New radiation oncology facility showcases latest technology

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Radiation oncology clinicians at UT Southwestern see more patients than any other provider in North Texas, but thanks to a physical expansion and the addition of state-of-the-art technology, the department can now offer even more patients the most advanced radiation treatments available.

The 16,000-square-foot Harold C. Simmons Comprehensive Cancer Center—Radiation Oncology building opened in September next-door to the emergency room entrance of University Hospital–St. Paul. Its three linear accelerators include two latest generation Varian TrueBeam devices, bringing the department’s total number of treatment machines to nine.

As part of the expansion, UT Southwestern became the first institution in North America to install VERO, an advanced system for delivering noninvasive treatment to cancer patients using stereotactic body radiation therapy (SBRT).

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The VERO machine incorporates several types of imaging technologies, including X-ray, CT, and fluoroscopy, that allow real-time tumor tracking, as well as a swiveling X-ray delivery head which allows clinicians to “chase” tumors during radiation delivery even when the patient’s body moves, such as when breathing.

“VERO is next-generation technology for institutions that are very progressive in their clinical approach,” said Timothy Selborg, PhD, Professor of Radiation Oncology and Director of Medical Physics and Engineering. “The medical community and industry look to us—as a premier cancer center for research and clinical care—to pave the way for a new technology that will truly benefit patients.”

The new building will facilitate the department’s training as well as therapeutic programs. UT Southwestern faculty in radiation oncology currently provide training in SBRT and image-guided radiation therapy (IGRT) to numerous professionals, including physicians, medical physicists, radiation therapists, dosimetrists, and others.

In addition to the renovated facility, radiation oncology clinicians will continue to see patients in the main Moncrief building as well as in the Annette Simmons Stereotactic Treatment Center at University Hospital–Zale Lipshy. The Department of Radiation Oncology also is the primary referral center for Children’s Medical Center Dallas and oversees one of the largest pediatric brain tumor programs in the country.

“We are very fortunate to have many different technologies at our fingertips. When our physicians determine individualized treatment plans for our patients, they are not limited by the availability of technology,” Dr. Choy said.

“Having the VERO system at UT Southwestern will provide another powerful weapon in the fight against cancer,” said James K.V. Willson, MD, Director of the Harold C. Simmons Cancer Center. “As our recent designation by the National Cancer Institute indicates, advanced cancer research and patient care is our utmost priority, and the ability to offer patients access to care that they may not be able to get elsewhere is key.”

On average, more than 150 patients are treated with radiation therapy each day at UT Southwestern. @
Four physicians join radiation oncology clinic

To accommodate the growing number of patients seeking radiation treatment at UT Southwestern, four new clinicians have recently been added to the Department of Radiation Oncology. The new faculty members, all of whom specialize in disease sites, will also serve in a teaching role at the medical school while seeing patients and, in some cases, conducting basic science and translational research.

Raquibul Hannan, MD, PhD

After earning a medical degree and doctorate in molecular biology at the State University of New York, Assistant Professor Raquibul Hannan, MD, PhD, completed his residency in radiation oncology at Montefiore Medical Center and Albert Einstein College of Medicine. He is board certified in radiation physics and radiobiology.

Dr. Hannan brings with him a rich basic science, cancer immunology, radiation biology and clinical training background, which he hopes to use to develop new treatments for cancer. His specific area of interest is combining radiation treatment with agents that trigger the body’s own immune system to fight cancer.

His doctoral research concentrated on identifying and characterizing a novel pancreatic cancer-specific tumor antigen, for which he holds two international patents. During his radiation oncology residency he developed several translational research projects. In one, he established a mouse prostate cancer tumor model and investigated the effects of focal irradiation and immunotherapy administration using a prostate-specific antigen (PSA) vaccine. This very exciting work opened the possibility of a novel therapeutic approach for combining immunotherapy and radiation therapy for prostate cancer patients.

In the clinic, Dr. Hannan joins the disease-oriented team focusing on the care of prostate cancer patients.

D. Nathan Kim, MD, PhD

Assistant Professor Nathan Kim, MD, PhD, earned a master’s degree in biomedical engineering before entering the MD/PhD program at Boston University School of Medicine. He completed a radiation oncology residency at Vanderbilt University Medical Center and was board certified in 2007.

Primarily a clinician, Dr. Kim will be part of the multidisciplinary physician group focusing on genitourinary cancer, as well as the team specializing in the treatment of lymphoma. He brings a robust background in stereotactic radiation treatments and assessment of response to therapy using molecular imaging techniques following ablative radiosurgery.

Dr. Kim’s research has been presented in numerous scientific journals and conferences. With his engineering background, he maintains an interest in conducting translational research integrating technology, imaging and biology with therapeutic oncology.

His current area of research interest is the development of clinical trials for the treatment of genitourinary malignancies such as prostate cancer.

Asal Shoushtari Rahimi, MD

Assistant Professor Asal Rahimi, MD, obtained a medical degree and master’s degree at Rosalind Franklin University/Chicago Medical School, then completed her internship and residency in radiation oncology at the University of Virginia, where she served as chief resident.

Dr. Rahimi received multiple clinical, research, and teaching awards during her residency. She has also published and presented multiple articles on head and neck research, specifically looking at the effects of radiation in oropharyngeal carcinomas with the human papillomavirus. Her study at the University of Virginia showing a correlation between HPV and the subsequent progression of disease was the subject of multiple presentations at this year’s ASTRO conference.

Her other research interests and publications included deep inspiratory breath hold techniques for breast carcinoma patients and partial breast irradiation.

Dr. Rahimi was awarded the American Brachytherapy Society and Nucletron-sponsored HDR Fellowship, which gave her the opportunity to receive further training in partial breast irradiation techniques by other breast cancer experts in the field. She is skilled in the use of Mammosite and Contura for breast cancer treatment.

Dr. Rahimi joins the disease-oriented team focusing on breast cancer patients.

John Yordy, MD, PhD

Assistant Professor John Yordy, MD, PhD, graduated from Medical University of South Carolina with a doctorate and medical degree, and completed his residency in radiation oncology at MD Anderson Cancer Center in Houston.

Dr. Yordy’s research has been published in numerous scientific journals. While at MD Anderson, he developed a laboratory study investigating the efficacy of radiation, chemotherapy and cetuximab in the treatment of locally advanced pancreatic cancer, and also identified radiosensitizing targets in head and neck cancer.

His current area of interest at UT Southwestern involves identifying gene expression signatures that may help predict survival for patients with lung adenocarcinoma and head and neck cancer. He plans to conduct translational research that will benefit patients through the development and testing of agents that can selectively target cancer in new ways in combination with radiation.

In the clinic, Dr. Yordy will focus on treating patients with head and neck cancer.
In the Clinic

Gamma Knife brings ‘Perfexion’ to radiation treatment for cancer that has spread to the brain

"It can treat multiple lesions simultaneously, which is a tremendous benefit to the patient," said Hak Choy, MD, Chair of Radiation Oncology.

About 30 percent of patients with metastatic cancer develop brain tumors, added Robert Timmerman, MD, Vice Chair of Radiation Oncology and Professor of Neurosurgical Oncology. The updated system replaces the current Gamma Knife at the Annette Simmons Stereotactic Treatment Center at University Hospital–Zale Lipshy. Used primarily in the treatment of eye tumors, in the future it will be directed into the neck area. Dr. Timmerman said he foresees more use of the machine for treating eye tumors, in particular.

"What I think we’ll see with this new equipment is a shifting of our distribution to a higher percentage of metastasis because it will be so user-friendly for patients—a one-stop treatment," Dr. Timmerman said.

Use of the Gamma Knife system for brain metastases involves a radiation oncologist, a neurosurgeon, a medical physicist, and other specialists, all dedicated to coordinating a patient’s radiation treatment sessions.

"We treat about 120 to 130 cases a year with Gamma Knife, and the number is rising," said Dr. Choy. "It is by far the most accurate, precise system worldwide." 

Promises more effective treatment and a quicker return to oncologists for other therapies.

The updated system replaces the current Gamma Knife at the Annette Simmons Stereotactic Treatment Center at University Hospital–Zale Lipshy. Used to treat a variety of maladies in the head and brain, Perfexion has been redesigned to treat patients with multiple metastatic brain tumors.

New technology benefits patients

Because the machine can treat multiple tumors in one session, Dr. Timmerman said, UT Southwestern will increase its threshold of the number of brain tumors it will treat to 10 or more from the current range of three to six.

"With this equipment, we’ll be able to get patients in and out quickly so they can get on with other treatments like chemotherapy," Dr. Timmerman said. "Perfexion is also a little less claustrophobic for the patient because they won’t be next to part of the equipment."

Another benefit of the new technology is its capability of dispersing radiation treatments a bit farther down the body, into the neck area. Dr. Timmerman said he foresees more use of the machine for treating eye tumors, in particular.

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Treatment options for patients whose cancer has spread, or metastasized, to the brain are often arduous and involve multiple radiation sessions. But a redesign of the Gamma Knife radiation therapy system called Perexion—available in North Texas only at UT Southwestern Medical Center—promises more effective treatment and a quicker return to oncologists for other therapies.

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Physicians who would like to make a referral may call the department’s main clinic number or UT Southwestern’s physician referral line at 214-645-8300 (toll-free 866-645-5455) for adult patients, or 877-445-1234 for pediatric patients.

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