Research Coordinator

Review of 2006 Accessions

Primary Site	Class of Case				Sex		Stage Distribution - Analytic Cases Only							
	Cases	%	Analytic	Non-Analytic	M	F	0	I	II	III	IV	NA	Unk	Blank/Inv
Buccal Cavity & Pharynx	**28**	**2.1%**	**20**	**8**	**22**	**6**	**0**	**8**	**5**	**1**	**3**	**0**	**3**	**0**
Lip	3	0.2%	3	0	1	2	0	0	2	0	0	0	0	1
Tongue	7	0.5%	4	3	5	2	0	0	4	0	0	0	0	0
Floor of Mouth	2	0.1%	2	0	2	0	0	0	0	1	0	1	0	0
Gum & Other Mouth	5	0.4%	4	1	5	0	0	0	2	2	0	0	0	0
Nasopharynx	2	0.1%	2	1	2	1	0	0	0	2	0	0	0	0
Tonsil	5	0.4%	1	0	1	0	0	0	0	0	0	1	0	0
Oropharynx	2	0.1%	1	1	2	0	0	0	0	0	0	0	0	1
Hypopharynx	3	0.2%	3	0	2	1	0	0	0	0	1	1	0	1
Other Buccal Cavity and Pharynx	2	0.1%	0	2	2	0	0	0	0	0	0	0	0	0
Digestive System	**148**	**11.0%**	**25**	**74**	**74**	**0**	**4**	**19**	**29**	**20**	**32**	**11**	**8**	**0**
Esophagus	11	0.8%	11	0	10	1	0	1	1	2	0	3	0	4
Stomach	8	0.6%	6	2	7	1	0	0	1	0	0	5	0	0
Small Intestine	6	0.4%	4	2	1	5	0	0	0	0	0	0	4	0
Colon Excluding Rectum	60	4.5%	49	11	24	36	0	3	10	15	10	10	0	1
Rectum & Rectosigmoid Junction	31	2.3%	26	5	20	11	0	0	5	5	8	3	2	3
Anus, Anal Canal & Anorectum	4	0.3%	2	2	2	2	0	0	0	1	0	1	0	0
Liver & Intrahepatic Bile Duct	3	0.2%	3	0	2	1	0	0	0	0	1	2	0	0
Gallbladder	1	0.1%	1	0	1	0	0	0	0	1	0	0	0	0
Other Biliary	3	0.2%	3	0	1	2	0	0	0	3	0	0	0	0
Pancreas	14	1.0%	13	1	6	8	0	0	2	2	1	8	0	0
Peritoneum, Omentum & Mesentery	6	0.4%	5	1	0	6	0	0	0	0	0	0	5	0
Other Digestive Organs	1	0.1%	0	1	0	1	0	0	0	0	0	0	0	0
Respiratory System	**219**	**16.3%**	**184**	**35**	**118**	**101**	**0**	**1**	**38**	**13**	**48**	**77**	**6**	**1**
Nasal Cavity, Middle Ear & Sinuses	3	0.2%	2	1	2	1	0	0	1	0	0	1	0	0
Larynx	16	1.2%	13	3	10	6	0	1	7	1	2	2	0	0
Lung & Bronchus	200	15.0%	169	31	106	94	0	0	30	12	46	74	6	1
Soft Tissue	**7**	**1.0%**	**6**	**1**	**4**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**2**
Soft Tissue (including Heart)	7	0.5%	6	1	4	3	0	0	0	3	0	0	1	2
Skin excluding Basal & Squamous	**49**	**5.7%**	**28**	**21**	**27**	**22**	**0**	**5**	**15**	**2**	**2**	**2**	**0**	**2**
Melanoma - Skin	48	3.6%	28	20	27	21	0	5	15	2	2	2	0	2
Other Nonepithelial Skin	1	0.1%	0	1	0	1	0	0	0	0	0	0	0	0
Breast	**227**	**17.0%**	**200**	**27**	**2**	**225**	**0**	**33**	**85**	**51**	**21**	**7**	**1**	**2**
Breast	227	17.0%	200	27	2	225	0	33	85	51	21	7	1	2
Female Genital System	**64**	**4.8%**	**51**	**13**	**0**	**64**	**0**	**3**	**26**	**4**	**12**	**5**	**1**	**0**
Cervix Uteri	9	0.7%	7	2	0	9	0	0	3	1	3	0	0	0
Corpus and Uterus, NOS	36	2.7%	30	6	0	36	0	1	21	1	3	3	1	0
Ovary	13	1.0%	10	3	0	13	0	0	1	1	6	2	0	0
Vagina	1	0.1%	1	0	0	1	0	1	0	0	0	0	0	0
Vulva	5	0.4%	3	2	0	5	0	1	1	1	0	0	0	0

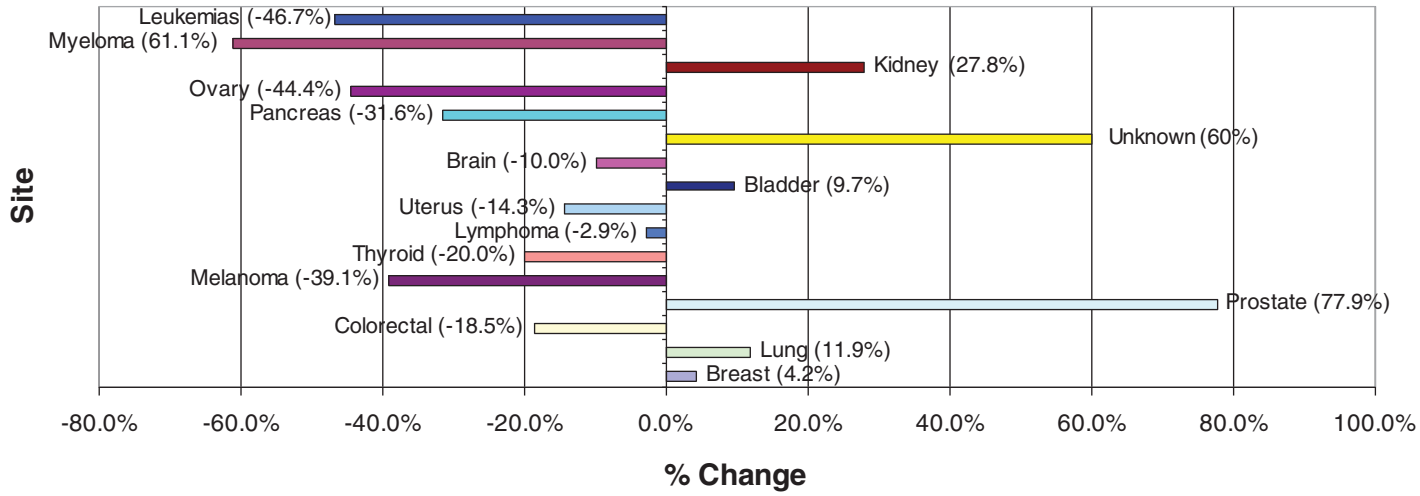
Primary Site	Class of Case				Sex		Stage Distribution - Analytic Cases Only							
	Cases	%	Analytic	Non-Analytic	M	F	0	I	II	III	IV	NA	Unk	Blank/Inv
Male Genital System	**214**	**16.0%**	**189**	**25**	**214**	**0**	**0**	**0**	**3**	**161**	**25**	**0**	**0**	**0**
Prostate	206	15.4%	185	21	206	0	0	0	0	160	25	0	0	0
Testis	8	0.6%	4	4	8	0	0	0	3	1	0	0	0	0
Urinary System	**104**	**7.7%**	**62**	**42**	**71**	**33**	**0**	**23**	**17**	**4**	**9**	**6**	**2**	**1**
Urinary Bladder	74	5.5%	34	40	51	23	0	21	4	2	1	4	2	0
Kidney & Renal Pelvis	25	1.9%	23	2	16	9	0	0	12	1	7	2	0	1
Ureter	5	0.4%	5	0	4	1	0	2	1	1	1	0	0	0
Eye & Orbit	**1**	**0.1%**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Eye & Orbit	1	0.1%	0	1	0	1	0	0	0	0	0	0	0	0
Brain & Other Nervous System	**35**	**2.6%**	**27**	**8**	**19**	**16**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**0**
Brain	14	1.0%	12	2	9	5	0	0	0	0	0	0	12	0
Benign Brain/CNS Tumors	21	1.6%	15	6	10	11	0	0	0	0	0	0	15	0
Endocrine System	**42**	**3.1%**	**39**	**3**	**14**	**28**	**0**	**0**	**21**	**2**	**3**	**2**	**11**	**0**
Thyroid	31	2.3%	28	3	6	25	0	0	21	2	3	2	0	0
Other Endocrine (including Thymus)	11	0.8%	11	0	8	3	0	0	0	0	0	0	11	0
Lymphomas	**65**	**4.8%**	**33**	**32**	**36**	**29**	**0**	**0**	**7**	**6**	**2**	**18**	**0**	**0**
Hodgkin Lymphoma	5	0.4%	1	4	1	4	0	0	0	1	0	0	0	0
Non-Hodgkin Lymphoma	60	4.5%	32	28	35	25	0	0	7	5	2	18	0	0
Myeloma	**21**	**1.6%**	**7**	**14**	**10**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**0**
Leukemias	**26**	**1.9%**	**8**	**18**	**14**	**12**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**0**
Lymphocytic Leukemia	17	1.3%	3	14	10	7	0	0	0	0	0	0	3	0
Myeloid & Monocytic Leukemia	9	0.7%	5	4	4	5	0	0	0	0	0	0	5	0
Mesothelioma	**22**	**1.6%**	**16**	**6**	**18**	**4**	**0**	**0**	**3**	**1**	**2**	**9**	**1**	**0**
Ill-Defined/Unspecified	**70**	**5.2%**	**40**	**30**	**40**	**30**	**0**	**0**	**0**	**0**	**0**	**0**	**40**	**0**
Total	**1,342**		**1,033**	**309**	**683**	**659**	**0**	**69**	**242**	**281**	**145**	**161**	**116**	**19**

RRMC Cancer Registry Data Base 1979-2006

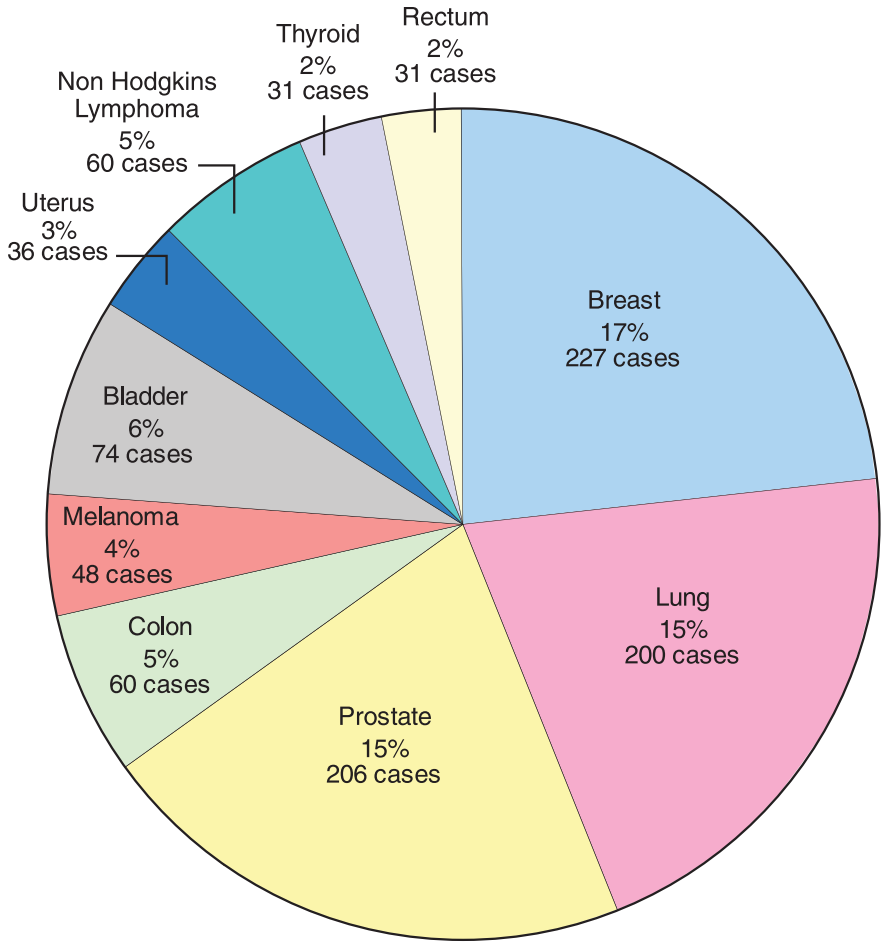


*NOTE: These are analytic cases ONLY (diagnosed and/or treated here during the first course of treatment). In previous years, this graph contained ALL CASES. Please note the change.

Analytic Cases: % Change 2005-2006
(Diagnosed and /or Treated at RRMC)



RRMC 2006 Top 10 Cancer Sites
(Accounting for 72% of Total Cases)



Lung Cancer Patient Navigator

Pat Emerson, RN, BSN
OCN – Riverside Cancer Care Center

As a Lung Cancer Patient Navigator much of my time is spent guiding lung cancer patients through an often-fragmented system. Once a patient has been identified as having a suspicious finding on chest x-ray, they are referred for further testing and for multiple physician consults. For many patients and their families they are so overwhelmed just by the word cancer or a possible cancer diagnosis they become numb. Unfortunately, this is a time that they will be required to navigate through the complexities found within the healthcare environment. As the Lung Cancer Patient Navigator, I feel fortunate to have the opportunity to guide these patients and their families through the process and build the relationship of a trusted member of the healthcare team that is concerned about their well being, and help make their diagnosis and treatment experience as seamless as possible.

With the introduction of the new Lung Cancer Clinic, consults are called into a central location, where I am the initial contact. A timely diagnosis and treatment plan is a primary goal of this program. I gather the necessary patient information and contact the Lung Cancer Center physician on call. That physician will order required diagnostic testing and identify the needed physician referrals. The lung center physician will make contact with the patient, and the navigator will follow-up with the patient to reinforce the information that the physician communicated and offer assistance in the next step. We have already seen this coordination cut weeks from the initial testing process.

As a patient navigator I can assist patients in securing financial resources such as Medicare, Medicaid, or disability benefits. Unfortunately, lung cancer is often diagnosed in the later stages and requires swift actions to establish financial stability as the patient attends to the required treatment. Another important service for the lung cancer patient is community resource referral. Many organizations are available and support a generous volunteer staff to assist cancer patients as they transit through their cancer treatment. Most newly diagnosed cancer patients have no idea how many resources are available to them in the community, and at this point in their lives do not know where to start. Sometimes, just a calm, stabilizing force helps keep a patient on track with the treatment plan.

As the Lung Cancer Patient Navigator, my primary goal is to guide the patient seamlessly through the healthcare system, providing support and resources along the way to help ease the burden.

Surgeon

Steven S. Scott, MD
Tidewater Thoracic and Cardiovascular Ltd.

The management of lung cancer is a difficult challenge for clinicians, because lung cancer is both common and deadly. The overall five-year survival for lung cancer is only 15%, and it is felt that the poor prognosis is related to the fact that most lung cancers are not detected until they reach an advanced stage.

The surgeon plays an important role in the multidisciplinary team of physicians evaluating patients with known or suspected lung cancer. The options for lung cancer treatment include surgical resection, chemotherapy, and radiation. The appropriate treatment option is determined by the stage of the cancer. The most common type of lung cancer is non-small cell lung cancer (NSCLC), best treated with surgery if found at an early stage. The other major type of lung cancer, small cell lung cancer, is treated with non-surgical modalities. The remainder of this discussion will be limited to NSCLC.

Patients often present after a lung nodule or tumor is found on x-ray, and neither the microscopic (pathologic) diagnosis nor the stage is known. Noninvasive means such as CT scans, positron emission tomography (PET)/CT scans, other radiographic modalities may be obtained to raise or lower the suspicion of cancer. Bronchoscopy or a CT-directed biopsy may be used to establish a diagnosis. However, in patients with suspected early or limited stage NSCLC, extensive preoperative testing is often unnecessary. The patients commonly have pre-existing chronic lung disease, so pulmonary function testing is needed to estimate their ability to tolerate a major pulmonary resection.

During the operation, the surgeon and pathologist work together to diagnose, stage, and treat the NSCLC in a single operation. By performing frozen section analysis of

surgically removed tissue, the pathologist determines if cancer is present in the specimen as well as the cell type. The stepwise process often begins with *bronchoscopy*, to visualize the tumor, evaluate respectability, and to rule out coexisting abnormalities within the airways. Next, the surgeon will often proceed to a *mediastinoscopy* or *thoracoscopy* to rule out spread of the cancer to the lymph nodes in the center of the chest, or *mediastinum*. These procedures involve very small incisions and result in a short recovery. If mediastinal nodes are involved, the surgery stops and the patient is best treated with chemotherapy and/or radiation, sometimes considering surgery later if a good response results in "downstaging" the patient.

If nodal staging is negative, the patient then may undergo surgical resection of a part of the lung (*wedge resection* or *lobectomy*) or the entire lung (*pneumonectomy*). If a diagnosis has not been made before surgery, a biopsy of the tumor is obtained first, prior to a major lung resection. Next, it is the surgeon's responsibility to remove additional lymph nodes (a *mediastinal lymph node dissection*) as well. After the surgery, the pathologist examines all the specimens to finalize the stage of the lung cancer.

The staging of the lung cancer determines whether or not the patient should undergo chemotherapy after surgery (*adjuvant chemotherapy*). Overall, appropriate selection and treatment of early stage NSCLC patients results in 5-year survivals of 70-80%. The survival is even better, 92%, in patients detected by screening CT (NEJM, 355:1763-1770).

The excellent survival for these surgically-treated NSCLC patients is in stark contrast to the poor survival of lung cancer patients overall. Our knowledge of the natural history of NSCLC tells us that all lung cancer patients were at one time early stage, albeit for varying lengths of time. While prevention is the ideal way to diminish loss of life from this disease, we have the opportunity to bring more patients into the early stage, surgically treated category by finding a cost-efficient and safe means of screening.

Radiologist

Jonathan H. Demeo, MD
Peninsula Radiological Associates Ltd.

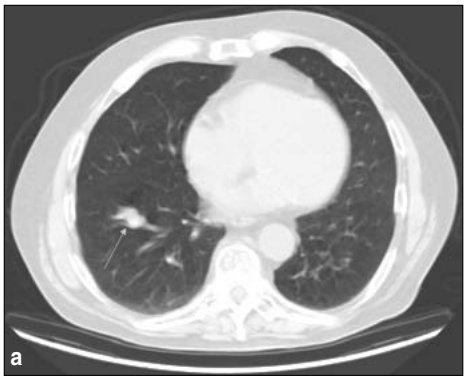
Chest radiography remains the primary screening study for detection of pulmonary nodules/masses, while computed tomography (CT) remains the primary staging exam for lung carcinoma. The exact size and location of the mass can be determined with CT, but more importantly the hilum and mediastinum are evaluated for metastatic disease. Distant metastases can be also be detected with CT and either imaging guided biopsy or bronchoscopic biospy can be performed in most cases for tissue diagnosis.

Positron emission tomography (PET) has become a vital exam in diagnosing, staging and restaging lung carcinoma. PET is performed with a glucose analog, fluourodeoxyglucose (FDG), which is tagged to a positron-emitting compound (Fluorine – 18). The tracer accumulates at sites of increased metabolism (increased glucose utilization), including many malignant neoplasms.

PET scanning has become the most important diagnostic test in evaluating solitary pulmonary nodules that are too small or are in a difficult location for biopsy (Fig 1). The majority of hypermetabolic nodules have gone on to surgical resection with a high incidence of neoplasm (80 – 90%). The small percentage of false positives is most commonly associated with active granulomatous disease.

Staging of lung carcinoma with PET has been shown to detect metastatic disease in normal size lymph nodes (which normally wouldn't be considered pathologic on CT) as well as unsuspected distant metastatic disease (Fig 2).

PET has become one of the most reliable ways to restage lung carcinoma to determine if the tumor is responding to the treatment regimen. If the tumor is responding to the treatment, the tumor decreases in metabolic activity and therefore decreases in intensity of FDG uptake and usually decreases in size. When the tumor is not responding to the treatment regimen, the lesion will get larger and more intense and often-new hypermetabolic lesions will appear (Fig 3).



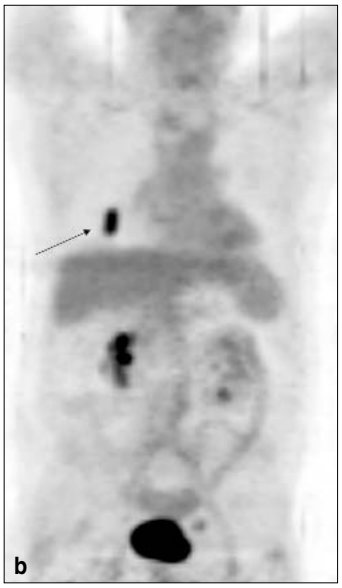


Figure 1. (a) CT shows a nodule in the right lower lobe of the lung (arrow). **(b)** The nodule is hypermetabolic on PET (arrow). Carcinoid tumor was confirmed after surgical resection.

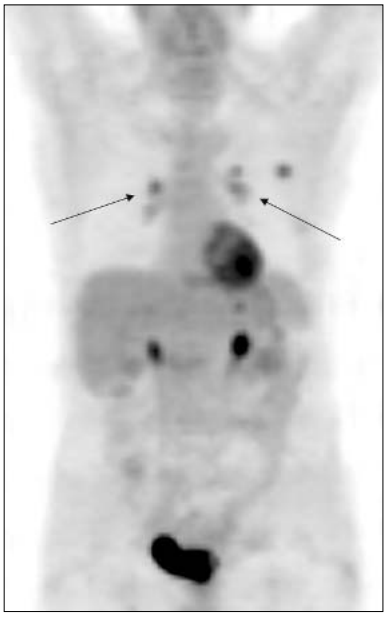
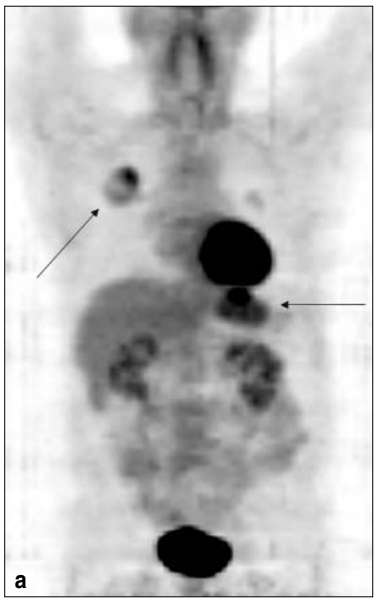


Figure 2.
Small hypermetabolic nodule in the left mid lung with hypermetabolic normal sized lymph nodes in both hila (arrows), consistent with unsuspected metastatic disease.



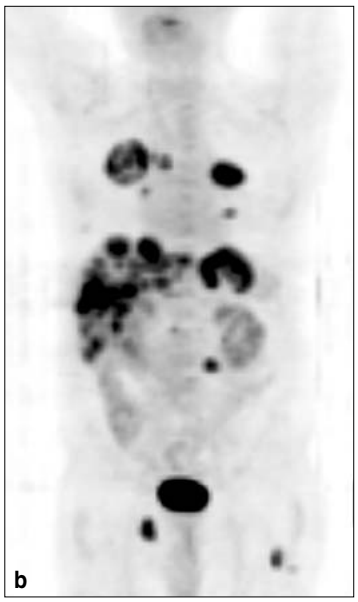


Figure 3. (a) Hypermetabolic mass in the right upper lobe of the lung with hypermetabolic liver metastasis (arrows). **(b)** Significant increase in number and size of hypermetabolic metastases, despite the patient receiving chemotherapy in the interval.

Pathologist

Michael Schwartz, MD
Peninsula Pathology Associates

Lung cancer is the leading cause of cancer mortality worldwide. The World Health Organization has recently revised its comprehensive histologic classification of lung neoplasms. However, thoracic surgeons, pulmonologists and oncologists typically simply classify the most common malignant lung neoplasms into only two categories: small cell carcinoma (SCLC), and non-small cell carcinoma (NSCLC) in terms of treatment purposes. The latter includes adenocarcinoma, squamous cell carcinoma and large cell carcinoma. Types of specimens that may be reviewed by the pathologist to establish a diagnosis of cancer include transbronchial biopsy, frozen section performed on a wedge resection, fine needle aspiration biopsy (FNA) and bronchial brushing and washing specimens.

Tumor stage, as determined by the American Joint Committee on Cancer (AJCC) guidelines is considered by most clinicians as one of the most important prognostic and predictive factor for patients with lung neoplasms. Determination of the pT and pN status of the resected neoplasm determines whether the patient will be treated with post-operative chemotherapy and or radiation therapy. It is the pathologist's role to provide accurate pathologic staging information in lung resection specimens. Indeed, oncologists are often more interested in the tumor stage of NSCLC patients, than in the tumor cell type.

Small cell carcinoma of the lung accounts for up to 15-20% of lung neoplasms. Patients with SCLC can be staged using the same AJCC tumor, node, metastasis guidelines that are discussed for NSCLC, but in practice they are usually stratified clinically into only two groups: limited disease with tumor confined to one hemithorax and extensive disease with metastasis in the contralateral chest or at distant sites. About 20-25% of patients with SCLC present with limited disease, which can be treated with curative intent with radiation therapy and systemic chemotherapy. The microscopic distinction between SCLC and other lung neoplasms is accurate in more than 90% of cases, often aided by the use of immunoperoxidase stain for neuroendocrine markers, but it can be difficult to distinguish these tumors from other neuroendocrine neoplasms such as large cell neuroendocrine carcinoma and atypical carcinoid tumor, and from selected NSCLC such as squamous cell carcinoma small cell variant, adenoid cystic carcinoma and other neoplasms. Recent studies using morphometry have shown considerable variability in the nuclear size of various pulmonary and neuroendocrine neoplasms, providing an explanation for the diagnostic variability. The remaining discussion will focus on NSCLC.

Pathologic staging (pTNM) of NSCLC is based on gross and microscopic examination of the tumor submitted for examination, usually established on the entire resection specimen (lobectomy, pneumonectomy, wedge resection or sleeve resection). According to the AJCC staging system, primary lung carcinomas are divided into four categories (T1-T4) depending on size, location and other findings. Lymph nodes are identified according to anatomic location and involvement is divided into bronchopulmonary (N1) ipsilateral mediastinal/and or subcarinal lymph nodes (N2) and contralateral mediastinal or hilar, or scalene or supraclavicular lymph nodes (N3). Metastases are designated as M1. Using this system, four broad stages with seven separate substages identify significant differences in five-year survival.

A lung tumor is categorized as pT1 if it measures up to 3.0 cm in dimension, does not invade the visceral pleura and is not present proximal to a lobar bronchus. A lung tumor of any size that infiltrates the visceral pleura, is larger than 3.0 cm in dimension or involves proximal to a lobar bronchus without extending within 2.0 cm of the carina and/or resulting in atelectasis of an entire lung is categorized as pT2. If the tumor comes within less than 2.0 cm of the carina, a pT3 designation is applied, and carinal involvement necessitates a pT4 assignment. It is usually necessary to consult with clinicians and/or radiologists to learn about the actual location of a central lung lesion (typically provided by preoperative or intraoperative bronchoscopy) and whether atelectasis of an entire lung was diagnosed by imaging studies, because gross examination of a resected lung may not provide this information. If regional lymph nodes are negative for metastatic carcinoma (pN0) patients with pT1 tumors are staged as Stage IA, whereas those with pT2 lesions are categorized as Stage IB. Patients with Stage IA NSCLC have about 10% better five-year survival rates than patients with Stage IB disease. This underscores the need for the pathologist to accurately distinguish pT1 from pT2 lung lesions, including providing accurate measurement of tumors, particularly

those with a dimension approximating 3.0 cm. As it can be difficult to distinguish grossly the tumor margins from adjacent areas of endogenous lipoid pneumonia, correlation with the microscopic findings is recommended in these instances.

Visceral pleural invasion in carcinomas 3.0 cm or less in size increases the pT category from T1 to T2, and thus increases the stage designation from IA to IB, or IIA-IIB. Survival rates differ for these subgroups, and in some centers adjuvant chemotherapy is offered to patients with T2 lesions. Recent evidence also suggests that pT2 carcinomas larger than 3.0 cm with visceral pleural invasion behave similarly to pT3 tumors. Clearly, pleural invasion by peripheral NSCLC is an important prognostic feature; however, it is unclear whether neoplasms that partially infiltrate the visceral pleura should be staged as pT1 or pT2. As the visceral pleura is a complex anatomic structure with five histologic layers that blur in the presence of underlying lung disease, an elastic stain (Verhoff van Gieson) may be helpful in evaluating the pleural status of NSCLC. Visceral pleural invasion is also associated with a higher frequency of lymph node involvement.

If a peripheral NSCLC extends to the parietal pleura or other chest wall tissues such as adipose tissue or skeletal muscle, the neoplasm is classified as pT3. Patients with pT3 disease and pN0 nodal status are staged as stage IIB, whereas those with pT3 and pN1 disease are classified as stage IIIA. Patients with stage IIB peripheral NSCLC are usually treated with additional chest wall resection or are deemed unresectable, depending on the tumor location and other clinical findings. Unfortunately, there are no definitive histopathologic criteria to help differentiate with accuracy whether a neoplasm is still within fibrotic visceral pleura or has extended into an adherent portion of parietal pleura.

Margin status is an important prognostic and predictive factor for patients with NSCLC. Tumors with negative margins are classified as R0, those with microscopic disease at the margin are R1, and those with gross tumor at the margin as R2. Patients with either R1 or R2 disease are usually treated with either further surgical excision or adjuvant chemotherapy and/or radiation therapy. The frozen section evaluation of bronchial margins in lung cancer resection specimens at the time of surgery is typically reliable as it is associated with only a small number of false positive and false negative diagnoses. A recent review from the University of North Carolina showed 1.5% false positive diagnoses.

The evaluation of lung wedge resections is usually assessed by frozen section examination. During the preparation of tissues for cutting frozen sections it is important to ink the stapled margins prior to sectioning, to blot the ink carefully or soak it briefly with Bouin's or other solutions to avoid its artifactual extension into adjacent lung tissues, and to measure grossly the distance between the lesion and the stapled margin. In patients with tumor present very closest to the margin it is probably more prudent to interpret the margin as positive and to request wider margins than to risk the possibility of unsuspected R1 disease found in permanent sections. For example, in a recent study of 31 T1N0M0 peripheral adenocarcinomas diagnosed by wedge resection and treated by subsequent lobectomy, R1 disease in a lobectomy is mostly demonstrated in specimens with tumor closer than 2.4 mm to the margin of the original biopsy. In this study, two processes affected wedge resection margin distances: stapling-induced parenchymal stretching, resulting in overestimation of distances and microscopic extension of adenocarcinoma beyond the gross perimeter of the neoplasm. Patients undergoing wedge resection for solitary pulmonary nodules have local recurrences in up to 27% of instances and the resection margin is a valuable prognostic feature.

Lymphatic and vascular invasion appear to be poor prognostic factors in patients with NSCLC. Tumor lymphatic invasion can be difficult to diagnose in the lung, because there are multiple air spaces that can simulate a lymphatic vessel. It is helpful to remember that lymphatics are normally located adjacent to bronchovascular structures, within the lung septa, in perivenous spaces and in the pleura. Elastin stains can also be very helpful in determining the presence of vascular invasion.

Lymph node status is one of the most important prognostic features in patients with NSCLC. Although imaging methods have greater than 90% sensitivity for the detection of metastasis, there specificity is generally less than 80%. Mediastonoscopy with pathologic examination of lymph nodes remains the gold standard for evaluation of lymph node status in patients with NSCLC. Lymph node metastases within regional lymph nodes can be subclassified as intranodal when they are present within a lymph node capsule and extranodal when they extend into the adjacent soft tissue. It has been suggested that patients with pN2 "minimal" metastases and "intranodal metastases" that do not extend beyond lymph node capsule may have better prognosis than those with more extensive involvement. There have been multiple

reports indicating that small nodal metastatic deposits, variably designated as "isolated tumor cells, micro metastases or occult metastases" may have prognostic significance. Another study of a small cohort of patients with stage I and II NSCLC suggested that patients with isolated tumor cells and micro metastases, defined by current AJCC criteria, have similar prognosis to patients with pN0 disease.

In order for patients to be appropriately staged, it is therefore important for the pathologist to include the following parameters in his final pathology report from lung resection specimens: specimen type, laterality, tumor site, tumor size, tumor histologic type and grade, extent of invasion, presence or absence of direct extension of tumor into surrounding structures including visceral pleura, presence or absence of venous, arterial, or lymphatic space invasion, and status of all margins and regional lymph nodes. The presence or absence of distant metastases should also be included if known. It is this pathologic staging of lung tumors that aids clinicians in determining optimal patient treatment, allows for a reasonable prognostication and facilitates comparisons between patient groups and clinical studies.

Bibliography

Alberto M. Marchevsky MD. 2006: **Problems in Pathologic Staging of Lung Cancer.** *Archives of Pathology and Laboratory Medicine*: Vol. 130, No. 3, pp. 292–302.

Douglas B. Flieder MD. 2007: **Commonly Encountered Difficulties in Pathologic Staging of Lung Cancer.** *Archives of Pathology and Laboratory Medicine*: Vol. 131, No. 7, pp. 1016–1026.

Medical Oncologist

Mashour Yousef, MD
Peninsula Cancer Institute

Lung Cancer is the leading cause of cancer death in both men and women in USA, with estimated 220,000 new cases will be diagnosed and more than 160,000 deaths are estimated in 2007.

The primary risk factor is smoking, which accounts for more than 85% of all lung cancer-related deaths. Other factors include Radon gas and exposure to asbestos.

The role of the medical oncologist in managing and treating lung cancer is an evolving field, which requires early involvement in decision-making in coordination with the pulmonologists, thoracic surgeon, and radiation oncologist to design the best approach for each specific case based on the patient's general condition, his disease stage, and type of tumor.

Lung cancer is divided into two major classes based on its pathology, prognosis, and treatment: small cell lung cancer (SCLC), and non-small cell lung cancer (NSCLC).

Non-small cell lung cancer accounts for about 85 % of cases, and it includes 3 major subtypes: 1) Adenocarcinoma; 2) Squamous cell carcinoma; and 3) large-cell carcinoma.

SCLC accounts for 15% of all lung cancers, and nearly all cases are attributable to cigarette smoking, whereas the rest are presumably caused by environmental and genetic factors.

Treatment of SCLC:

In comparison with NSCLC, SCLC has a more aggressive course with early development of metastatic disease, with approximately 70% of patients present with extrathoracic disease, whereas only about 30% of patients present with limited disease.

SCLC is very sensitive to chemotherapy (CTX) and radiation treatment (RT); however most patients eventually die from recurrent disease, and while concurrent CTX and RT can be curative for some patients with limited- stage disease, chemotherapy alone can palliate symptoms and prolong survival in most patients with extensive stage disease.

Surgery is only appropriate for the few patients (2-5%) with surgically respectable SCLC (stage I), and those patients should have standard staging evaluation, including CT scan of the chest and upper abdomen, or PET scan, bone scan, and brain imaging, prior to definitive treatment.

Patients with stage I SCLC should be treated with postoperative chemotherapy, and patients with nodal metastases could be considered for postoperative radiation treatment.

Because prophylactic cranial radiation (PCR) can improve both disease-free survival (DFS) and overall-survival (OS) in patients with SCLC in complete remission, it should be

considered after adjuvant CTX in patients who have undergone a complete resection.

Single agents and combination CTX regimens are active in SCLC, but etoposide and cisplatin (EP) is still considered the standard treatment in SCLC; however, in clinical practice carboplatin is frequently substituted for cisplatin to reduce the risk of emesis, neuropathy, and nephropathy.

A phase III trial in Japan reported that patients with extensive SCLC who were treated with irinotecan plus cisplatin achieved a median survival of 12.8 months compared to 9.4 months for patients who were treated with EP. In addition the 2-year survival was 19.5 % in the Irinotecan arm compared with 5.2 % in the EP group. However a large trial with similar design in the US failed to demonstrate similar results.

In patients with limited stage SCLC response rates (RR) of 70-90 % are expected after CTX plus RT, while in extensive stage RR of 60-70 % can be achieved with CTX alone. Unfortunately median survival rates are only 14-20 months with 40 % chance of 2-year survival in limited stage disease, and 9-11 months with less than 5% 2- year survival in extensive stage disease.

Attempts to improve long-term survival rates in patients with SCLC through the addition of more agents or the use of dose-intense CTX regimens, or maintenance therapy have generally failed to yield significant advantages when compared with standard approaches.

Treatment of NSCLC:

Surgery, chemotherapy (CTX), and radiation treatment (RT) are the three modalities used to treat patients with NSCLC; and they can be used either alone or in combination, depending on the disease status.

In general, in patients with stage I or II disease, surgery is usually the main modality and it can provide the best chance for cure, however it is highly dependable on the extent of the disease and the cardiopulmonary status of the patient, which can dictate the probability of intervention and the probability of curative intent.

The International Adjuvant Lung Cancer Trial (IALT) reported a significant survival benefit with Cisplatin-based adjuvant CTX in patients with completely resected stage I, II, or III NSCLC.

In patients with unresectable stage IIIA or stage IIIB disease, combined CTX-RT is the treatment of choice and concurrent chemoradiation was found to be superior to sequential therapy.

Patients with metastatic disease (stage IV) who are in good general condition will benefit from CTX, usually with platinum-based regimen. Phase III trials showed that many of the platinum-doublet combinations are similar for their response and survival.

New advances in targeted therapies for advanced lung cancer have been made in the last three years. Bevacizumab (Avastin) is a monoclonal antibody that blocks the vascular endothelial growth factor (VEGF) and it was approved in 2006 by the FDA for patients with unresectable, locally advanced, recurrent, or metastatic non-squamous NSCLC, and it is usually combined with Carboplatin and Taxol.

Erlotinib (Tarceva) is an inhibitor of EGFR and the FDA approved it in 2004 for the treatment of patients with locally advanced or metastatic NSCLC after failure of at least one prior CTX regimen. However it can also be given (with or without CTX) as a first line treatment in patients with advanced disease who have known active EGFR mutation or gene amplification and who never smoked.

Given the dismal survival rates for patients with advanced lung cancer, it is essential to enroll those patients in clinical trials, which have the potential of addressing many of the unanswered questions regarding the best management approach, the choice of CTX, and the appropriate utilization of the new targeted agents that can hold the key for a dramatic shift in response rates and survival. These clinical trials are readily available in the local and regional oncology practices.

Radiation Oncologist

Joseph Layser, MD
Radiation Oncology Specialists

Radiation therapy stands along side surgery and medical oncology as one of the standard treatments with proven benefits for lung cancer. There are a variety of ways in which radiation can be used, both alone and in combination with other therapies.

In early stage lung cancer, the surgeons and pulmonologists will need to assess the patient for ability to undergo surgical therapy and on occasion the patient's pulmonary function will not be sufficient to support such intervention. Radiation can serve as an alternative, either with or without chemotherapy. Usually in this setting, radiation is given as a six to seven week course of treatment with daily fifteen-minute treatments, which gradually shrink the tumor. Long-term control can be achieved in 20 to 30% of patients. Research is ongoing to determine new and innovative ways to combine chemotherapy with radiation and we are beginning to look at situations were stereotactic radiosurgery may be useful for smaller tumors that cannot be removed. On occasion, there will be involvement of the lining of the lung (pleura) or nearby lymph nodes and when appropriate, radiation can be used to reduce the risks of local recurrence. This would typically require a five to six week course of treatment.

For patients with small cell carcinoma of the lung or non-small cell carcinomas, which are not resectable due to their size and location, we will frequently utilize combination therapy. Using chemotherapy and radiation at the same time can give the most rapid and complete tumor shrinkage; however, it does require that the patient be well enough to tolerate the side effects of each modality. The most common side effects of radiation are fatigue and difficulty swallowing. Occasionally patients can experience problems with cough or shortness of breath. There are some special circumstances where radiation and chemotherapy can be used as pre-operative treatments, and with good shrinkage of the tumor, surgery may become possible. This is especially true in tumors that arise in the upper portion of the lung which have been called Pancoast tumors and sometimes in tumors in the central chest that are involving a minimal number of lymph nodes (Stage IIIA).

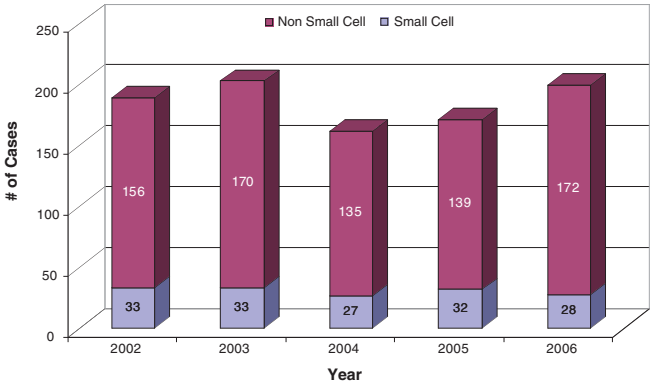
Riverside has the availability of a high dose rate afterloader, which allows for brachytherapy. Brachytherapy is radioactive treatments delivered to the inside of the body through placement of special catheters through a bronchoscope. This is especially useful if a tumor is growing inside the bronchial passage causing obstruction or bleeding. Many times these patients will have laser resection and follow-up radiation can help prevent regrowth within the bronchial passage.

Radiation is also useful to control metastatic disease, which is common, especially in the areas of the brain and bones. Often times this will require a shorter course of treatment, usually two to three weeks. When brain metastases are few in number, Gamma Knife can also be used for its ability to target a high dose of radiation to small areas.

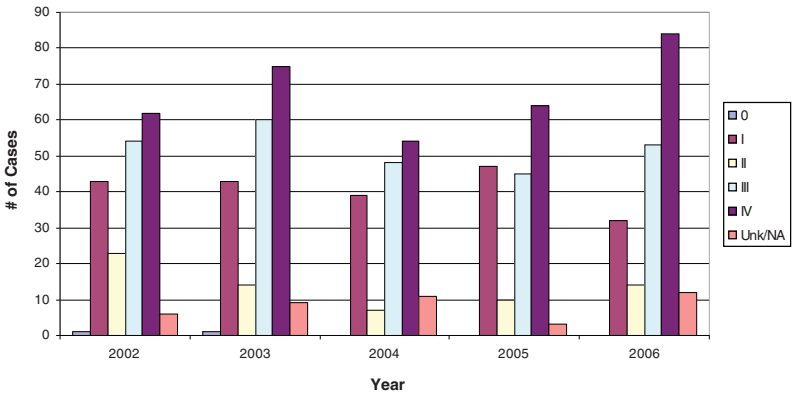
The interaction between the various specialists can be complex and Riverside has recently introduced a tumor board specifically targeted for patients with lung cancer so that these specialists can meet in one place to discuss individual cases and optimize collaboration between specialists. A navigator is available to help patients manage the complexities of their treatment program.

Riverside Cancer Registry Data

2002 - 2006 Lung Cancers
Number of Small Cell and Non Small Cell Cancers

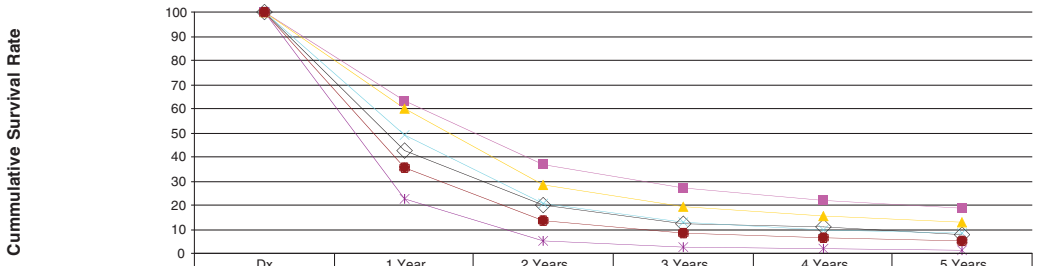


2002 - 2006 Lung Cancer
Cases by Stage at Diagnosis



Unlike other sites, lung cancer is predominantly identified in its later stages. The above graph illustrates this tendency, as stage IV (metastatic) lung cancer has been the highest from 2002 to 2006. These numbers are similar to national data.

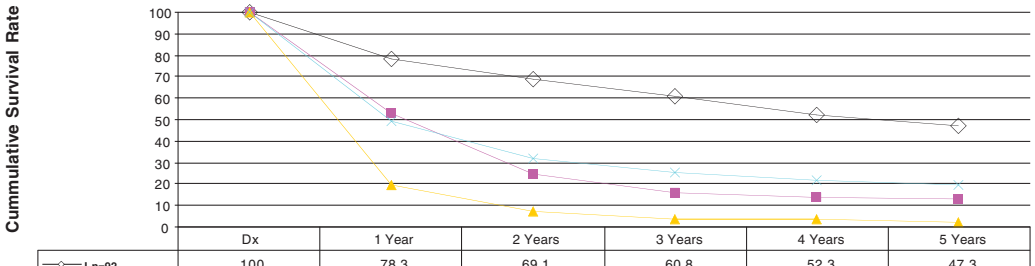
1998-2000 5-Year Survival for Non-Small Cell Lung Cancer - NCDB



	Dx	1 Year	2 Years	3 Years	4 Years	5 Years
0 n=157	100	42.9	20.3	12.3	10.9	7.8
I n=3583	100	63.4	37	26.9	21.8	18.4
II n=2145	100	60.3	28.4	19.4	15.6	12.9
III n=15976	100	49.1	20.9	13.2	10	8.4
IV n=29873	100	22.5	5.4	2.6	1.8	1.4
OVERALL n=51734	100	35.2	13.4	8.3	6.4	5.3

Years From Diagnosis

1998-2000 5-Year Survival for Non-Small Cell Lung Cancer - RRMC Only



	Dx	1 Year	2 Years	3 Years	4 Years	5 Years
I n=92	100	78.3	69.1	60.8	52.3	47.3
III n=98	100	53.1	24.7	16.1	13.9	12.8
IV n=108	100	19.4	7.4	3.7	3.7	1.9
OVERALL n=326	100	49.1	31.9	25.4	22.1	19.7

Years From Diagnosis

When comparing the 5-year survival of Riverside Regional Medical Center's (RRMC) lung cancer patients (n=326) to the Commission on Cancer's National Cancer Data Base (NCDB) patients (n=51,734), it is evident that Riverside's patients have a better 5 year-survival in each stage. When combining all the stages, 5-year survival for non-small cell lung cancer at Riverside is 19.7%, while the NCDB's survival is 5.3%. Although this is a very large difference, some of the variation can be accredited to the fact that Riverside's caseload is much different demographically and clinically than many other areas around the nation. Despite these variances, the 5-year survival rates for RRMC's lung cancer patients was better than the national average for Stage I, Stage III, Stage IV, and overall and that is a significant achievement.

Ovarian Cancer at Riverside Regional Medical Center

Gynecologic Oncologist

OVARIAN CANCER:
THERE IS HOPE ON THE HORIZON

Ovarian cancer is the seventh most common female malignancy in the United States, and the fifth leading cause of cancer-related death among women. Ovarian cancer is the most lethal of all gynecologic malignancies, accounting for more deaths each year than all other gynecologic malignancies combined. It is estimated there will be approximately 22,340 new cases of ovarian cancer diagnosed and approximately 15,280 deaths from ovarian cancer in the United States during 2007.

The symptoms associated with developing ovarian cancer include bloating, pelvic or abdominal pain, difficulty eating or feeling full quickly, and urinary symptoms of feeling the urge to go or actually going to the bathroom with increasing frequency during the day or night.

The risk of epithelial ovarian cancer increases with age, especially around the time of menopause. A family history of epithelial ovarian cancer is one of the most important risk factors. Infertility and an absence of childbearing are also risk factors for the development of ovarian cancer, while pregnancy, breast-feeding and the use of birth control pills reduces the risk.

Currently there is no widely accepted or effective screening test for epithelial ovarian cancer. Given the absence of any effective screening test, 75% of women diagnosed with ovarian cancer will have advanced stage disease at the time of their diagnosis. In the past, the majority of these women would ultimately die from their disease.

Recently, however, there have been significant advances noted on several fronts regarding the prevention, detection, treatment and surveillance of epithelial ovarian cancer. These advances offer new hope to the many women diagnosed with this deadly malignancy in the United States each year.

PREVENTION:
The Gynecologic Oncology Group will soon launch a new clinical trial investigating the use of progestins as a chemo-preventative agent in women at increased risk of developing epithelial ovarian cancer. Epidemiologic evidence has shown that routine use of the combined estrogen-progestin oral contraceptive pill offers a 30-50% reduction in the subsequent risk of developing epithelial ovarian cancer, suggesting that an effective pharmacologic approach for the chemoprevention of ovarian cancer is possible. The evidence suggests that it is the progestin component of the OCP that has preventative biologic effects upon the ovarian epithelium. Patients recruited to this clinical trial will be women at high risk of developing ovarian cancer and planning to undergo surgery to have their ovaries and fallopian tubes removed to reduce their risk of epithelial ovarian cancer. This surgery is called "prophylactic oophorectomy" or "RRSO" (risk reducing salpingo-oophorectomy). In this study, all women will be treated with progestins for 6-8 weeks prior to their surgery. At the time of the surgery, investigators will sample the ovarian tissue to study specific histopathological and molecular pathways that may be modified by the progestin medication. The goal of this study is to learn more about pathways that protect against ovarian cancer. Other agents that have been shown to modify preventative molecular pathways in laboratory and animal studies include non-steroidal anti-inflammatory agents and eicosanoids, of the omega-3 fatty acid family. These will be the next generation of agents to be studied within a clinical trial setting.

William Irvin, MD
Riverside Gynecologic Oncology

SCREENING:
Approximately 10-15% of epithelial ovarian cancers are hereditary, often related to mutations of the BRCA1 and BRCA2 gene. There is strong data to show that RRSO in this high-risk patient population can decrease both the risk of epithelial ovarian cancer as well as breast cancer by approximately 80% and 40% respectively. To confirm these findings, the Gynecologic Oncology Group just completed a study of high risk women who requested risk-reducing salpingo-oophorectomy (RRSO) compared to high-risk women that opted for longitudinal CA 125 screening with special emphasis on known BRCA1/2 mutation carriers. The main objective of the study was to define the risks and benefits of RRSO and to determine,

in a prospective manner, the incidence of ovarian, fallopian tube, breast, and primary peritoneal cancer in this high-risk population. The study will also quantify the accuracy of serial CA 125 tests in women who have elected not to undergo RRSO. The study was closed to accrual in November of 2006 and results are highly anticipated so as to guide high-risk women with the difficult decision of how to best protect their health.

Although no effective screening test has yet been developed, more knowledge was gained this year about using ultrasound and CA 125 to detect ovarian cancer in its early stages. Preliminary results of screening post-menopausal women in the large and important Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial (PLCO) were recently presented at the Society of Gynecologic Oncologists (SGO) Annual Meeting on Women's Cancers. In this study, over 39,000 women who have no symptoms of ovarian cancer are scheduled to have transvaginal ultrasounds (TVU) done every year for 4 years, as well as a CA 125 blood test performed every year for 6 years. The interim results from the first 4 years show that most of the cancers found with TVU were early stage (77% stage I/II), but most of those found with the CA 125 blood test were advanced (90 stage III/IV). The chances that a woman with an abnormal screening test would actually have ovarian cancer, otherwise known as the positive predictive value of the test (PPV), remained low over the 4 years but showed improvement over time. These initial results show a high rate of unnecessary surgeries and a low rate of ovarian cancer detection. Since the impact on mortality is not yet known for this trial, such monitoring is not currently recommended outside the trial. However, completion of the PLCO trial is highly anticipated to help answer this important question and to determine if such intense monitoring may be justified for this deadly cancer.

At the 207 meeting of the American Society of Clinical Oncology (ASCO), another group of researchers reported on using serial CA 125 blood tests to predict a woman's risk of developing ovarian cancer. The researchers used a method of analyzing serial CA 125 blood tests over time called the Risk of Ovarian Cancer Algorithm (ROCA), to screen 2,300 women who had no symptoms, but were at high risk for developing ovarian cancer. The positive predictive value for ROCA as a screening test was 13 percent, and the sensitivity, or chances that women who actually had ovarian cancer had an abnormal test result, was 83%. These initial results are promising for high-risk women, but confirmation of the value of ROCA as a screening in women who are not at high risk for developing ovarian cancer will be necessary. To this end, ROCA is currently being evaluated in a screening trial involving 200,000 postmenopausal women in the United Kingdom (UK Collaborative Trial of Ovarian Cancer Screening). This trial involves the serial measurement of CA 125 (ROCA) as the initial screen followed by transvaginal ultrasound for abnormal serial values. This trial is now closed and the results are eagerly anticipated in 2011.

TREATMENT:

Surgery remains the cornerstone for the treatment of epithelial ovarian cancer with early stage disease requiring methodical surgical staging, and advanced disease calling for a maximal surgical effort to remove as much tumor as possible ("debulk" the tumor) followed by chemotherapy. Two recent reports add to the growing number of studies supporting the critical role of the gynecologic oncologist in treating women with ovarian cancer. A study reporting collective data from 19 researchers around the world showed that appropriate staging and debulking of tumor were significantly more likely to be achieved when gynecologic oncologists performed the ovarian cancer surgery compared to other types of surgeons. Data from the California Cancer Registry revealed that only 34% of women with ovarian cancer were treated by a gynecologic oncologist, and that those women were more likely to be treated according to the accepted standard of care including having surgery as their initial treatment and receiving chemotherapy after surgery. Both studies showed that survival for women with ovarian cancer was improved by having surgery performed by a gynecologic oncologist. Because of data from these and similar studies, an important focus of the continuing effort to improve care for women with ovarian cancer remains encouraging women and their health care providers to seek care from a gynecologic oncologist when ovarian cancer is suspected.

There has been continuing progress in the search for better treatments for ovarian cancer in the past year including advances in intraperitoneal therapy and the use of new biologic that target specific pathways that tumor cells depend upon to survive. Multiple trials in recent years have demonstrated that chemotherapy when given directly into the abdominal cavity (intraperitoneal or IP therapy) significantly improves survival for women with advanced ovarian cancer when compared to treatment with intravenous chemotherapy alone. The most recent of these trials (GOG 172) demonstrated the longestoverall survival for women treated for advanced stage ovarian cancer (67 months) of

any trial that as ever been performed in this group of women…ever! Despite the overwhelming benefits demonstrated with intraperitoneal therapy, concerns persist within the oncologic community regarding the increase in side effects of IP therapy when compared to intravenous (IV) therapy. In response, studies aimed at minimizing the side effects of intraperitoneal (IP) chemotherapy while preserving the survival benefits are being conducted. At ASCO and at the SGO 2007 annual meeting, reports from two such studies were presented. In both studies, one substituting the platinum drug IP carboplatin instead of IP Cisplatin, and one using a lower dose of IP cisplatin, the side effects of the IP therapy were greatly reduced and early results regarding tumor control have been promising.

It has been clearly demonstrated that a rising CA 125 above normal can lead to early detection of recurrent ovarian cancer 3-6 months prior to there being any evidence of clinical disease (biochemical recurrence). What is less clear is whether detection of disease ahead of radiographic or physical findings adds a survival benefit. In fact, currently no data exists showing that giving chemotherapy early in patients with biochemical recurrent ovarian cancer results in any form of survival benefit. The Europeans just completed a trial looking at this very question. Now closed, results are expected in 2008 and will provide important information as to the benefit of chemotherapy in patients whose only evidence of recurrence is a rising CA 125.

While investigators continue to make improvements with IP chemotherapy, agents that take advantage of the specific biology of tumor cells have been introduced into the arsenal of drugs that fight ovarian cancer. A number of biologic agents that target specific molecular pathways have been developed and are currently undergoing active clinical testing. CT-2103 (Xyotax) is a large molecule that changes the structure of paclitaxel, a drug known to be highly effective against ovarian cancer, by combining it with a large sugar molecule. Being larger than regular paclitaxel, CT-2103 becomes preferentially trapped in the tumor by leaky blood vessels, and can thus minimize exposure and side effects in normal tissues in the body. In a Phase III trial being conducted by the Gynecologic Oncology Group, CT-2103 is being compared to standard paclitaxel to compare the two drug's ability to keep ovarian cancer from coming back in women who are in remission following primary surgery and chemotherapy.

Biologic agents that block angiogenesis, or the growth of new blood vessels in tumor tissue, are the focus of other recent studies in ovarian cancer. As most of these agents are in the early stages of transition from the laboratory to the bedside, most information about the anti-angiogenesis agents in ovarian cancer comes from Phase I and Phase II clinical trials. One of the keys to blocking the angiogenesis pathway in cancer cells is interfering with vascular endothelial growth factor (VEGF), the substance that signals new blood vessels to grow. VEGF Trap is a new and promising potent angiogenesis blocker currently in development that works as a decoy receptor, soaking up much of the VEGF in the tumor tissue and preventing it from binding to its intended target. Preliminary results of a Phase II trial, reported at the recent ASCO meeting, showed that VEGF Trap has activity against ovarian cancer in some women whose cancer recurred even after they had received 2 or 3 different types of chemotherapy. The results of this small study are promising and hopefully will lead to continued development of agents that target the angiogenesis pathway. Bevacizumab was the first anti-angiogenic agent approved by the Food and Drug Administration for use in oncology patients. Bevacizumab is an antibody that binds to VEGF, thus inactivating its blood vessel growing capacities and inhibiting tumor growth as a result. In 2005, the Gynecologic Oncology Group (GOG) initiated a large Phase III clinical trial (GOG 218) examining the use of IV carboplatin and paclitaxel with and without bevacizumab in women with advanced ovarian cancer, to see if the use of bevacizumab in conjunction with standard therapy will result in improved survival when compared to standard therapy alone. This trial is based upon at least four positive Phase III trials in non-gynecologic cancers as well as a Phase II ovarian cancer trial that was sponsored by the GOG. The results showed that bevacizumab was able to shrink ovarian cancer in 20% of patients and keep the cancer from progressing in 40% of patients with recurrent disease.

The results of clinical trials with agents such as CT-2103, VEGF Trap, and bevacizumab are exciting and represent important steps toward establishing the role of biologic agents in developing better treatments and improved survival for women diagnosed with ovarian cancer.

The Women's Cancer Network (www.wcn.org) offers detailed information about current GOG clinical trials, and the National Cancer Institute Clinical Trials web site (www.cancer.gov) details over 250 clinical trials worldwide related to ovarian cancer. Overall, women diagnosed with ovarian cancer today now live longer and with better quali-

ties of life than had been the case just 10 years ago. This is largely thanks to the many brave and courageous women who have volunteered their time to participate in the clinical trials that are helping to pioneer the current standards of care. We can only hope that continued research will serve to pioneer the next generation of agents and treatment modalities that will set new standards of care, and hopefully even better survivals, for this deadly disease.

Medical Oncologist

Guy Tillinghast, MD
Peninsula Cancer Institute

While ovarian cancer is less common than uterine cancer, it is still the most common cause of death in the field of gynecological cancers. In 2007 alone, there are estimated to be 22,000 cases of ovarian cancer in the United States, resulting in an estimated 15,000 deaths due to this cancer. Research has shown an epidemiological link between ovarian and breast cancer. For example, it is possible for a patient presenting with ovarian cancer to also develop breast cancer largely because the risk factors for these two cancers are so similar. In particular, pregnancy or the long-term use of oral contraceptives **reduces** the risk of developing either ovarian or breast cancer. However, the use of estrogen alone (to manage menopausal symptoms, for example) **increases** the risk. Additionally, obesity **increases** the risk of these cancers as well as genetically inherited mutations in certain genes. However, recent research has also noted a genetic link to colon cancer, in that families with the "Lynch Syndrome" tend to develop both colon and ovarian cancer.

The Medical Oncologist becomes involved with a patient's care generally after surgery has occurred to discuss **adjuvant therapy** (meaning therapy that "adds" benefit to surgery). Whether adjuvant therapy is recommended depends on the stage of the tumor. If the tumor is a Stage IA, meaning it has been confined to just one ovary, then adjuvant therapy is not offered. Instead, the patient is monitored closely in the months and years following surgery for any possible recurrence of the cancer. However, because ovarian cancer can be difficult to detect, most patients present in Stage III, meaning the tumor has spread beyond the confines of the pelvis and into the abdomen and chemotherapy is the most effective treatment.

Since 2006, there has been a change in the adjuvant therapy recommendations for Stage IB to Stage III ovarian cancer. The National Comprehensive Cancer Network (NCCN) guidelines now recommend either an all-intravenous regimen, or a combined intraperitoneal (within the lining surrounding the abdominal cavity) and intravenous regimen. In a recently published clinical trial, the combined regimen was shown to provide a 16-month improvement in overall survival, compared to the all-intravenous route. This combined regimen involves placement of chemotherapy directly into the peritoneal cavity where the tumor resides. In this way, tumor cells are treated to much higher concentrations of these drugs, as much as 1000-fold higher. However, the intraperitoneal therapy has been associated with a higher complication rate, with only 42-65% of patients being able to complete all six cycles of designated therapy due to the toxic effects of the drugs. The main toxicities of this regimen are abdominal pain, numbness in the fingertips, and an increased risk of infection. In contrast, the intravenous regimen is associated predominantly with fatigue, nausea (which is usually easy to manage), hair loss, and, for some patients, numbness in the fingertips. For patients whose cancer has spread beyond the confines of the abdominal cavity (Stage IV), only the all-intravenous route is an option.

After chemotherapy treatment for Stage III ovarian cancer, most patients see a decline in their CA125 (a substance secreted in the blood indicating the presence of cancer) to the normal range. For 20% of patients, the CA125 will remain normal and they can be considered "cured." However, the remainder of these patients will eventually see a rise in their CA125 levels and a return of their cancer. When the CA125 levels start to rise, it is usually customary to start chemotherapy in an attempt to slow the progression of their disease.

Survival after treatment is greatly affected by the age of the patient and the Stage of the cancer. A woman under 65 is twice as likely to survive five years beyond the initial diagnosis of her cancer than a woman diagnosed after age 65. The five-year survival for localized cancer (involving only one ovary) is 90%, for pelvis-confined tumor (cancer that has spread into the pelvis only) 70%, and 30% for patients whose cancer has spread beyond the pelvis. However, these survival figures do not reflect the potential impact of intraperitoneal therapy as it is a newer therapy.

The future therapy for ovarian cancer looks to the incorporation of **Bevacizumab** (bev-uh-siz-uh-mab) into treatment

regimens. Bevacizumab is a newer drug that prevents a cancerous tumor from "recruiting" blood vessels in the body to help it grow. By inhibiting the growth of these vessels, Bevacizumab may constitute a form of "maintenance" therapy, which maintains the cancer in a steady state. As of this writing, it has not been established whether the benefits of Bevacizumab outweigh its risks (such as a potential for bowel perforation and heart attack). Another potential therapy is based on the patient's own "genetic fingerprint." **Gene expression-based therapy** uses **microarray** (a laboratory test, essentially) to measure the expression of certain genes that may be present within the cancer, and then uses this information to direct therapy for the patient. The Food and Drug Administration (FDA) itself has been spearheading an effort to produce "good practices" whereby this gene expression-based therapy can be applied in the field of medical oncology.

Radiation Oncologist

Joseph Layser, MD
Radiation Oncology Specialists

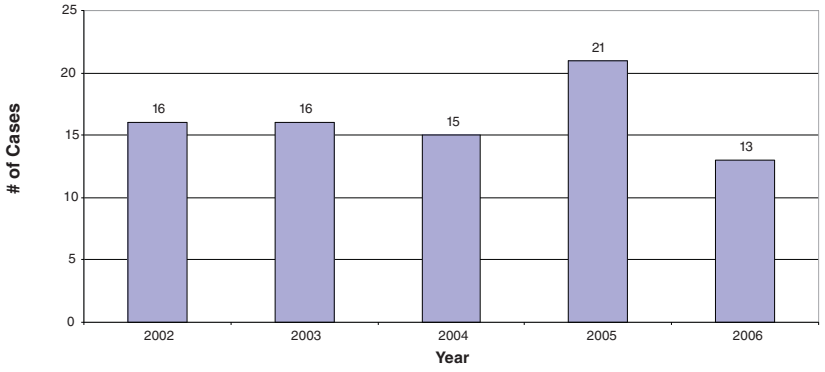
The Radiation Oncologist works along with the GYN oncologist and medical oncologists to optimize care for patients with ovarian cancer. Patients with early stage disease will usually be treated by surgery alone or surgery with adjuvant chemotherapy. If patients refuse adjuvant chemotherapy or cannot tolerate adjuvant chemotherapy, radiation can be considered. In this setting one would normally give a fairly modest dose of whole abdominal radiation with special shielding to protect the liver and kidneys. Radiation is equally successful with chemotherapy. Radiation has lost favor over the years as chemotherapy has improved and as the toxicities of whole abdominal radiation have had to be considered. For more advanced disease, radiation can be used in select cases along with other modalities. Radiation is most frequently being used when disease is resistant to chemotherapy and causes local symptoms such as obstruction within the urinary tracts or lymphatics of the abdomen or pelvis. Targeted radiation in this setting will frequently have palliative value.

Over the years we have often used radiation as an adjuvant after resection of a dysgerminoma, which is a special type of ovarian carcinoma similar to seminoma (a male testicular cancer with similar tendencies to dygerminoma). Radiation can be quite effective but can also hinder future fertility and therefore the options between surgery and radiation will need to be carefully considered.

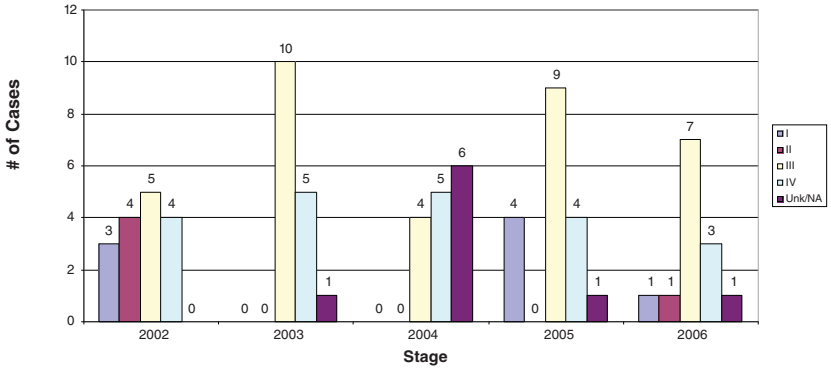
There has also been some work done with intraperitoneal P-32, which is a radioactive material, which can be placed within the abdominal cavity. If a good distribution of the material is obtained, toxicity can be minimal and recurrences can be reduced. A recently introduced technique of heated intraperitoneal chemotherapy has made the use of P-32 less common.

Radiation Oncologists are looking at some innovative ways to combine radiation with chemotherapy to heighten its effectiveness as an adjuvant treatment. Most promising is the introduction of IMRT to deliver radiation to the areas at risk within the abdomen and pelvis at doses sufficient to be sensitizing for chemotherapy but with specific attention to avoiding liver, kidneys and bone marrow through careful planning processes. This approach is still in the research phase; however, if it is proven effective, Riverside does have the capability for IMRT.

2002-2006 Total Ovarian Cancer Cases

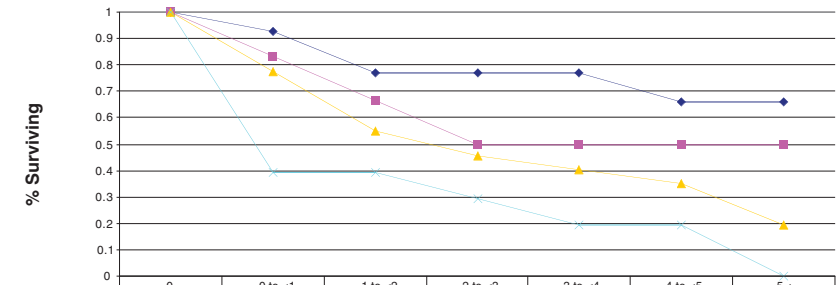


2002-2006 Total Ovarian Cancer Cases by AJCC Stage



There are similarities between ovarian cancer and lung cancer when analyzing stage at diagnosis. Like lung cancer, ovarian cancer is often diagnosed at a later stage due to it being asymptomatic until it has spread. The graph left illustrates this tendency.

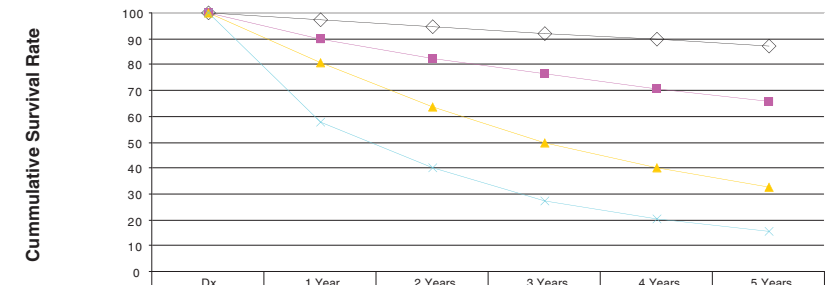
2000-2002 RRMC Ovarian Cancers 5-Year Survival (n=55)



	0	0 to <1	1 to <2	2 to <3	3 to <4	4 to <5	5 +
Stage I (n=14)	1	0.925	0.771	0.771	0.771	0.661	0.661
Stage II (n=6)	1.000	0.833	0.666	0.500	0.500	0.500	0.500
Stage III (n=23)	1.000	0.777	0.549	0.453	0.403	0.352	0.195
Stage IV (n=12)	1.000	0.391	0.391	0.293	0.195	0.195	0.000

When comparing the 5-Year Survivals of Riverside Regional's ovarian cancer patients to the NCDB's, one should take into account the difference in sample size. The NCDB is a database containing 42,555 ovarian cancer patients between 1998 and 2000 and RRMC's Cancer Registry contains only 52 patients. These differences can account for the discrepancies between survival rates, as the RRMC rates appear to be lower than the total population provided by the NCDB.

1998-2000 NCDB Ovarian Cancer 5-Year Survival (n-42555)



	Dx	1 Year	2 Years	3 Years	4 Years	5 Years
I n=12104	100	97.3	94.5	92.2	89.6	87
II n=3125	100	89.7	82.6	76.3	70.7	65.8
III n=16558	100	80.7	63.6	49.8	40	32.8
IV n=10768	100	58	39.9	27.5	20.1	15.5