



Cancer Care

2018 ANNUAL REPORT

ONE TEAM. ONE GOAL. ONE YOU.



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2018 Riverside Cancer Care Annual Report

Dear Friends,

Quality. It's a word that we use often in health care, but it is one that the Riverside Cancer Care team takes very seriously. The highest possible quality of care is not just what we strive for — it's the cornerstone of what we do. After all, it's fundamental to the Riverside Health System mission: to care for others as we would care for those we love.

Within this 2018 Annual Report, we are proud to highlight some of our key pillars of quality this year. You'll see evidence of excellence as you read about our impressive capabilities in stereotactic radiosurgery, gynecologic oncology, surgical oncology, screening and diagnostic techniques, clinical research, pathology and more. You'll see examples of how our team comes together around individual patients every day.

The following pages demonstrate Riverside's selectivity in seeking out accomplished, highly specialized health care providers, scientific experts, state-of-the-art technology, cutting-edge treatments, relationships with respected institutions and innovative ways to prevent, detect and treat cancer. And we've brought them all to one regional, comprehensive organization for advanced cancer care. To all those who stand with us in these efforts through generous financial support, we offer our deepest thanks.

But we won't stop there. Riverside Cancer Care is committed to reaching higher to deliver only the finest care for our patients. As we move forward into 2019, we will work on advancing our genetics and research programs, refining our processes to focus on the unique needs of patients with specific cancers, and continuing to advance service and safety for all of our patients.

When it comes to fighting cancer, we remain steadfast in practicing excellence in every way — and accepting nothing less for our patients.



Sincerely,

Biral S. Amin, M.D.

Cancer Service Line Chief
Riverside Health System

Linda S. McKee

Cancer Service Line Administrator
Riverside Health System

Riverside Cancer Care 2018 Year-in-Review

January

Riverside Tappahannock Cancer Center implemented tumor board meetings, in which a multidisciplinary team of clinical experts regularly reviews cancer patient cases.

February

Riverside Peninsula Cancer Institute and the University of Virginia underwent an NCI audit of NCI clinical trial SWOG S1207 in accordance with Clinical Trials Monitoring Branch Audit Guidelines. Riverside PCI was found to be compliant in all areas reviewed and commended for work performance.

April

Riverside was awarded a scholarship from the Virginia Department of Health SYNC program, designed to help health care professionals develop their capabilities for collaborative teamwork and leadership.

Team members



▲ Pictured (l-r): Ruth VanDavelaar, Director Radiation Oncology/Radiosurgery; Jennifer Brown, BS, CTR,CIP, Tumor Registry/IRB Manager; Melissa Paulette, Nurse Manager/Cancer Infusion Center; and Susanna Gretsky, Practice Manager/Cancer Infusion Center.

Dr. Ilene Stephan, Ruth VanDavelaar, Jennifer Brown, Melissa Paulette and Susanna Gretsky completed the capstone project for cancer, entitled “Improving the percentage of patients that reported having a treatment summary plan or survivorship care.”

June

The Varian Edge stereotactic linear accelerator was launched.

A pet therapy program was initiated at Riverside Shore Cancer Center.

July

Radiation oncology team members won the \$7,000 American Society of Radiologic Technologists Safety First® Grant. Funds were used to purchase a patient lift for the Williamsburg Radiation Therapy Center, and a plan for safe patient handling was developed.

August

The Prostate Cancer Care Clinic was implemented at the Riverside Cancer Care Center in Newport News.

Dr. Drury Martin Stith was honored for his dedication and for implementation of the cancer program at Riverside Shore Cancer Center. His last day of work was recognized by



▲ The Northampton County Board of Supervisors proclaimed June 27, 2018 to be “Dr. Drury Martin Stith Day” in Northampton County at their meeting on June 12. The proclamation honors Stith for his 43 years of service to cancer patients of the Eastern Shore. Left to right: Spencer Murray, Dr. Drury Stith, Jason Stith, Asa Stith, Patsy Stith.

Accomack and Northampton Counties as “Dr. Drury Martin Stith Day,” and the Eastern Shore Chamber of Commerce named him Citizen of the Year.

September

Music therapy and massage therapy were implemented at Riverside Tappahannock Cancer Center.

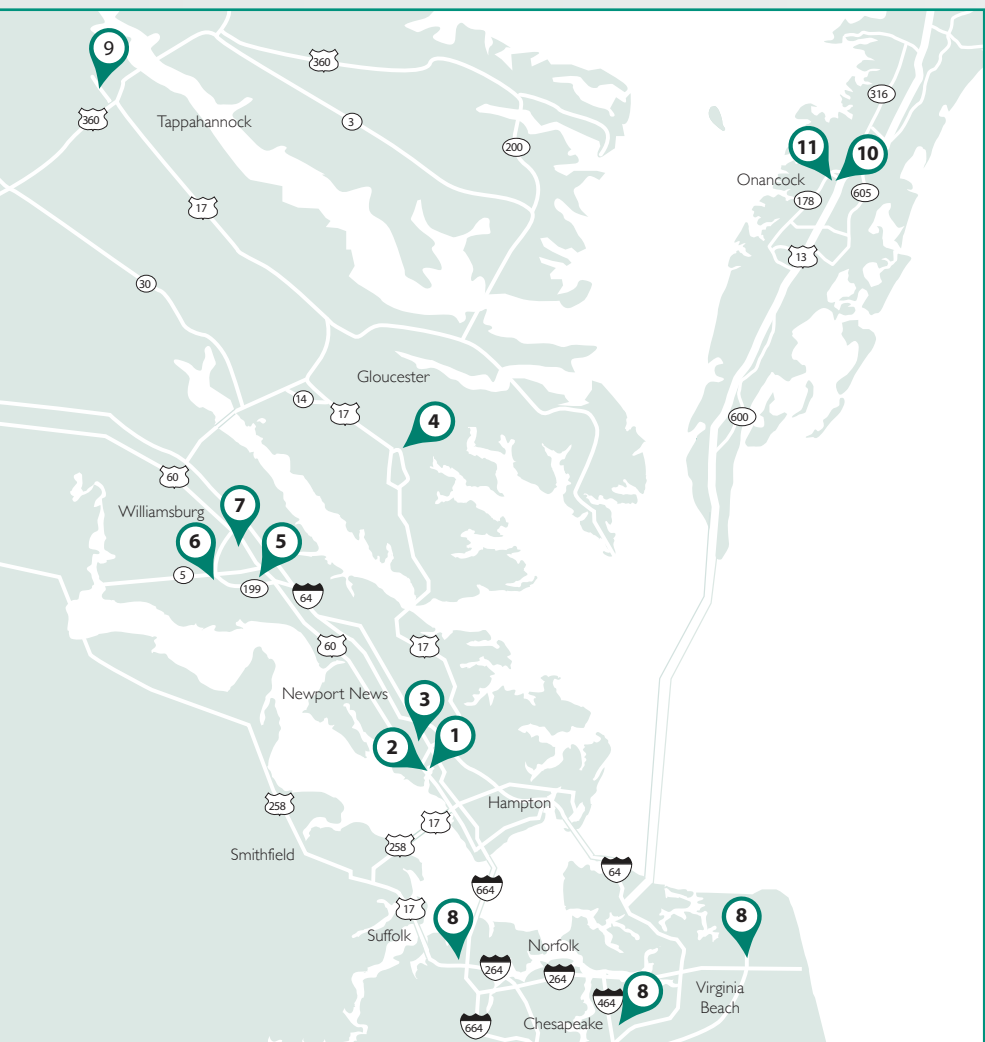
October

Two grants for HPV and colorectal cancer were received from the American Cancer Society Partnership Awards.

November

Our low-dose CT program for the early diagnosis and treatment of lung cancer added a lung registry to ensure appropriate surveillance for all active patients.

Our Network of Locations



Riverside Cancer Care serves individuals and communities throughout southeastern Virginia through a wide range of inpatient and outpatient treatment and diagnostic locations. The broad geographic distribution of these healing environments, supported by skillful and experienced staff and state-of-the-art technology, helps ensure that patients across a broad region have access to high-quality cancer care close to home.

- 1** **Riverside Regional Medical Center**
500 J. Clyde Morris Blvd.
Newport News, Virginia 23601

*Riverside Oncology Intensive Care Unit**
 757-594-3222
5-West Oncology Unit
 757-594-2654
- 2** **Riverside Cancer Care Center**
12100 Warwick Blvd.
Newport News, Virginia 23601

757-594-3099

Peninsula Cancer Institute, Newport News
 757-534-5555
Nurse Educator and Community Support
 800-520-7006
Radiation Therapy
 757-594-2644
Riverside Gynecologic Oncology
 757-594-4198
- 3** **Riverside Diagnostic and Breast Imaging Center**
895 City Center Blvd., Suite 104
Newport News, Virginia 23606

757-594-3900
- 4** **Peninsula Cancer Institute, Gloucester**
7544 Medical Drive
Gloucester, Virginia 23061

804-693-4900
- 5** **Riverside Doctors' Hospital Williamsburg**
1500 Commonwealth Ave.
Williamsburg, VA 23185

757-585-2200
- 6** **Peninsula Cancer Institute, Williamsburg**
120 Kings Way, Suite 3100
Williamsburg, Virginia 23185

757-345-5724
- 7** **Williamsburg Radiation Therapy Center**
3901 Treyburn Drive, Suite B
Williamsburg, Virginia 23185

757-220-4900
- 8** **Cancer Specialists of Tidewater**
110 Wimbledon Square, Suite E
Chesapeake, Virginia 23320

757-436-2995

1200 First Colonial Road, Suite 204
Virginia Beach, Virginia 23454
 757-363-8212

5839 Harbour View Blvd., Suite 100
Suffolk, Virginia 23435
 757-397-4200
- 9** **Riverside Tappahannock Hospital**
618 Hospital Road
Tappahannock, VA 22560

804-443-3311
- 10** **Riverside Shore Memorial Hospital**
20480 Market St.
Onancock, VA 23417

757-302-2100
- 11** **Riverside Shore Cancer Center**
20480 Market St.
Onancock, VA 23417

757-302-2600

**One of very few Oncology Intensive Care Units in the U.S.*

Accreditations

The Commission on Cancer:

Riverside Regional Medical Center, accredited by the CoC since 1982, received three-year accreditation in November 2018 with commendation in seven standards.

Riverside Shore Memorial Hospital was surveyed in September 2016, receiving three-year accreditation with commendation, as well as the Outstanding Achievement Award.

Riverside Walter Reed Hospital completed its third survey in June 2017, receiving three-year accreditation with commendation and the Outstanding Achievement Award.

National Accreditation Program for Breast Centers:

Riverside Regional Medical Center received three-year accreditation by the NAPBC in September 2018.

Quality Oncology Practice Initiative:

Riverside cancer infusion centers certified by QOPI include:

- Peninsula Cancer Institute (Williamsburg)
- Riverside Cancer Care Center (Newport News)
- Riverside Walter Reed Hospital (Gloucester)
- Cancer Specialists of Tidewater (Suffolk)
- Cancer Specialists of Tidewater (Virginia Beach)
- Cancer Specialists of Tidewater (Chesapeake)



The American College of Surgeons Commission on Cancer is a consortium of professional organizations that have established standards to ensure quality, multidisciplinary and comprehensive care for patients seen at our accredited facilities. Surveys are conducted by the ACOS every three years to ensure compliance with standards. Riverside's legacy of accreditation began in 1982 and our commitment to caring for our cancer patients is held to the highest standard.

The National Accreditation Program for Breast Centers was established in 2008 and is dedicated to improving quality of care and surveillance of outcomes for patients with breast disease. Riverside was among the first breast cancer programs in Virginia to become accredited (2009). The Riverside Breast Cancer Program has successfully achieved four (three-year) accreditations of 27 NAPBC standards that measure clinical management, quality improvement, professional education and other areas.

QOPI is a certification received for achieving safety standards in chemotherapy offices. Riverside is the first to achieve and maintain certification in the Hampton Roads area since 2012.

The Center for Medicare & Medicaid Innovation developed the **Oncology Care Model**, which aims to provide higher quality, more highly coordinated oncology care at the same or lower cost for Medicare patients. Riverside's Peninsula Cancer Institute is one of 178 practices, along with 13 payers in the U.S., participating in this initiative to improve the quality of cancer care.

Surgical Oncologist John Donohue, M.D., Passes the Torch of Specialized Care to Jane Wey, M.D.

In 2013, Riverside Health System recruited surgical oncologist John Donohue, M.D., following his 25-year practice at Mayo Clinic. Although many general surgeons effectively treat cancer, the addition of a surgical oncologist with specialized training and interest would help coordinate the complex multidisciplinary care of cancer patients and offer the unique surgical procedures that they require. This is important in Riverside's commitment to serve our patients comprehensively.

A Harvard Medical School graduate, Dr. Donohue completed a surgical residency at the University of California San Francisco, a surgical research fellowship with the National Cancer Institute, and a clinical fellowship at Memorial Sloan Kettering Cancer Center. After his lengthy tenure at Mayo, he successfully led the re-establishment of a surgical oncology presence at Riverside. In particular, Dr. Donohue made significant progress in practices related to upper gastroenterology, hepatopancreatobiliary cancer and melanoma. He was instrumental in obtaining accreditation from the National Accreditation Program for Breast Centers and maintaining Commission on Cancer accreditation for oncology services.

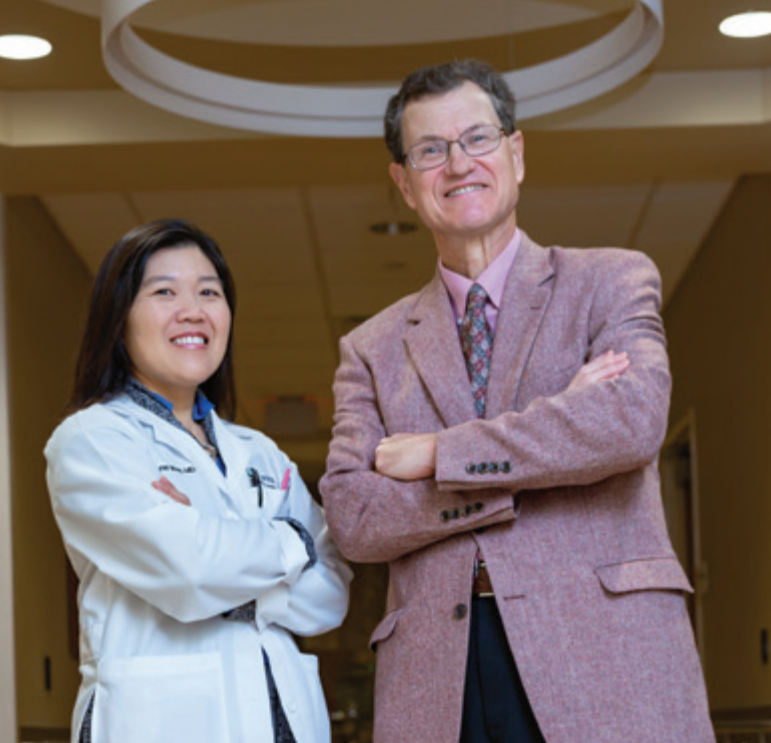
As Dr. Donohue retires at the end of 2018, he confidently leaves the job to a well-qualified

successor, Surgical Oncologist Jane Wey, M.D. "With Dr. Wey's superb training and experience, including her time at the Cleveland Clinic, she possesses the ability to ably perform all of the operative procedures I have been doing, plus offer the option of more complex minimally invasive procedures than I am capable of doing," Dr. Donohue says. "I have been very impressed in observing her early practice at Riverside Health System that she has great patience and adaptability, in addition to considerable operative and clinical skills. Riverside will be a better place given her skills and knowledge."

Dr. Wey arrived at Riverside in the fall of 2018. The timing intentionally overlapped with Dr. Donohue's departure for a smoother transition. "Dr. Donohue has been very helpful to me," Dr. Wey says. By scrubbing-in on cases with him, she was able to become familiar with the people and equipment he routinely works with, as well as his management of patient flow from clinic to operating room to hospital.

"They're some big shoes to fill," Dr. Wey says of her predecessor. "Dr. Donohue is very accomplished. He had a long and prestigious career at Mayo Clinic before bringing a lot of clinical experience, knowledge and technical abilities to this area. He's done a lot in terms of establishing the quality of care initiatives that we need for oncology here. My impression is also that

Surgical Oncology



▲ Surgical Oncologists Jane Wey, M.D., and John Donohue, M.D.

he is the ‘go-to surgeon’ for a lot of different specialties for opinions on complex matters.”

Dr. Wey brings her own set of accomplishments to the program. After undergraduate studies at Harvard, she earned her medical degree from the University of California San Diego School of Medicine. She completed a general surgery residency at the University of California Davis Medical Center and a surgical oncology fellowship at the University of Pittsburgh Medical Center. She also conducted oncology research at M.D. Anderson Cancer Center. Dr. Wey is board-certified by the American Board of Surgery and is a Fellow of the American College of Surgeons.

An experienced surgeon widely published in national medical journals, Dr. Wey specializes in hepatobiliary

surgery, minimally invasive oncologic surgery, sentinel node biopsy, cytoreduction, heated intraperitoneal chemotherapy, gastrectomy and pancreatic surgery. She helped rebuild Louisiana State University’s program following Hurricane Katrina before being recruited to Cleveland Clinic, where she worked for six years before making the move here. “Riverside seemed like a very supportive, personable group,” Dr. Wey says. “Certainly the administration seems very supportive of efforts to build the oncology program.”

One of those current efforts involves HIPEC, or hyperthermic intraperitoneal chemotherapy treatment. This is a complex technical procedure involving cytoreduction and heated chemotherapy delivered directly to the abdomen. It is offered at select locations throughout the country, including Cleveland Clinic where Dr. Wey performed it. “It’s useful for patients with certain types of peritoneal surface malignancies, and we’re bringing it to Riverside,” she says.

Additionally, Dr. Wey’s expertise in the surgical treatment of hepatopancreatobiliary cancers, which affect the liver, pancreas and bile duct systems, will be valuable in growing Riverside’s gastroenterological oncology offerings. “It’s a relatively complicated area in which to operate,” she says. “We’re hoping to build a more rounded group of specialists who have experience and interest in HPB cancers, which will help us to provide better care for those patients.”

The prevalent biological problem of cancer has always captured Dr. Wey’s attention, and she discovered her passion for its surgical treatment in

medical school. “The oncology population of patients is one that I just enjoy working with,” she says. “They’re people who are at a very difficult time in their lives, and I feel like if I can do anything to intervene in that — either providing an operation that may help to improve their overall health and quality of life, or just giving them information that they didn’t previously have — then I can make a huge difference in their lives.” ■

Support Remarkable

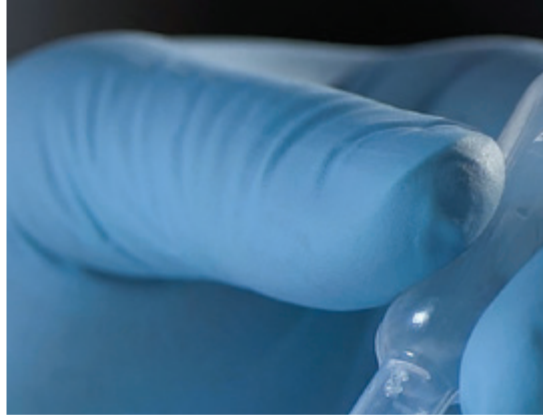
Surgical oncology patients often benefit from Riverside’s Patient Navigation program. Oncology nurses and social workers are able to identify patients who have challenges that could complicate or inhibit their cancer treatments. Riverside Navigators can help patients by:

- **Providing education and information** about the cancer diagnosis and treatment options
- **Addressing financial and transportation challenges**
- **Creating a support system**
- **Helping to navigate the health care system** (multiple appointments and referrals)

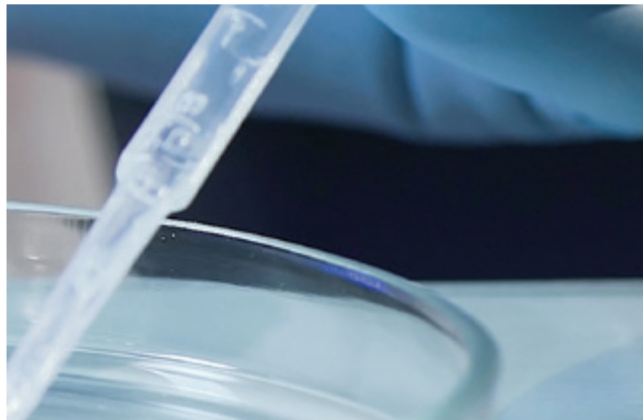
This vital resource is provided at no cost to patients and is available through the generosity of patients, families, community members and corporate partners who give through the Riverside Foundation in support of cancer care.

***Call the Riverside Foundation at 757-234-8740
or visit riversideonline.com/stronger
to help support cancer care in your community.***

The Riverside Pathologist: Scientist, Sleuth and Doctor for All



2018
Pathology



A grain of rice — that’s about the size of a typical tissue sample from which pathologists at Riverside make multifaceted cancer diagnoses every single day. “In this era of medicine, we’re always challenged as pathologists to do more with less,” says Pathologist David Smith, M.D., who serves as practice president and laboratory medical director for Peninsula Pathology Associates. One of the region’s leading independent pathology groups, PPA operates their highly advanced laboratory at Riverside Regional Medical Center in Newport News.

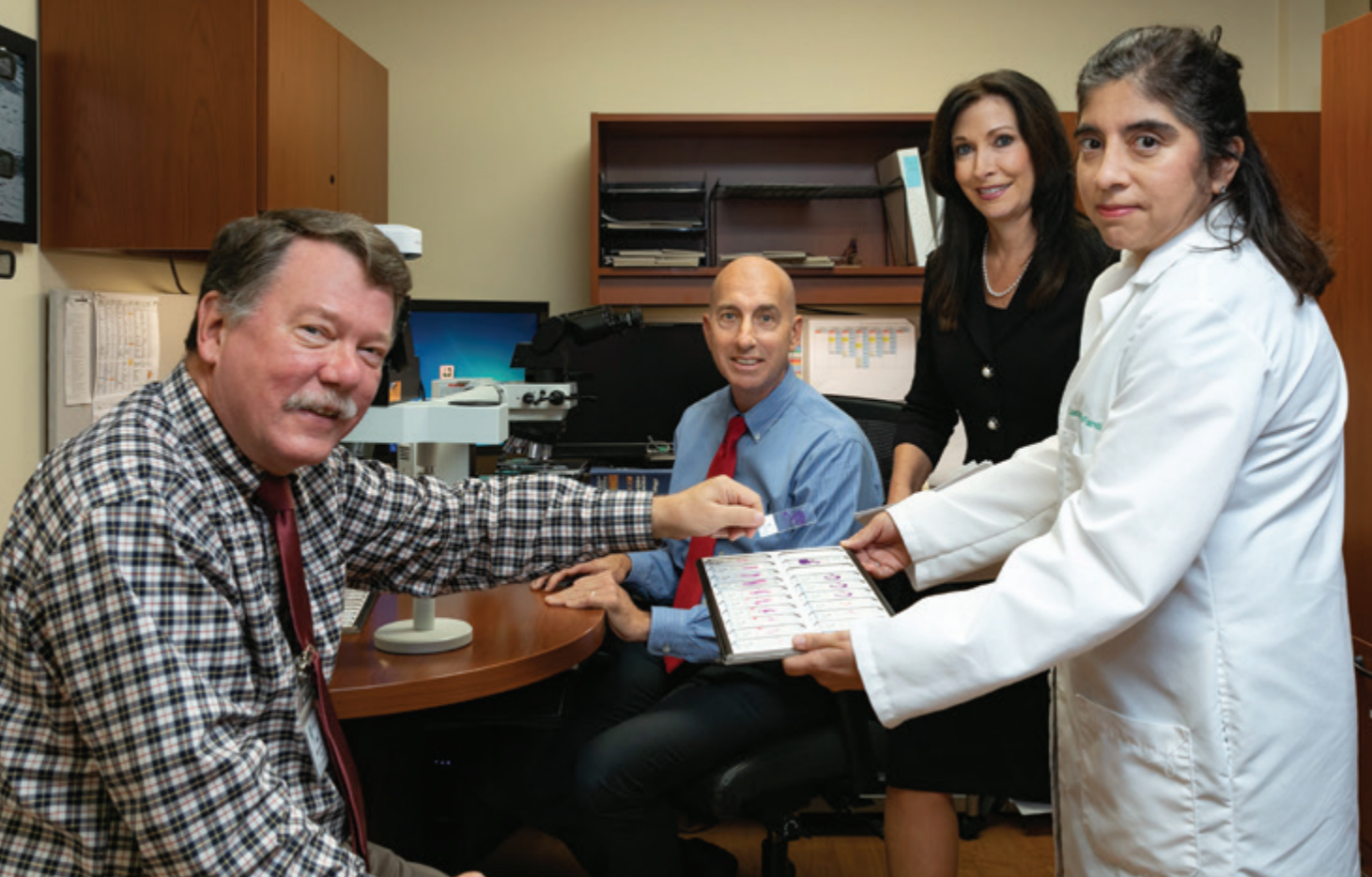
It’s in this lab that every cancer patient within Riverside Health System is officially diagnosed. Biopsies come to the lab in all sizes and types, including whole organs, but often it’s a 1–2 millimeter-size specimen. It will undergo not only a routine diagnostic test, but also potentially multiple techniques to gather molecular genetic information. The pathology report is fundamental to the diagnosis, but it can also be highly influential in the staging and specific treatment of cancer.

When a typical biopsied tissue sample arrives in the pathology department, pathology assistants first describe it. It’s already in a fluid called formalin, which stops cell division and preserves the tissue. From there, it’s put into a special container that allows fluids to flow through. Next it goes into a

processing machine in the histology department, where technicians make the tissue into slides.

This process, which can vary in length, is a process of substitution which gradually transfers the sample from an aqueous solution to an alcohol solution, to an oily solvent called xylene, and finally into hard paraffin wax. The wax is then cut with a microtome into an extremely thin piece that floats on a water bath before being picked up with a glass microscope slide and stained. Histotechnologists are cutting slides every morning at 4 a.m. so that pathologists can begin reviewing them by 6:30 a.m. The group does exceedingly well at turning most diagnoses around within 24 to 48 business hours of specimen receipt, a timeframe monitored by the College of American Pathology.

All of this happens behind the scenes, since most patients never meet the pathologist, one of the most influential physicians in their care. “We are all aware, at that time, we are your doctor,” says Pathologist Theresa Emory, M.D. “I might never meet you, but I know someone is out there worrying to death about what happened yesterday.” Dr. Smith agrees. “I spend at least 80 percent of my time at the microscope looking at hundreds of glass slides and making reports,” he says. “It’s very important for us since we’re not facing the patient to keep in mind that somebody’s out there.”



▲ Riverside Pathologists (l-r): Dr. John Maddox, Dr. David Smith, Dr. Theresa Emory and Dr. Lucy Defanti.

Every Riverside pathologist must have a medical degree, residency training and two types of board certification: anatomic pathology, which analyzes solids, and clinical pathology, which analyzes fluids like blood. “We need to have all of that knowledge so that we can help doctors decide how to treat a patient or what other testing they might want to do,” Dr. Emory says. “We’re kind of the doctor’s doctor in that way.”

Along that line, intraoperative consultations are a significant part of the job. At any time of the day,

night or weekend, surgeons call on pathologists when they need to know if they removed the entire tumor, if they got beyond the tumor with a healthy margin of resection, or if they have a surprise finding during surgery. In a room designated for surgical specimens, the pathologist on call performs an abbreviated version of processing by rapidly freezing a piece of tissue for review while the patient is still under anesthesia in the operating room.

Within 20 minutes, they are expected to examine the tissue, make and review the slide and call the

surgeon back with an answer. “It’s sort of a dance between the surgeon and the pathologist, back and forth, until they have what they need,” Dr. Emory says. “Sometimes it’s one call, sometimes it’s multiple specimens or multiple questions, so that the patient doesn’t have the risk of another surgery. We want to get it fast, but we want to get it right.”

With close to 23,000 patient cases reviewed by PPA each year at Riverside Regional Medical Center, cancer diagnoses occur multiple times a day, most commonly affecting the breast, colon, lung and prostate. “We’re making these life-altering decisions on a daily basis,” says Pathologist Lucy Defanti, M.D. “I always remember the impact that my decision has on those patients — I know that it changes their lives.”

Every new cancer diagnosis is shared with a colleague in the group to confirm certainty. Internal consultations are not required, but they are highly valued and routinely practiced at Riverside. Next, pathologists frequently put the sample under additional testing, such as a battery of special staining that helps determine the site where the cancer originated. Other molecular testing directs the specific type of therapy that will be most effective. The task of assigning a standardized stage, or categorizing exactly how advanced the disease is, can also be performed by a pathologist for certain types of cancer.

Riverside pathologists also conduct flow cytometry, which analyzes cells from bone marrow, lymph nodes and blood samples — often to determine

“I have been honored to work with Peninsula Pathology Associates for more than 25 years. There have been great advantages in knowing the expertise and approachability of these local pathologists. When I have clinical questions about results, or even obtaining an opinion concerning patient evaluation and care, they have always been available by phone, email or by visit to their department. I have the utmost confidence in their services and am grateful for the opportunity to work with this experienced team.”

Stanley Yeatts II, M.D.
**Riverside Partners in
Women’s Health — Warwick**

types of leukemia or lymphoma. “We’ve had the only non-university, hospital-based flow cytometry lab in the Commonwealth for the past 30 years,” says Pathologist John Maddox, M.D., who has obtained nearly 4,000 marrow biopsies and examined thousands more sent by others.

On par with advanced university labs, PPA only has to send specimens out to reference labs when they are so unusual that the volume is too low to bring in-house. “Our Riverside anatomic pathology laboratory is state-of-the-art,” Dr. Smith says. “It’s automated. We’ve added a lot of features to ensure patient safety, like bar coding and double safety checks. We’ve been able to bring in several advanced techniques that really enhance the quality of patient care at Riverside.” Mindful of the expense and work involved in implementing new tests and equipment, the team also recognizes that keeping things in-house enables overnight and two-day turnaround times. “Ultimately, the patient is waiting by the phone,” Dr. Smith says.

Cost-effectiveness also comes into play when deciding which tests to conduct. “As pathologists, we are aware of what tests cost,” Dr. Smith says. “We try to be conservative and prioritize, but we think it does add value.” Dr. Emory puts it into perspective. “About 80 percent of medical decisions originate from a laboratory test, whether surgical pathology or a clinical lab, but lab medicine costs are only about 2–5 percent of the entire cost of all health care nationally,” she says. “So you get 80 percent of your answers from 2–5 percent of the cost.”

Beyond the lab, pathologists are also an integral part of all Riverside tumor boards, in which unusual or complex cases are presented to an interdisciplinary conference of medical providers to direct care. “We’re trying to collaborate with all the different specialties together to answer questions about how we can improve this individual patient’s care,” Dr. Smith says. “It’s taking patient-centered care to a higher level,” Dr. Emory adds. “They become the center of the wheel, and we are the spokes.”

Every part of the pathologist’s job is linked to another part of the patient’s care. Even before they contribute to staging and treatment decisions, the pathologist’s diagnosis relies heavily on the patient’s electronic medical record for insight on their general health — things like clinical history, lab notes, radiology, medications, previous illnesses and even lifestyle choices — and the potential interactions. “It’s the pathologist who helps put all the clues together to solve the problem,” Dr. Emory says. “It’s really the whole idea of comprehensive care.” ■

22,500

**total specimens reviewed by
pathology per year on average**



Support Remarkable

Pathologists don't often have the direct connection to patients like other physicians, due to the nature of their work. However, they do have first-hand knowledge of the significant needs of these patients throughout the course of their care. Dr. Theresa Emory, member of the Riverside Foundation Board of Directors, recently facilitated a joint contribution from her partners at Peninsula Pathology Associates to Riverside's Cancer Care program. "The Riverside Foundation provides support for patients for things not covered by insurance," Dr. Emory says. "This is one way to say we really care about patients in a personal way."

Call the Riverside Foundation at 757-234-8740 or visit riversideonline.com/stronger to help support cancer care in your community.

**Approx.
700**

intraoperative consultations per year on average

2,600

cancer specimens reviewed by pathology per year on average

**96% in
48 hours**

average testing turnaround time

92%

of surgical specimens reviewed within 20 minutes

100

tissue biopsies per day

10

tissue biopsies per day to rule out cancer

Riverside Patients Benefit from World-Renowned Radiosurgery Pioneer C. Ronald Kersh, M.D.

“I was in the right place at the right time,” says Ronald Kersh, M.D. That place was the University of Virginia and the year was 1989. Dr. Kersh was a young radiation oncologist who had been practicing and teaching at UVA for three years following medical school and residency at the Medical College of Virginia. “At that time, there were only three Gamma Knife radiosurgery machines in the world and we not only got the fourth machine, but we literally got the world’s expert from Sweden along with it,” Dr. Kersh says.

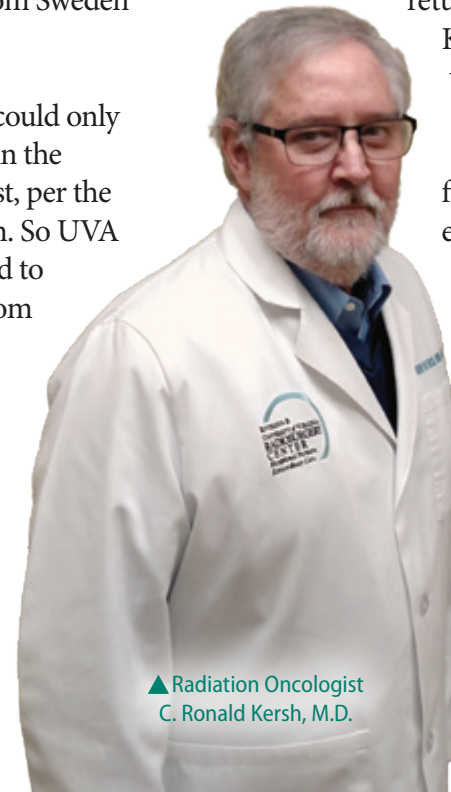
Dr. Ladislau Steiner, the expert, could only operate the machine in the U.S. in the presence of a radiation oncologist, per the Nuclear Regulatory Commission. So UVA needed to provide staff, but it had to be someone who would work from 6 a.m. until midnight, which is how long it took to complete only two cases due to slow computer processing speeds. “I was in my 30s and I would do it,” Dr. Kersh says. “I looked at it as a chance to learn.”

And learn he did. Dr. Kersh completed the first 2,000 cases with Dr. Steiner, working

18-hour days for three years. “It’s not often in life that you really get to say you worked with the world’s expert in anything,” Dr. Kersh says.

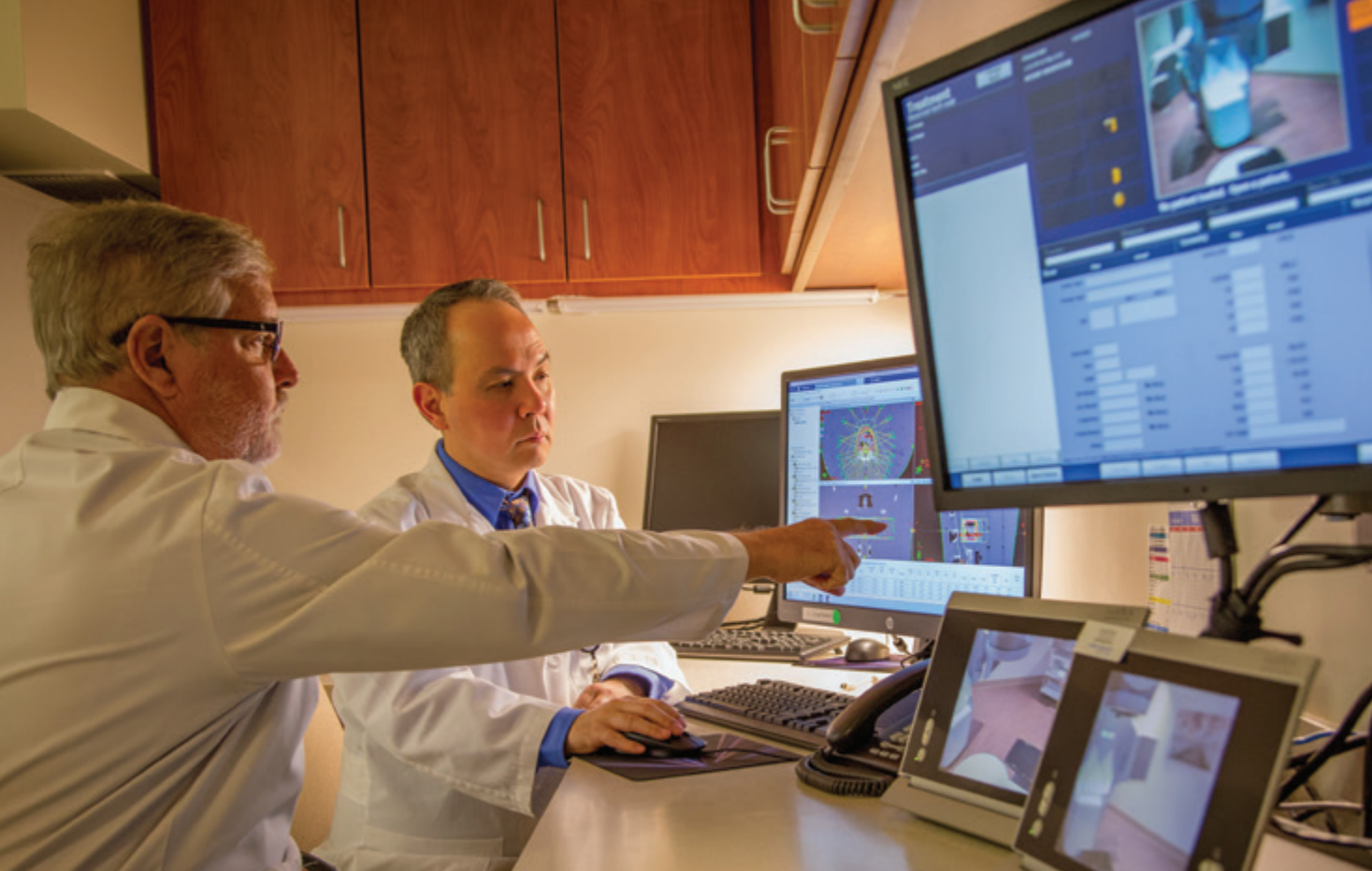
With this superb training under his belt, Dr. Kersh eventually left Charlottesville to start Riverside Health System’s Williamsburg radiation center. But his passion for teaching residents kept him on UVA’s faculty (and still does), and he periodically returned to campus to maintain his Gamma Knife skills. “I was down here about six years and realized I was sending a lot of patients there,” Dr. Kersh says. So, in 2002, he worked with administrators from Riverside and the university to explore the concept of a joint radiosurgery venture.

Dr. Kersh’s idea became a reality in 2006 with the opening of the Riverside and University of Virginia Radiosurgery Center on the campus of Riverside Regional Medical Center in Newport News. Its first focus was Gamma Knife treatment for benign and malignant brain tumors, and then body radiosurgery with the Synergy S linear accelerator as that technology first emerged and



▲ Radiation Oncologist
C. Ronald Kersh, M.D.

Radiosurgery Center



▲ Radiation Oncologist C. Ronald Kersh, M.D., (left) and Medical Physicist Kelly Spencer, MS, DABMP, DABR, review a patient treatment plan.

allowed the treatment of previously radiated areas. In 2012, Riverside and UVA welcomed Chesapeake Regional Medical Center to the existing partnership, and the center name was changed to the Chesapeake Regional, Riverside and University of Virginia Radiosurgery Center.

A standalone, dedicated radiosurgery center with these two machines makes the facility incredibly unique among other radiation centers across the country. In fact, a facility like Riverside's doesn't exist in the southeastern U.S., according to Dr.

Kersh. "When most centers do radiosurgery, they'll do at most two cases at the end of their routine day of normal day-to-day radiation oncology," Dr. Kersh explains. "We have four radiation centers where my partners do traditional radiation very well. But the Radiosurgery Center has a different building and staff, so we're treating seven or eight patients a day with this technology. Most radiation oncology departments wouldn't dream of doing that in one day. It's hard to shift gears because the treatment is different — different physics, different doses, different everything. So we are very fortunate."

Dr. Kersh's innovative work has earned him global recognition as an expert in his field. During his career, he has served as a proctor in the founding of seven radiosurgery centers throughout the world, including Puerto Rico, Australia and the Dominican Republic. He's helped establish four programs in Russia, including one that operates the only radiation center for a population of six million, treating an astounding 150 patients a day with two machines.

He has lectured on body tumor radiosurgery in Germany, South Korea, Australia, Paris, London, Prague, Istanbul, Bulgaria, Moscow and St. Petersburg, and given over 40 invited lectures in the U.S. "I tend to be very lucky," the native Virginian says humbly. "I've been able to see the world on two machines."

Dr. Kersh has not only established new facilities, but also influenced — and even initiated — changes in standards of treatment. While hosting the first International Gamma Knife Society meeting in 1989, he and leading expert Dr. Steiner presented one of the first-ever papers about radiosurgical treatment of metastatic disease. But it was Dr. Kersh who had to convince Steiner to consider this drastic change from the previous standard of care, which radiated the entire brain. "It's been fun to be part of that revolution," he says. About half of Gamma Knife treatments today are aimed at metastatic tumors.

That's not the only revolution. The Radiosurgery Center was the only true nonacademic center to be part of a recent international consortium on spinal tumors, resulting in several publications and many worldwide speaking invitations for Dr. Kersh. "We

were one of the first to come up with the concept that you could re-treat a previously radiated spine with radiosurgery without risk of paralysis,” Dr. Kersh says. “We had re-treated 280 cases — more than any of the academic centers.”

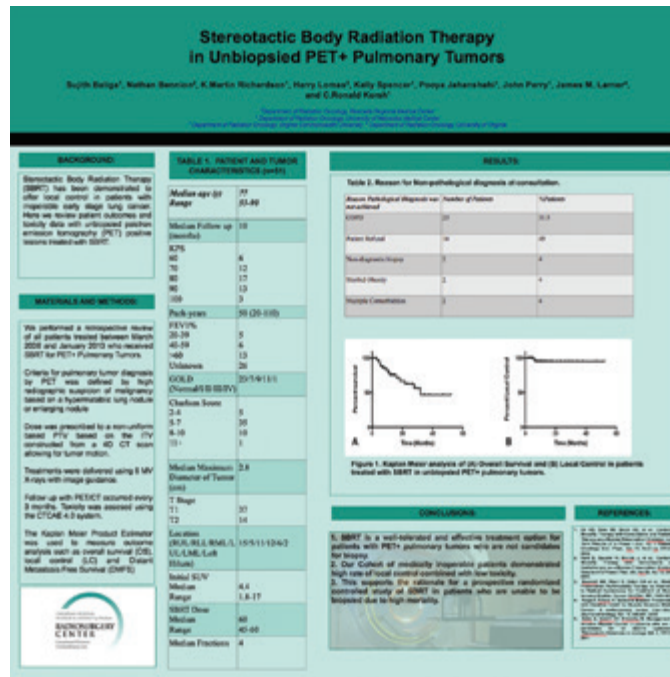
Likewise for lung cancer, Dr. Kersh’s team published results on a series of more than 100 central lung tumors treated with no complications. The center was one of the first nationwide to treat such tumors. Overall, the center’s more than 900 lung tumor treatments make it the most commonly treated cancer site in the body, frequently untreatable via traditional surgery. “Now we can cure them 90 percent of the time,” Dr. Kersh says.

In only 12 years, the Chesapeake Regional, Riverside and University of Virginia Radiosurgery Center has made a groundbreaking difference in oncology care under Dr. Kersh’s leadership. His team has made great strides in the ability to treat increasingly acute, complex disease, and Riverside physicians are increasingly recommending it for their patients, who benefit most of all. ■

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The opportunities for saving lives and improving quality of life through new medical techniques and leading-edge science have never been greater. As a non-profit health system, charitable contributions in gratitude for life-saving care allow us to continually provide new and emerging technology to treat cancer in the communities we serve.

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▲ Publishing studies allows researchers to share their work with their peers. Drs. Spencer, Kersh and Bennion (a resident at the time) were co-authors of the following study: “Stereotactic Body Radiation Therapy in Unbiopsied PET+ Pulmonary Tumors.” The image above is indicative of how a study is presented on a board at a conference.

▼ Radiation Oncologist C. Ronald Kersh, M.D. (below left), Neurosurgeon William McAllister, M.D. and Randi Cole, BSN, RN, consult with a patient prior to Gamma Knife treatment.



Top Medical Residents Work with Dr. Kersh to Produce Prominent Clinical Research

Throughout his traveling, proctoring and lecturing, Dr. Kersh always longs to get back to patient care at Riverside — and his second love, teaching medical residents. “It’s incredibly satisfying,” he says. “Young doctors keep you on your toes. These men and women are bright and they want to analyze data, write papers and do research.”

Riverside’s popular transitional-year oncology residency program provides a wide breadth of unique exposure that includes radiosurgery and the opportunity to learn clinical research before entering full residency. Thanks in part to these residents, the Chesapeake Regional, Riverside and University of Virginia Radiosurgery Center leads Riverside Health System in clinical research, with frequent resident presentations at national meetings.

For each of the past seven years, Dr. Kersh has worked with one to three transitional residents, all headed for prestigious residency programs. “Radiation oncology is one of the most highly competitive specialties by far, with only 100 new board-certified radiation oncologists per year in the nation,” he says. “You have to be in the top 10 percent of your med school class to even apply to residency.” Three of Dr. Kersh’s residents graduated first in their entire medical school.

“People are now saying to these students, ‘Have you heard about Riverside?’” he says. “And Riverside not only gains research, but also the benefit of attracting doctors who want to come back and work here.” In the meantime, Dr. Kersh happily obliges when former residents call him regularly for advice.

One of them, Chesapeake native Nathan Bennion, M.D., completed the program in 2013 after graduating from the Virginia Commonwealth University School of Medicine and hearing about Riverside’s strength in radiosurgery. “The program had a widespread reputation for a solid education in a congenial atmosphere with customizable rotations,” Dr. Bennion says.



▲ Nathan Bennion, M.D.

“Dr. Kersh mentored me in clinical care and scientific pursuits, and the large radiosurgery volumes provided unique opportunities for research,” he says. “We constructed the largest, single-center patient database for spinal stereotactic radiosurgery. I presented the data at a national meeting and it was eventually published in a peer-reviewed journal.” In conjunction, the Radiosurgery Center became the largest contributor to an international database that analyzed the efficacy and safety of the emerging modality.

“Five years later, I am grateful to my mentors there, specifically Dr. Kersh, for his example as a clinician, mentor and friend,” Dr. Bennion says. “I believe that his mentorship positively affects the outcomes of patients all over the country through the residents he has trained.” Dr. Bennion went on to complete a radiation oncology residency at the University of Nebraska Medical Center, where he is now an assistant professor. ■

Virginia's First Varian Edge Machine Goes Hand-in-Hand with Expertise from Riverside's Medical Physicists

Board-certified Medical Physicist Kelly Spencer, MS, DABMP, DABR, is celebrating his tenth anniversary with the Chesapeake Regional, Riverside and University of Virginia Radiosurgery Center. A year after the center opened in 2006 with the Elekta Gamma Knife for brain treatment, the Elekta Synergy S linear accelerator was brought online to treat lesions in the body using stereotactic radiation therapy. “Riverside and the Radiosurgery Center’s primary radiation oncologist, Dr. C. Ronald Kersh, felt that there was a definite need in the community for this type of specialized radiation therapy,” Kelly says. When they quickly began treating many more patients than expected, Kelly was hired to join board-certified Medical Physicist Martin Richardson, MS, DABR. Later, with continued growth, board-certified Medical Physicist Trip Hornsmith, MS, DABR, joined the team.

Every day, this team of three physicists takes on the important responsibility of ensuring that the correct amount of physician-ordered radiation reaches the correct target site while minimizing radiation to the healthy tissue surrounding it. There’s a lot that goes into that, of course. “Our job is to develop policies and procedures, quality control and quality assurance, with the help of the radiation therapy staff and radiation oncologists, to

make sure that all of our equipment is running properly so we can deliver treatment to the patient safely, accurately and effectively,” Kelly says. A physicist is also directly involved in each patient’s care, from planning treatment to personally monitoring it.

Another important aspect of the job involves the implementation of new equipment. “Before treating any patient, we put the equipment through its paces — characterize it, baseline it, understand how it’s delivering the radiation and make sure it continues to operate as expected,” Kelly says. But even before that stage, the physicists help determine facility needs and make expert recommendations as to what type of equipment should be purchased. They were pivotal in the decision to bring in the new Varian Edge machine — the first in Virginia and one of only 60 in the country — launched earlier this year.

Its predecessor, the Synergy S, had reached the typical 10-year lifespan mark of a radiation therapy LINAC, prompting Riverside to look for a new machine. With only a handful of stereotactic equipment manufacturers in the world, the two primary choices were Elekta, manufacturer of the Synergy S, and Varian. “Elekta’s updated model was a one-size-fits-all for traditional external beam radiotherapy,” Kelly says.



Leading-Edge
Technology





▲ A patient is fully prepped prior to a treatment via the Varian Edge, a state-of-the-art linear accelerator.

Varian's base model, the TrueBeam, is also primarily intended for standard radiation therapy, which is what most radiation centers will purchase because they do very little stereotactic radiation. In contrast, Riverside's Radiosurgery Center uniquely specializes only in stereotactic treatments (which deliver higher, more targeted doses in fewer sessions), while all other Riverside cancer centers provide traditional radiation. Varian's upgraded model, the Edge, is based on their TrueBeam platform but specialized for stereotactic treatment, and its features made it a perfect match for Riverside's program.

For example, the all-angle movement capabilities of the robotic couch provide the ability to correct for

small variations in patient setup from session to session. Real-time imaging allows continuous patient monitoring. The multi-leaf collimator, which shapes the radiation field to match a particular tumor's outline, reduces the leaf width from 4 to 2.5 millimeters, allowing physicists to make sharp, intricate shapes very precisely, blocking surrounding areas.

"When we started with the Synergy S, we had what we felt was the best of the breed," Kelly says. "It was a specialized LINAC at that time with a robotic couch for positioning the patient and cone-beam CT imaging capabilities to help align patients." But those things were add-on attachments to the system, which

made the workflow slightly disjointed, as did separate treatment planning and record and verify systems. All of this required extensive quality assurance measures at each step to ensure proper treatment.

With the Varian Edge, all of these features are now integrated. Therapists can directly access the patient's treatment plan, complete imaging, and reposition the patient all from the console panel in front of them. "We don't have to push data around anymore — all of the systems share a single database." Kelly says. "Rather than being bogged down by the technology, therapists can work with it and keep their attention on the patient, which is the most important thing. It was obvious that Varian had put a lot of thought into how the user works with the machine and the patient's experience while receiving treatment." This technology integration has already improved efficiency and patient comfort by reducing treatment time.

Kelly and the team received extensive training, both at Varian's Las Vegas training facility and on-site prior to and during the first treatment in June 2018. Through October, the center transitioned from the Synergy S to the Varian Edge, alternating the use of each machine to complete cases already planned and in progress. Now, with the new equipment in full force and treating 25 new patients per month, the caliber of cancer care at Riverside has been even further elevated among other programs in the region and even in the country.

"For the last 12 years, the team has worked really hard to develop a world-class center-of-excellence-type

stereotactic radiation therapy program for our patients that we can be proud of,” Kelly says. “We’ve turned metastatic cancer into a chronic disease. People who had metastatic cancer in the past weren’t expected to live very long or have a very good quality of life. We feel like we’ve given them a chance to do both — so much so that we have patients coming back years later. It’s unfortunate when they have another disease site, but they’re alive. It’s wonderful that we can use the new Edge technology we have now and say, ‘Yes, we can help you again,’ and in some cases maybe even better now.” ■

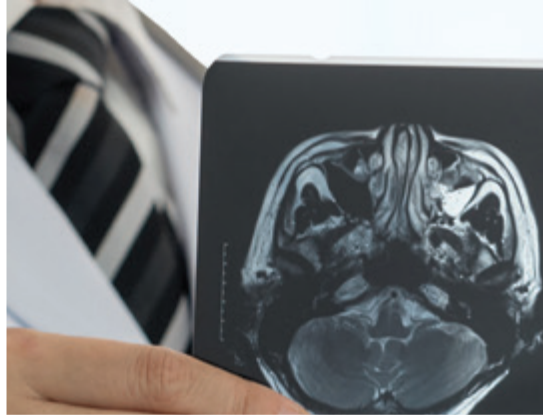
▼The new technology includes a consolidated console that allows simultaneous access to multiple aspects of the patient’s treatment. This improves efficiency, safety and patient comfort.



The Varian Edge Treatment Planning Process

- 1 Creation of patient immobilization device:** The patient lies comfortably in a soft cradle, which is then emptied of air, hardening and molding to his/her body to allow accurate positioning. A CT scan of the patient in this device is taken and sent into the planning system.
- 2 The CT scan is divided and analyzed** so the patient can be seen in all directions. Physicists use a model of the LINAC to determine how to position it around the patient and get the radiation into the tumor while missing healthy tissue. This process includes consultation with the radiation oncologist and can take from three days to two weeks, depending on complexity.
- 3 The physicist and radiation oncologist** formally agree on the treatment plan that is best for the patient.
- 4 Quality Assurance:** The plan is tested on the machine, measured and quantified to make sure the intended delivery occurs.
- 5 Dry run with the patient:** The patient is imaged and repositioned as if for treatment. The geometry of the machine is checked to ensure it does not come in contact with the patient or couch during movement.
- 6 The patient begins treatment** at the next appointment. ■

Gamma Knife Radiosurgery Continues to Reshape Local Treatment for Brain Tumors



Brain Cancer



▲ Neurosurgeon William McAllister, M.D. (left), with Radiation Oncologist C. Ronald Kersh, M.D.

Since 2002, Neurosurgeon William McAllister, M.D., has become an integral part of Riverside's pioneering introduction and increasing growth of radiosurgery to treat cancer. "The thing that sets us apart, and has since we opened the radiosurgery center in 2006, is that we are one of the only hospitals [in Hampton Roads] that has the ability to do radiosurgery both on the body and the brain, with both technologies under one roof," Dr. McAllister says.

Rather than excising tumors with a blade, radiosurgery uses a high dose of precisely targeted radiation to destroy select areas of tissue. At the Chesapeake Regional, Riverside and University of Virginia Radiosurgery Center in Newport News, two different machines enable delivery of this advanced treatment. "We have one of the best generations of the Gamma Knife, the Perfxion unit,

which is a brain-only device," Dr. McAllister says. "And we have a new device, the Varian Edge, which changes the dynamics of radiosurgery for body lesions." Lesions that previously required risky operations in prior years can now be treated with focused radiation instead.

When its use is possible, radiosurgery is often preferred over traditional surgery, and in some cases also over conventional fractionated radiation, which includes disadvantages like daily treatment sessions lasting for three to six weeks. In contrast, radiosurgery typically involves only three to five sessions total. "They're quicker, they're more precise, and because they're more precise, the radiation toxicity associated with them is less. And they seem to be equally, if not more, effective than conventional radiation," Dr. McAllister says.

As a neurosurgeon, Dr. McAllister's expertise resides in Gamma Knife radiosurgery for the brain. He completed specialized training a year after the Radiosurgery Center opened, and today he is joined by several colleagues. "As of right now, we've treated more than 1,600 patients with the Gamma Knife since we started," Dr. McAllister says. Of those, he says, approximately 65 percent are for brain metastases (secondary tumors) with the primary site of origin usually being the lung or breast. The



▲ Neurosurgeon William McAllister, M.D., consults with a patient prior to treatment.

remainder of cases consists of benign tumors and other non-cancerous conditions.

The Gamma Knife’s obvious benefits do not apply to every case, however. In order to respond successfully, brain tumors generally must be less than three centimeters in circumference, definable by a discrete margin, and few in number. “If you’ve got 20 small tumors that you can see, you probably have multiple microscopic tumors that you can’t see, and therefore need something more pervasive that covers the whole territory,” Dr. McAllister says. “In that case, doing a more inclusive, whole-brain type of radiation treatment is more effective. So it all hinges on early detection and early treatment, when you can define them and when they haven’t proliferated.”

That being said, Dr. McAllister feels that Gamma Knife radiosurgery is still an underutilized technology. “The real advantage of Gamma Knife as opposed to other forms of radiation and surgery is the side effect profile,” he says. “A lot of folks don’t know to ask about this. Whole-brain radiation works

up-front for months, but the issue comes in when people start to live longer than that.”

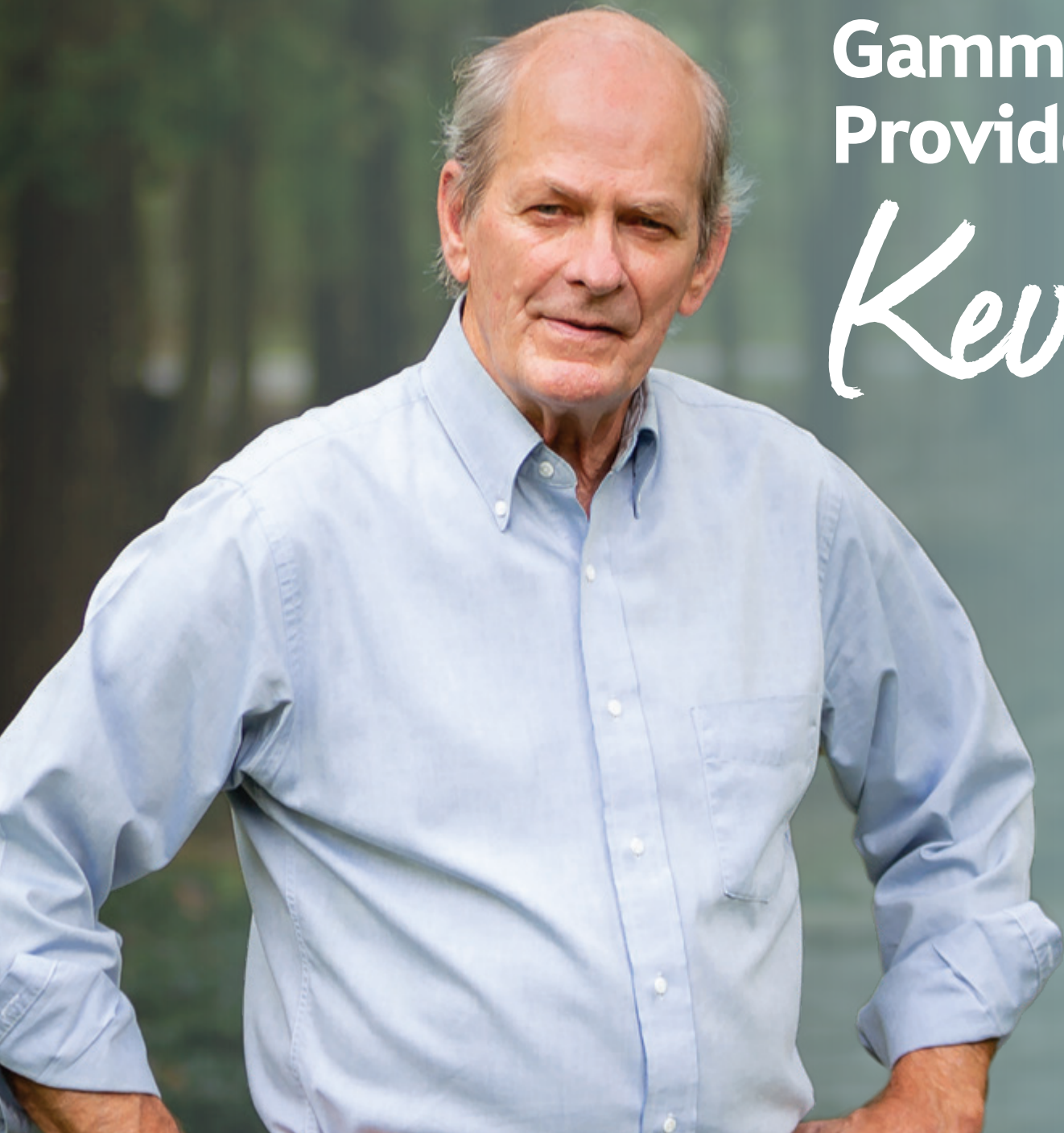
Previously, the average survival of a patient with brain metastasis was measured in months, not years — even with whole-brain radiation. “That has changed because now there are more therapies that can control it and keep it from spreading further,” Dr. McAllister says. “The medical therapies for stage-four cancers, lung and breast in particular, have gotten so much better in the last 10–15 years.”

For example, Dr. McAllister has been treating a patient with melanoma that spread to her brain approximately two years ago. “Melanoma with metastasis in the brain used to be considered untreatable in many cases because it wasn’t sensitive to conventional radiation,” he says. “Now with radiosurgery and advances in immunotherapy, we can control metastatic melanoma for years.” Dr. McAllister’s extensive experience with the Gamma Knife has made him a strong believer in its value, and he hopes that others will continue to follow suit. ■

Gamma Knife Cases By Year

Year	Total	Metastases	Meningioma	Acoustic Neuroma	Pituitary Adenoma	Trigeminal Neuralgia	Arteriovenous Malformation	Other
2018*	120	76	17	7	3	11	2	4
2017	161	112	23	10	4	3	7	2
2016	139	96	25	5	1	8	1	3
2015	147	97	26	6	5	5	3	5
2014	120	78	12	7	4	11	4	4

*2018 data taken through 12/21/2018



Gamma Knife Treatment Provides Fast Relief for *Kevin Nealon*

When Kevin Nealon, a 66-year-old Newport News resident, started having trouble with his legs and balance, followed quickly by an inability to write, he and his wife were concerned he might have Parkinson's disease. He visited his primary care physician and a brain scan was scheduled.

Immediately after his scan, Kevin was instructed to go see his primary care doctor, so he knew the news was not good. She informed him that he had brain cancer and referred him to Dr. William McAllister, who saw Kevin the same day.

Dr. McAllister told Kevin that he was a candidate for Gamma Knife radiosurgery. He was previously unfamiliar with the term "radiosurgery," but he was scheduled for the procedure the very next morning. "Within 24 hours I had a test, was diagnosed and received the Gamma Knife treatment," explains Kevin. "That was really something."

Kevin describes the procedure as simple. He was at the Radiosurgery Center for about three hours and he and his wife went to breakfast immediately following the appointment. Within two weeks of the procedure, Kevin's legs were working better and his handwriting — which took a little longer — has now come back.

Already a cancer survivor, Kevin was diagnosed with lung cancer just three years ago. Surgeons removed his left upper lobe and he then went through chemotherapy and radiation treatments. He's been cancer-free, but he remembers the long and tough recovery that followed.

Since having Gamma Knife radiosurgery in July, Kevin had a follow-up MRI and learned his brain tumor is currently 50–60 percent smaller and no new tumors have developed. That is promising news.

“Treating brain cancer was better than treating lung cancer,” Kevin says. “I prefer Gamma Knife surgery any day of the week.”

The Nealons describe the staff at the Radiosurgery Center as friendly and caring. “The staff gives you a lot of confidence in the treatment because they explain everything so well,” Kevin adds.

Kevin's cancer will be continuously monitored with follow-up MRI scans. With his initial symptoms improved, he is happy to be able to work in his yard and enjoy time with family. ■

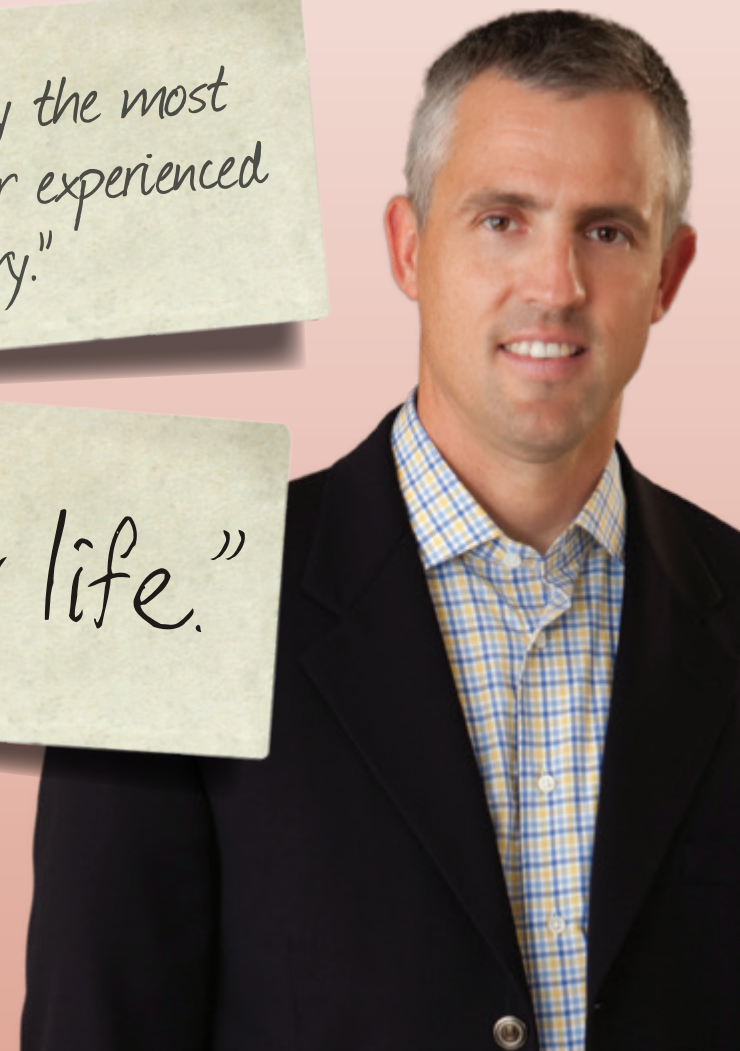
Support Remarkable

Dr. McAllister has been nominated as a Riverside Champion of Caring and has received numerous donations in gratitude for the care provided to his patients. Here's what some have said about him.

“Dr. McAllister took away the most excruciating pain I have ever experienced with brain surgery.”

“He saved my life.”

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William Irvin, M.D., Leads Comprehensive, Cutting-Edge GYN Oncology Program



Gynecologic Cancer

William Irvin, M.D., was a graduate student at the University of Virginia's Darden School of Business when he unexpectedly lost his 59-year-old father, a Norfolk obstetrician and gynecologist. "I was walking near my home the day after he died, trying to get my thoughts together," Dr. Irvin recalls. "I saw two little children playing out in the yard and stopped for a second. Their mother recognized me and said, 'Your father delivered both of those children.' It just dawned on me that through the field of medicine, you can make contributions that live on after you're gone. Medicine is a unique way to directly impact the quality of other people's lives, and I think the primary goal in our lives should be to make the world a better place."

Inspired by this life-altering realization, Dr. Irvin left business school to complete pre-med courses. He went on to graduate from UVA's School of Medicine in 1989, remaining there to complete an obstetrics and gynecology residency in 1993. In the meantime, he departed slightly from his father's footsteps, developing a special interest in the subspecialty of gynecologic oncology — and pursuing that interest through fellowship training at Loyola University Medical Center in Chicago. Upon completion, he returned to Charlottesville to practice and teach at UVA from 1997 to 2006.

During his last two years at UVA, Dr. Irvin was recruited by Riverside Health System in an effort to bring a much-needed gynecologic oncology program to the area. He practiced in Newport News two days a week for two years and, as the demand for his services quickly became evident, Riverside asked him to develop the program as a full-time director in 2006.

"It's grown very quickly," Dr. Irvin says. "We have done our best to not just have a gynecologic oncology program, but to truly have a comprehensive gynecologic oncology program of excellence. What I'm most proud of is that we've been able to maintain cutting-edge therapies based upon evidence-based data and randomized prospective clinical trials, enabling us to provide the most current and up-to-date care and management of women with all forms of gynecologic cancers."

For example, Riverside's treatment offerings for ovarian cancer include intraperitoneal chemotherapy, dose-dense intravenous chemotherapy and — most recently — heated intraperitoneal chemotherapy. Access to clinical trials is also available. Surgical offerings include not only radical pelvic resection of disease, but also extensive debulking in the upper abdomen. The latter involves complicated surgeries offered by very few institutions, but Dr. Irvin has the



▲ Gynecologic Oncologist William Irvin, M.D.

expertise to surgically cytoreduce more than 90 percent of his patients to zero remaining evidence of ovarian cancer, which is critical to their long-term survival. “It’s up to us to enable patients to have that level of debulking, from the floor of the pelvis to the top of the diaphragm, for maximal tumor resection and cytoreduction,” he says.

Advanced care for cervical, vulvar and endometrial cancer — the most common of all — includes use of the da Vinci robotic-assisted surgical system for laparoscopic and minimally invasive surgery, preferred for its faster recovery times, shorter hospital stays, less postoperative discomfort and better cosmetic outcomes. Cutting-edge radiation oncology for gynecologic patients includes conventional radiation therapy, high-dose rate brachytherapy,

intensity-modulated radiation therapy and stereotactic radiosurgery.

Dr. Irvin loves his job on many levels. “I derive great satisfaction from being able to cure disease and enable people to live a normal life with their children and grandchildren — and experience the life events that we all want to experience before we leave this world,” he says. “The nice thing about GYN oncology is that you follow patients for several years, so you get to know them and become a part of their lives. I find that very rewarding.” He also enjoys the challenge of surgical procedures. “They never get easier,” Dr. Irvin says as he reflects on a seven-hour surgery the previous night, in which he removed all visible disease from a 36-year-old with advanced-stage cervical cancer.

During those surgeries and clinic visits, there is yet another aspect that has brought Dr. Irvin just as much fulfillment since the beginning of his career — that is, the care of OB/GYN residents. He routinely works with residents from Riverside’s program. “It is always satisfying to see young residents learn and grow, become good surgeons and learn to manage complicated patients in the clinic through our interaction — and really become excited about GYN oncology,” he says. Dr. Irvin also serves as a clinical instructor for Eastern Virginia Medical School and the Edward Via College of Osteopathic Medicine.

As Riverside’s only gynecologic oncologist, Dr. Irvin’s vision for the future is to expand the program, an effort already underway with the recruitment of an additional fellowship-trained, board-eligible

gynecologic oncologist and the recent hiring of a gynecologic nurse practitioner and a nurse navigator.

“I think that what makes Riverside unique is that we offer a comprehensive gynecologic cancer care program for women, from the beginning of the diagnosis to the completion of therapy,” Dr. Irvin says. “We’ve made sure we have the most advanced, current therapies available in terms of surgical management, chemotherapeutic management and radiation oncology, in conjunction with a high level of hospital care to ensure safety and avoid complications. All of these components enable us to tailor the patient’s care so that we don’t use the one-size-fits-all mentality, but rather provide individualized care to each patient on the basis of their specific needs.” ■

Support Remarkable

Philanthropic support of our cancer program helps provide special support services at no cost to address the needs of our patients, family and other caregivers. Conventional cancer treatment and evidence-based research are coupled with a range of therapies, counseling, personalized guidance and palliative care. This combined approach helps to manage the physical and emotional impacts of cancer and improve quality of life. In 2017 over \$970,000 was invested to sustain and expand these resources for patients fighting cancer.

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One Family Thanks Dr. Irvin for *Saving Two Lives*



Tabb resident Susan Beulow was referred to Dr. Irvin after a suspicious Pap test result in 2011. He diagnosed the 60-year-old with cervical cancer, though thankfully it was caught early. Susan underwent surgery followed by radiation therapy to eradicate her cancer. “Dr. Irvin is a wonderful doctor,” Susan says. “His whole staff is, too. He was really good about explaining everything to me and my husband. I’d recommend him to anybody.” She just didn’t think she’d have to recommend him to her own daughter two years later.

Lisa Martin lives two doors down from her mother, Susan. At age 37, nine years since her last gynecologic exam, Lisa experienced severe cervical bleeding. When her gynecologist recommended a specialist, Lisa’s mom was adamant that she see Dr. Irvin, who immediately evaluated her and ran some tests.

◀ Lisa Martin (left) and Susan Beulow.

But before Lisa’s results were back, complications resulted in an ambulance trip to Riverside Regional Medical Center, where Dr. Irvin found a mass on Lisa’s cervix and scheduled a hysterectomy. “He came in the morning of the surgery and he had gotten the test results back — it was cancer,” Lisa says. Advanced almost to stage IV, the disease now required a radical hysterectomy, which Dr. Irvin performed that day.

“When my daughter found out,” Susan says, “Dr. Irvin explained [to me at length] that it was not my fault — it was not hereditary.”

“He is a wonderful man,” Lisa agrees. “I think knowing that my mom had gone through it with him, I was just already so comfortable because he knew the family already. He is the best.”

Lisa also underwent radiation and chemotherapy at the Riverside Cancer Care Center in Newport News. “It was all done right there at Riverside, all in one building right there by Dr. Irvin’s office, so it’s perfect,” Lisa says. “And they worked it out really well so all of my appointments were in the same day. With all that I was going through, all the way across the board, Riverside has been excellent. They took good care of me and took good care of my mom.”

Five years later, Lisa is quick to encourage all her female friends to keep up with their annual gynecology exams. And thanks to Riverside, both mother and daughter are cancer-free. ■

Low-Dose CT Screening Enables Early Detection of Lung Cancer

Lung Cancer

Lung cancer is today's leading fatal cancer in adults, in part because the disease is usually advanced by the time symptoms begin. To combat this problem, Riverside Health System implemented low-dose CT screening for lung cancer at all hospitals and outpatient diagnostic centers several years ago. "If we wait until patients have symptoms, it's usually too late," says Cardiothoracic Surgeon Robert Dunton, M.D., with Riverside Thoracic & Cardiovascular Surgery in Newport News. "Screening allows us to find the problem a lot sooner, and it can be done with low risk to the patient."

A number of national studies show that if large numbers of at-risk patients are screened for lung cancer and diagnosed at an earlier stage, they can be cured more readily. "Generally any adult who is a current or former smoker really should talk to their primary care physician to see if they're a candidate for screening," Dr. Dunton says.

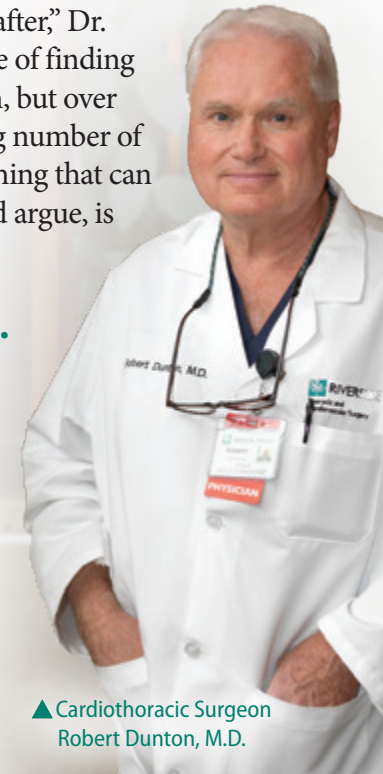
He points out that Riverside's electronic medical record system is improving that process, so that all primary care providers can easily see when patients meet the criteria and offer screening. "Riverside is planning more of an integrated approach to cancer care," Dr. Dunton says. "I think having the lung cancer screening program is one important component of that. The goal is that if the patient enters anywhere in the system, they'll have the same

screening criteria, screening scans, workups, appraisals and so forth applied evenly across the board. The same will happen if patients actually have lung cancer and enter treatment stages."

Now widely practiced and recognized by Medicare and other health care payers as an important tool, low-dose CT lung cancer screening is being used to evaluate an increasing number of patients. "There's an initial screen and then oftentimes patients are screened every year thereafter," Dr. Dunton says. "The percentage of finding something is not terribly high, but over time that turns into a growing number of patients found to have something that can be cured." And that, we would argue, is worth the effort.

AFTER THE SCREENING... Multimodality Physician Panel Examines Ambiguous Results

An at-risk patient has been screened for lung cancer. Now what? "If someone has a CT scan and it shows a definite abnormality, they're usually referred to either the



▲ Cardiothoracic Surgeon
Robert Dunton, M.D.

pulmonary specialists or the surgeons,” Dr. Dunton says. “If it’s clear-cut, we generally have a set approach to determine the treatment.”

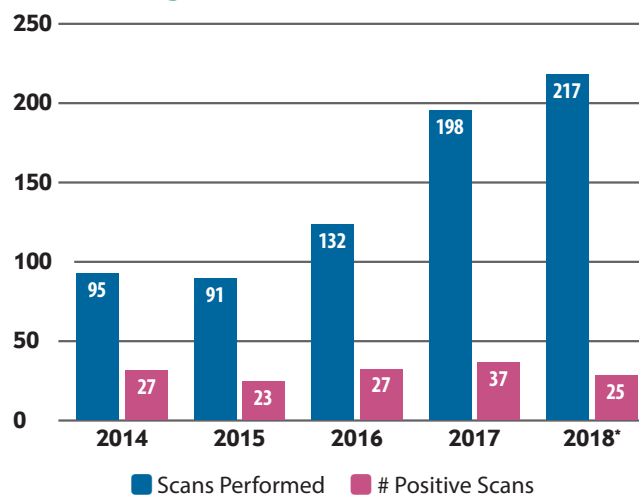
But when the path isn’t as obvious, lung cancer specialists at Riverside consult with each other via a clinical group specifically designated for nodule review. Surgery, pulmonology and radiology specialties are each represented, and anyone can bring up a case for immediate attention, usually within a week of the screening results.

“We all review the scans and then submit our opinions as to what to do,” says Dr. Dunton. “So many times, the CT scans don’t show anything or they show what we call very stable nodules — and then occasionally they’ll show a real tumor. But in between, sometimes we’re not sure. Those are the ones that we’ll discuss in this multimodality group.”

Often a decision needs to be made on timing the next steps, according to Dr. Dunton. “Usually it’s a question of whether or not something needs to be done now, or can we wait ... and then how long do we wait?” he

says. Sometimes the group recommends that a questionable annual screening be repeated sooner than the following year, for instance.

Riverside Low-Dose CT Lung Screening Program Volumes 2014-2018*

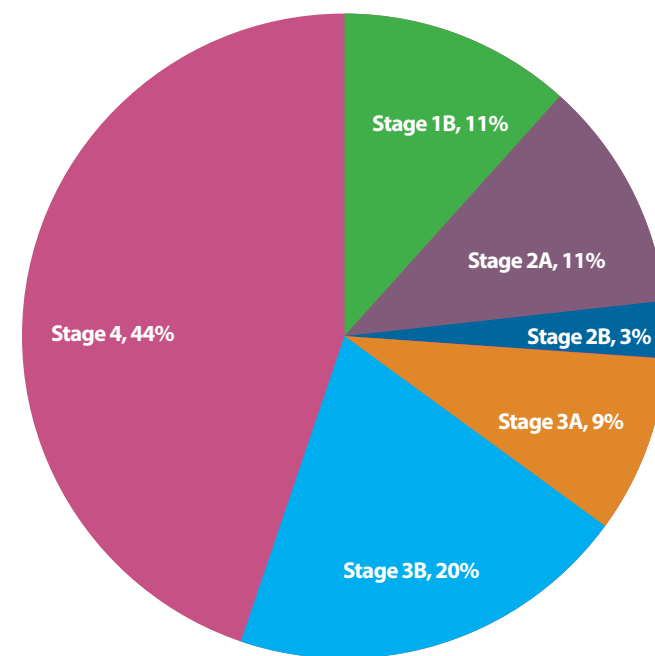


▲ Riverside continues to see growth in the low-dose lung screening program. The number of scans performed from 2014 to 2017 doubled while the number of positive findings increased by 37 percent. In 2018, we implemented a process through our electronic health record to facilitate education and screenings to diagnose lung cancer earlier.

* 2018 volumes through September

Thankfully, medical advances are making unclear cases less frequent. “For example, by using Lung-RADS [Lung Imaging Reporting and Data System], which is a grading system, we can standardize the approach and everyone follows the same recommendations,” Dr. Dunton says. “That’s really helped, and the number of ambiguous cases has gone down a lot. But when there is a question, everybody gets an input, which is really good for the patients.” Clearly, having this multidisciplinary team of experts in the field of lung cancer helps to ensure that patients receive the highest level of care. ■

Riverside Shore Memorial Hospital Lung Cancer Diagnoses by Stage in 2017



▲ Nearly half of all lung cancers seen at Riverside Shore Memorial Hospital present as Stage IV, when the cancer has already spread to other parts of the body. Offering the low-dose CT lung cancer screening program is a way to identify lung cancer earlier at a more treatable stage.

Support Remarkable

Riverside works alongside many community partners to fill the gaps for the uninsured and underinsured population. It is essential to keep the community informed about early health interventions and meet the critical needs of our neighbors due to a lack of resources in obtaining cancer screening services. Thanks to grant funding and charitable gifts to the Riverside Foundation, we are able to provide more early diagnoses and improve patient outcomes.

Call the Riverside Foundation at 757-234-8740 or visit riversideonline.com/stronger to help support cancer care in your community.

Riverside Addresses

High Incidence of Lung Cancer on the Eastern Shore

The Eastern Shore of Virginia, consisting of Accomack and Northampton counties, has the second highest incidence of lung cancer in the state, and the highest lung cancer mortality.¹ One contributing factor is that almost 60 percent of local patients initially present with stage IV disease, which can be treated but not cured. Riverside's lung cancer screening program is aimed at improving those statistics with earlier detection.

In conjunction with better screening efforts, treatment approaches for lung cancer are also evolving, according to Laura Kerbin, M.D., a medical oncologist at the Riverside Shore Cancer Center. "Oncology treatments are changing, and now treatment is more personalized to each patient," Dr. Kerbin says. Before deciding on treatments, multiple factors are considered, including tumor size and location, various mutations and markers on the cancer cells, other medical problems and overall well-being. For example, some targeted therapies are only successful in treating specific cancers with certain mutations. "What is right for one person may not be correct for another with a similar cancer," Dr. Kerbin says. "Each patient's lung cancer is unique to them."

Encouragingly, there is a treatment that has recently changed the outcome for people with metastatic lung cancer. Immunotherapy, which uses drugs to boost the body's natural defenses to fight the disease, is making a big difference. "Adding immunotherapy to traditional chemotherapy has significantly increased survival for patients with metastatic lung cancer and has nearly doubled progression-free survival," Dr. Kerbin says. "These drugs are now being investigated for use in the upfront setting to treat patients before their lung cancer has spread to other parts of the body."

On the rural Eastern Shore, when it comes to lung cancer — and all cancers — Dr. Kerbin and the rest of the Riverside Shore cancer team will continue to bring the most recent advances in care directly to this community. ■

1. "Cancer Data by Health District — Lung, Incidence & Mortality (2009-2013)" from the Virginia Cancer Registry and VDH Division of Health Statistics.



▲ Medical Oncologist Laura Kerbin, M.D.

Oncology Research Addresses Unanswered Questions, Provides Riverside Patients with Valuable Local Resource

At Riverside, a conversation about clinical research trial opportunities occurs at each new cancer diagnosis, thanks to the health system's strong oncology research program. Dedicated to supporting patients in the community with access to potentially cutting-edge treatments still in development, Riverside is able to simultaneously elevate patient care and assist in the advancement of medical knowledge.

In addition to clinical trials offered by pharmaceutical companies, Riverside's relationship with the University of Virginia facilitates participation in National Cancer Institute clinical trials. As opposed to the private sector, many NCI-supported clinical trials test a combination of therapies, including surgery, radiation therapy, chemotherapy and newer targeted agents, to determine efficacy in certain patient groups. Another hallmark of NCI trials is the involvement of patients of different ethnic, racial or socioeconomic backgrounds to ensure broad application.

Riverside's external research partnerships, such as those with tertiary care centers and medical universities, are quite advantageous, according to Riverside Oncologist and Hematologist William MacLaughlin, M.D. "Such collaborative activities help

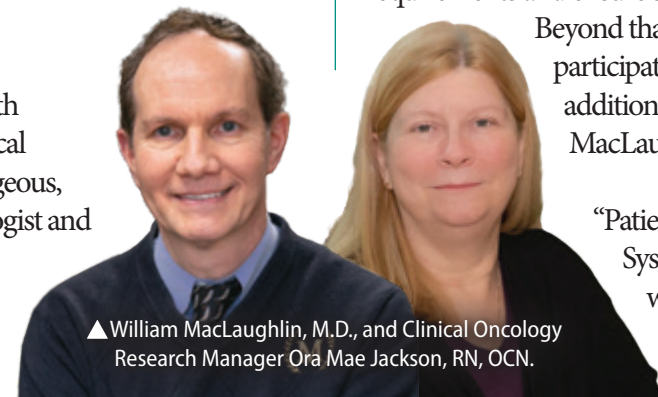
keep our institution integrated with a number of other regional, state, national and even global health care entities, which have shared goals for the advancement of medical knowledge and the most effective utilization of evidence-based medical treatments to the benefit of the patients we serve," he says.

Bringing these types of clinical trials to the communities served by Riverside Health System can keep patients from traveling long distances to participate. "Providing these opportunities allows our patients to get treatment and remain at home with their family and friends," says Clinical Oncology Research Manager Ora Mae Jackson, RN, OCN.

There are additional benefits for the patient as well. "Though all Riverside patients can be assured of quality care, patients in clinical trials can expect closer and, in some cases, more frequent assessments to meet trial requirements and ensure safety," Ms. Jackson says.

Beyond that, medical team members participating in research receive additional education and review, Dr. MacLaughlin explains.

"Patients treated at Riverside Health System as part of a research study will receive their care from health care providers who



▲ William MacLaughlin, M.D., and Clinical Oncology Research Manager Ora Mae Jackson, RN, OCN.

Cancer Research

make an extra effort to be informed, trained and interested in cancer research activities,” Dr. MacLaughlin says. “The treatment team follows a clinical design formulated by national experts and thus delivers care in the same manner as renowned facilities such as Johns Hopkins, Memorial Sloan Kettering, Mayo Clinic and others.”

Because data and specimens from NCI-supported clinical trials are made available to researchers worldwide to further scientific discovery, participating patients recognize that they are contributing to the greater good and improving care for all patients. “Although treatment is their goal, many patients express the importance and meaning of helping someone else,” Ms. Jackson says.

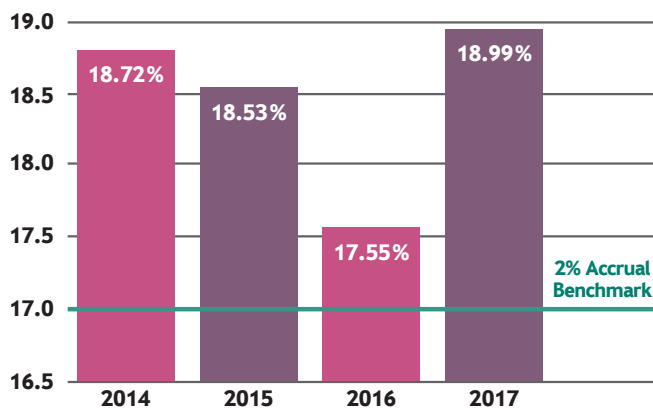
The importance of clinical research does indeed span a much wider spectrum. “It’s actually the core of oncology because it helps us find the best treatment for a particular patient population,” says Riverside Oncologist and Hematologist Magi Khalil, M.D., Ph.D. “All the guidelines we have are based on data from clinical research, and it’s important to continue to contribute because there are a lot of unanswered questions in oncology. Collective information helps advance the field, and it keeps providers up-to-date. It really is the crux of what we should be doing.”



Oftentimes, Dr. Khalil explains, approved guidelines lag behind what is being developed in the field, simply due to the nature of the process, which means patients can’t typically access an anticipated new standard of care. “For a long time, we felt that

◀ Magi Khalil, M.D., Ph.D.

2014–2017 Total Percentage of Breast Cancer Patients Enrolled in a Clinical Trial



immunotherapy was going to benefit certain populations of lung cancer patients, but we did not yet have the clinical trials finished to support that,” she says. “Research participation provides access to treatments that look like they’re going to be beneficial, much sooner.”

As with lung cancer, certain disease types and patient populations can significantly benefit from new treatment options — another example is triple-negative breast cancer with metastatic disease. “That disease tends to be very aggressive and the current treatment modalities do not always provide effective options,” Dr. Khalil says. “The only way you can get newer treatment is through access to clinical trials.”

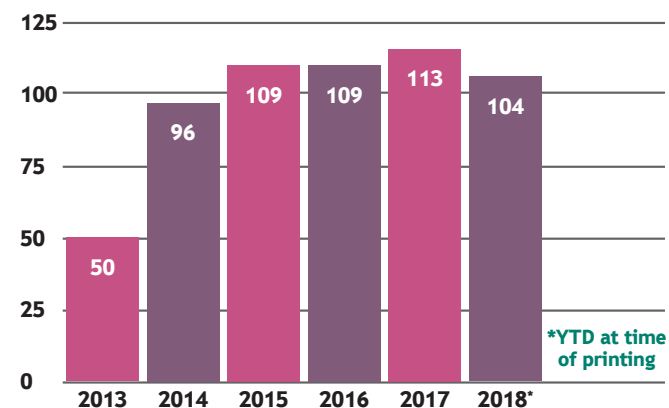
Studies can also be especially helpful for patients who have already progressed through proven standard options. Like many cancer programs, Riverside follows National Comprehensive Cancer Network guidelines, a set of pathways established by a panel of experts to treat a certain cancer at a certain stage. “At any point in time where there is not a clear next step, the recommendation

in all NCCN guidelines is to participate in a clinical trial,” Dr. Khalil says.

Eligibility to offer research studies is alone indicative of the high standing of Riverside’s cancer care program. “There are a lot of standards to abide by in order to conduct clinical trials in an optimal fashion,” Dr. Khalil says. “If you’re able to meet all those standards, that says a lot about the quality of your program. Organizations are sought out because of how good their patient care is and how inclusive their patient population is.”

The multifaceted value of cancer research at Riverside is unquestionable. But it boils down to patients benefiting from emerging treatments that can help them. Because of that, Riverside has more than doubled the number of oncology patients enrolled in research trials over the past five years. Dr. MacLaughlin says it simply: “Through participation in cancer research, Riverside gains access to some of the newest and most innovative medications and treatments currently under development by the research community, and the ability to offer them to the patients we treat.” ■

Oncology Research Enrollment History



Community Outreach



Reaching Out with a Mission

Riverside Health System serves a population of **2 million people**, covering an **8,000-square-mile area**. We are committed to supporting communities throughout our region with **education and screening resources** to prevent, detect and treat cancer.

Areas Served:

- Peninsula: Newport News, Hampton, Poquoson, York
- Middle Peninsula: Gloucester, Mathews, Middlesex, Lancaster
- Williamsburg, James City County
- Virginia Beach, Chesapeake, Suffolk
- Eastern Shore
- Northern Neck, Tappahannock



Grants

- Grant funding allows Riverside to provide free screenings to the underserved in our communities.
- For more than **20 years**, Riverside has secured and managed federal and state grants from **Every Woman's Life**, which served 6,596 women in Virginia during the 2017–2018 year. **Riverside served 9% (609)** of those women in our region alone, resulting in the diagnosis of **40 cancers and precancerous conditions**.
- Through the **Susan G. Komen** grant in 2017–2018, we provided **146 breast imaging services**, resulting in **4 breast cancer diagnoses**.
- Pathology and radiology diagnosis of abnormal findings and physician reports for these patients are funded by these grants and Riverside.
- All women diagnosed are enrolled in Medicaid to ensure continued treatment.



Support for Local Free Clinics

- Riverside provides Pap tests and clinical staff to free clinics throughout the year for education and screening exams.
- The pathology and radiology diagnosis of abnormal findings and physician reports for these patients is funded by Riverside.



▲ During the annual Riverside Team Member Giving Campaign in 2018, Riverside team members contributed more than \$33,000 to help support Riverside Cancer Care patients.

◀ Riverside proudly sponsored a series of fundraising runs throughout the region and used the opportunity to educate participants on cancer care.





Health Education & Promotion

This year, **1,700 people** attended Riverside's cancer-focused educational and awareness events. Thousands more were reached via social media.



◀ Riverside team members donned pink to honor breast cancer patients and survivors in October 2018.

Messages focused on the importance of:

- **Sun safety** for the prevention of skin cancer
- **Human Papillomavirus vaccine** for the prevention of cervical cancer
- **Colonoscopy** at age 45 for the prevention of colorectal cancer
- **Mammograms, self-breast exams and Pap tests** for the early detection of breast and cervical cancer
- **Prostate screenings** for the early detection of prostate cancer
- **Lung cancer screening and smoking cessation** for the early detection and prevention of lung cancer



Cancer Screenings for the Community

Riverside provides cancer screenings to the public as part of our commitment to the wellness of our communities. And, with the help of grant funding and local partners, we are able to offer some of these services at no cost to the indigent, in an effort to reach our underserved population. Community screenings routinely result in the lifesaving diagnosis of cancers that may otherwise remain undetected.

In 2018, we provided:

■ Women's health screenings for **1,035 women**, including:

310	Pap tests	✓ 16	Precancerous conditions
38	Colposcopies	✓ 2	Early stage cervical cancer diagnoses
		✓ 1	Invasive cervical cancer diagnosis
316	Breast exams		
463	Screening mammograms	✓ 13	Breast cancer diagnoses
184	Diagnostic mammograms	✓ 8	Precancerous breast conditions
218	Breast ultrasounds		
35	Breast biopsies		

- **Lung cancer screenings** for **217 people**, resulting in 25 abnormal results and 4 cancer diagnoses.
- **Prostate cancer screenings** for **70 men**, resulting in 14 abnormal results and 2 cancer diagnoses.
- **Skin cancer screenings** for **88 people**, resulting in 38 abnormal results and 4 melanoma diagnoses.



▲ Top: The 24th Annual John Randolph and Dr. Mark E. Ellis Memorial Dinner held at Two Rivers Country Club on Feb. 25, 2018 raised \$31,650 for Riverside Cancer Care.

By The Numbers / 2017 Cancer Site Table

Cancer Site	RRMC*		RWRH*		RSMH*		RTH		RDHW	
	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic
ORAL CAVITY & PHARYNX	43	40	6	6	5	5	1	0	4	4
Lip	1	1	0	0	0	0	0	0	0	0
Tongue	16	14	2	2	0	0	0	0	1	1
Salivary Glands	4	4	0	0	0	0	0	0	1	1
Floor of Mouth	3	3	0	0	0	0	0	0	0	0
Gum & Other Mouth	1	1	1	1	1	1	0	0	0	0
Tonsil	11	10	2	2	2	2	1	0	1	1
Oropharynx	2	2	0	0	0	0	0	0	0	0
Hypopharynx	4	4	1	1	2	2	0	0	0	0
Other Oral Cavity & Pharynx	1	1	0	0	0	0	0	0	1	1
DIGESTIVE SYSTEM	279	260	49	45	25	24	23	21	23	20
Esophagus	16	16	3	3	2	2	2	2	2	2
Stomach	24	22	5	5	2	2	3	3	3	3
Small Intestine	9	8	3	2	0	0	0	0	0	0
Colon Excluding Rectum	121	111	19	19	8	8	10	10	12	10
Rectum & Rectosigmoid	46	44	5	5	5	4	4	3	3	2
Anus, Anal Canal & Anorectum	7	6	1	1	2	2	0	0	1	1
Liver & Intrahepatic Bile Duct	12	9	6	5	1	1	0	0	1	1
Other Biliary	9	9	0	0	2	2	0	0	0	0
Gallbladder	0	0	1	1	0	0	0	0	0	0
Pancreas	30	30	5	3	3	3	4	3	1	1
Retroperitoneum	1	1	1	1	0	0	0	0	0	0
Peritoneum, Omentum & Mesentery	1	1	0	0	0	0	0	0	0	0
Other Digestive Organs	3	3	0	0	0	0	0	0	0	0
RESPIRATORY SYSTEM	283	251	31	28	45	40	13	12	8	5
Larynx	14	14	3	3	4	4	0	0	2	1
Lung & Bronchus	268	236	28	25	40	35	13	12	6	4
Trachea, Mediastinum & Other Respiratory Organs	1	1	0	0	1	1	0	0	0	0

Primary Site	RRMC*		RWRH*		RSMH*		RTH		RDHW	
	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic
SOFT TISSUE	6	5	1	1	0	0	0	0	0	0
SKIN EXCLUDING BASAL & SQUAMOUS	59	42	11	8	15	14	4	1	0	0
Melanoma -- Skin	53	38	10	7	15	14	3	1	0	0
Other Non-Epithelial Skin	6	4	1	1	0	0	1	0	0	0
BASAL & SQUAMOUS SKIN	1	0	0	0	0	0	0	0	0	0
BREAST	422	395	61	60	44	40	28	25	16	15
FEMALE GENITAL SYSTEM	103	80	9	7	7	7	3	2	7	5
Cervix Uteri	9	8	1	1	0	0	0	0	1	0
Corpus & Uterus, NOS	58	51	6	5	6	6	1	1	1	1
Ovary	18	13	1	1	1	1	1	0	4	3
Vagina	2	0	0	0	0	0	0	0	0	0
Vulva	12	6	1	0	0	0	0	0	1	1
Other Female Genital Organs	4	2	0	0	0	0	1	1	0	0
MALE GENITAL SYSTEM	282	180	38	29	32	26	18	17	6	5
Prostate	273	171	34	25	32	26	18	17	3	2
Testis	7	7	3	3	0	0	0	0	1	1
Penis	2	2	1	1	0	0	0	0	1	1
Other Male Genital Organs	0	0	0	0	0	0	0	0	1	1
URINARY SYSTEM	123	110	22	20	11	8	5	5	11	8
Urinary Bladder	55	45	16	15	7	6	5	5	11	8
Kidney & Renal Pelvis	64	62	5	4	4	2	0	0	0	0
Ureter	4	3	1	1	0	0	0	0	0	0
EYE & ORBIT	1	0	0	0	0	0	0	0	1	0
BRAIN & OTHER NERVOUS SYSTEM	75	61	6	5	7	7	0	0	1	1
Brain	29	27	5	4	2	2	0	0	1	1
Cranial Nerves Other Nervous System	46	34	1	1	5	5	0	0	0	0

Riverside Foundation

Caring for others as we would care for those we love.

It is through the generosity of donors who care about cancer that we are able to go above and beyond for our patients and their loved ones.

We are grateful to the many donors who gave more than \$495,000 in 2017, and over \$1 million in the past three years.

Your gifts have made a remarkable impact.

- **Patient navigators** provided coordinated care and guidance for 12,450 patients.
- **Improved quality of life** was made possible for 2,781 patients and their families through palliative care and access to social workers.
- **Integrative therapies** as a complementary approach for evidence-based medicine help to promote wellness, immune enhancement and pain management. These services are not covered by insurance and were provided at no cost to more than 13,000 patients.



1,669
Therapeutic Massage



2,659
Music Therapy



1,941
Nutrition Counseling



6,850
Pet Therapy

Primary Site	RRMC*		RWRH*		RSMH*		RTH		RDHW	
	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic	Total	Analytic
ENDOCRINE SYSTEM	41	38	3	3	0	0	1	1	4	4
Thyroid	32	31	2	2	0	0	0	0	4	4
Other Endocrine including Thymus	9	7	1	1	0	0	1	1	0	0
LYMPHOMA	85	67	6	6	7	6	6	6	7	6
Hodgkin Lymphoma	14	14	0	0	0	0	1	1	1	1
Non-Hodgkin Lymphoma	71	53	6	6	7	6	5	5	6	5
MYELOMA	28	23	1	1	5	3	2	0	0	0
LEUKEMIA	25	15	1	1	7	5	4	2	1	1
Lymphocytic Leukemia	12	5	1	1	2	1	2	1	1	1
Myeloid & Monocytic Leukemia	10	7	0	0	5	4	2	1	0	0
Other Leukemia	3	3	0	0	0	0	0	0	0	0
MESOTHELIOMA	14	13	0	0	0	0	0	0	0	0
MISCELLANEOUS	39	38	6	6	5	4	4	4	3	3
Total	1,909	1,618	251	226	215	189	112	96	92	77

*Hospital is accredited by the American College of Surgeons Commission on Cancer.

Analytic = Patients who were diagnosed and/or received initial cancer care.

RRMC = Riverside Regional Medical Center

RWRH = Riverside Walter Reed Hospital

RSMH = Riverside Shore Memorial Hospital

RTH = Riverside Tappahannock Hospital

RDHW = Riverside Doctors' Hospital Williamsburg

Support Remarkable

Community support makes a difference to those on their journey of hope and healing. You can make a gift to honor a loved one or say thank you to a caregiver. When you give to Riverside, 100% of your donation makes a difference.

Call the Riverside Foundation at 757-234-8740 or visit riversideonline.com/stronger-to-help-support-cancer-care-in-your-community.



RIVERSIDE

**To care for others as we would care for those we love, to
enhance their well-being and improve their health.**



▲ **Riverside Health System physicians pictured: (back cover, left to right)** Lori Gillespie, M.D.; John Miller, M.D.; George Kannarkat, M.D.; patient; Mark Chisam, M.D.; Magi Khalil, M.D.; Joseph Laysner, M.D.; and Flavia Kostov, M.D.;
(front cover, left to right) Jefferson Moulds, M.D.; Kimberly Schlesinger, M.D.; Amy Skorupa, M.D.; patient; Mashour Yousef, M.D.; Lauren Salmon, D.O.; Craig Franzman, M.D.

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