UT SOUTHWESTERN

THE TARGET

News from the Department of Radiation Oncology

VOLUME 2, WINTER 2011–2012

New radiation oncology facility showcases latest technology

Harold C. Simmons Comprehensive Cancer Center—Radiation Oncology

Story begins on page 2

What's Inside

1-3 RADIATION ONCOLOGY FACILITY OPENS
4 NEW PHYSICIANS JOIN CLINIC
5 PERFEXION ADDED TO CANCER ARSENAL
6 CLINICAL TRIALS LISTING

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). To date, the VERO system has been installed in just a few facilities in Japan and Europe. Doctors began treating patients with the device in October.

The VERO system integrates many state-of-the-art radiation therapy capabilities into one machine and is designed to locate tumors and direct radiation precisely where it is needed. This noninvasive procedure delivers radiation beams to a tumor in a concentrated, precise manner, minimizing damage to healthy tissues and reducing the number of treatment sessions for patients.

Radiation oncology and medical physics experts at UT Southwestern will evaluate the VERO system, manufactured by Germany's BrainLab, and develop clinical guidelines for its use.

"We have the reputation at UT Southwestern for delivering cutting-edge radiotherapy, and we have recognized experts, both physicians and physicists, who are capable of applying this new technology for the benefit of our patients," said Hak Choy, MD, Chair of Radiation Oncology.

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. The new facility's design includes a dedicated visitor conference room and separate entrance for patients, which will allow medical professionals worldwide to observe the department's operations while maintaining patient privacy.

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).

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 Solberg, 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."

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.

TrueBeam linear accelerator

Vero machine for delivering ultra-precise radiosurgery on cancer patients

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.

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

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 Perfexion—available in North Texas only at UT Southwestern Medical Center—promises more effective treatment and a quicker return to oncologists for other therapies.

Multiple brain metastases are easily treated with Perfexion

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.

"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 Neurological Surgery. In the past, options for patients with numerous brain metastases included extremely long, targeted radiation sessions or whole-brain radiation, which often carries unwelcome side effects.

"Robotic features allow going from one spot to another without much difficulty," said Bruce Mickey, MD, Vice Chair of Neurological Surgery, of Perfexion. "This machine was designed from scratch to treat brain metastases."

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.

"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 metastasis involves a radiation oncologist, neurosurgeon, a medical physicist, and other specialists, all dedicated to coordinating a patient's radiation treatment session.

"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."

Clinical Trials Listing

BRAIN

082009-040 Phase I study of the combination of vorinostat and radiation therapy for the treatment of patients with brain metastases

042011-075 Interstitial radioactive iodine implants for the treatment of pan-invasive pituitary macroadenomas

042011-050 Phase II trial of hippocampal-avoiding whole brain irradiation with simultaneous integrated boost for treatment of brain metastases

BREAST

042010-052 A phase I study of CyberKnife® partial breast irradiation (PBI) for early stage breast cancer

RTOG 1014 A phase II study of repeat breast preserving surgery and 3D-conformal partial breast re-irradiation (PBRI) for local recurrence of breast carcinoma

GASTROINTESTINAL

052010-013 Dose escalating study of single fraction stereotactic body radiation therapy (SBRT) for patients with hepatic metastases

082010-335 A pilot and phase II study of altered chemotherapy sequencing during neoadjuvant therapy for patients with stage II or III rectal adenocarcinoma

GYNECOLOGIC

GOG 0249 A phase III trial of pelvic radiation therapy versus vaginal cuff brachytherapy followed by paclitaxel/carboplatin in patients with high-risk, early stage endometrial cancer

GOG 0238 A randomized trial of pelvic irradiation with or without concurrent weekly cisplatin in patients with pelvic-only recurrence of carcinoma of the uterine corpus

GOG 0258 A randomized phase III trial of cisplatin and tumor volume directed irradiation followed by carboplatin and paclitaxel vs. carboplatin and paclitaxel for optimally debulked, advanced endometrial carcinoma

HEAD AND NECK

BMS CA 225314 A phase II multi-center study of concomitant cetuximab and cisplatin with re-irradiation using intensity-modulated radiotherapy (IMRT) in patients with recurrent squamous cell carcinoma of the head and neck

A phase I/II study of nab-paclitaxel, cisplatin and cetuximab with concurrent radiation therapy for local-regionally advanced head-and-neck squamous cell carcinoma

RTOG 0920 A phase III study of postoperative radiation therapy (IMRT) /- cetuximab for locally-advanced resected head and neck cancer

LUNG (THORACIC)

Small Cell Lung Cancer

CALGB 30610/RTOG 0538 A phase III comparison of thoracic radiotherapy regimes with cisplatin and etoposide in limited small cell lung cancer

RTOG 0937 Randomized phase II study comparing prophylactic cranial irradiation alone to prophylactic cranial irradiation and consolidative extracranial irradiation for extensive disease small cell lung cancer (ED-SCLC)

Non-Small Cell Lung Cancer

—Stage 1

RTOG 1021 A randomized phase III study of sublobar resection (+/- brachytherapy) versus stereotactic body radiation therapy in high risk patients with stage I NSCLC

—Locally Advanced (Stage 3) or Inoperable (Stage 1 or Stage 2)

RTOG 0617 A randomized phase III comparison of standard-dose (60 Gy) versus high-dose (74 Gy) conformal radiotherapy with concurrent and consolidation carboplatin/paclitaxel /- cetuximab (IND #103444) in patients with stage IIIA/IIIB non-small cell lung cancer

RTOG 0813 Seamless phase I/II study of stereotactic body radiotherapy (SBRT) for early stage, centrally located non-small cell lung cancer (NSCLC) in medically inoperable patients

072009-061 Phase I study of accelerated hypofractionated image-guided radiation therapy (IGRT) in patients with stage II-IV non-small cell lung cancer and poor performance status

—Metastatic (2 or more sites)

42007003 A phase II trial of erlotinib (Tarceva®) in combination with stereotactic body radiation therapy (SBRT) for patients with locally advanced or metastatic non-small cell lung cancer (NSCLC)

PROSTATE AND BLADDER

62006010 A phase I and II study of stereotactic body radiation therapy (SBRT) for low and intermediate risk prostate cancer

062009-014 Hypoxia assessment in localized prostate cancer: a companion protocol to a phase II study of stereotactic body radiation therapy (SBRT) for low and intermediate risk prostate cancer

RTOG 0815 A phase III prospective randomized trial of dose-escalated radiotherapy with or without short-term androgen depriva tion therapy for patients with intermediate-risk prostate cancer

SPINE

SCCC-03Z08 A phase II study of stereotactic body radiation therapy and vertebroplasty for localized spine metastasis

RTOG 0631 A phase II/III study of iimage-guided radiosurgery/SBRT for localized spine metastasis

UT SOUTHWESTERN
Harold C. Simmons Cancer Center

NCI·CC
A Cancer Center Designated by the National Cancer Institute

Department of Radiation Oncology
5801 Forest Park Rd.
Dallas, TX 75390-9183

PRESORTED
NON PROFIT
US POSTAGE
PAID
TWMS

Department of Radiation Oncology at UT Southwestern

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.

W.A. Monty and "Tex" Moncrief Radiation Oncology Building

5801 Forest Park Rd.
Dallas, TX 75235 (mail 75390-9183)

Annette Simmons Stereotactic Treatment Center UT Southwestern University Hospital–Zale Lipshy

5151 Harry Hines Blvd.
Dallas, TX 75235 (mail 75390-9183)

Harold C. Simmons Comprehensive Cancer Center–Radiation Oncology

2001 Inwood Rd.
Dallas, TX 75235 (mail 75390-9183)

Visit us on the Web

Patient care: **utsouthwestern.org**
Education & research: **utsouthwestern.edu.**