



The Vero Stereotactic Body Radiotherapy suite at the Upstate Cancer Center, Syracuse, NY

## TARGETING TUMORS WITH PRECISION

Upstate is one of a few institutions in the United States offering the Vero, a 9-ton ring of sophisticated cancer weaponry that allows radiation oncologists to pinpoint tumors and deliver stereotactic body radiotherapy with unprecedented precision.

The Vero “integrates several state-of-the-art capabilities and technologies into one machine and is designed to locate tumors and direct radiation precisely where it is needed,” said Jeffrey Bogart, MD, who leads the Department of Radiation Oncology.



Jeffrey Bogart, MD

Bogart said the Vero allows for a tightly focused beam of radiation, which is essential when aiming at a tumor that is located near critical structures such as the spinal cord. The system’s advanced imaging capabilities allow providers to locate and track tumors, confirm the location at any point in the treatment process and account for even slight anatomical movements that occur each time a patient takes a breath.

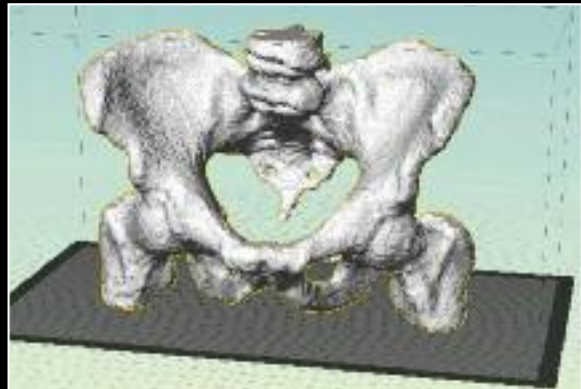
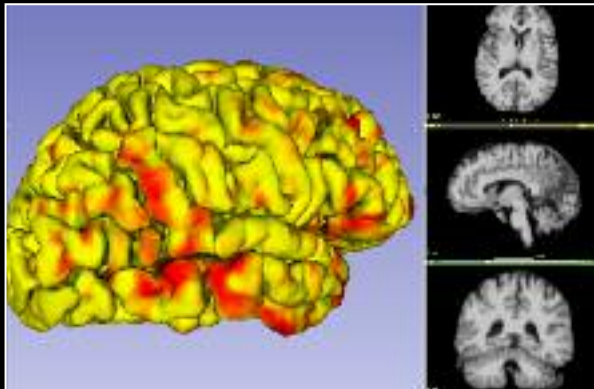
### How it works

The patient lies on the treatment “couch.” After he or she is positioned, the Vero moves freely around the patient. With its unique pivoting head, the machine moves as necessary to provide unrestricted access to the tumor from nearly any angle. The advanced imaging technology built into the Vero shows a 3D view of tumors and organs in real time.

The Vero can be used for many types of tumors and may be used on tumors that have spread and for those that are hard to reach surgically. Once the tumor is identified, the Vero’s precise delivery of radiation is achieved through several beams at different angles and intensities — all directed at the tumor. This means that radiation is concentrated on the tumor and less so on surrounding healthy cells and tissues. The customized treatment provides hope for greater cure rates and fewer side effects.

The Vero is housed in a specially constructed vault in the Upstate Cancer Center, which opened late last year and is connected to Upstate University Hospital in downtown Syracuse.

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Three-dimensional brain and pelvis, used to plot surgeries.

## HIGH-TECH HUMAN BODY TOURS POSSIBLE WITH ADVANCED IMAGING

For more than 11 years, David Feiglin, MD, professor and chairman, has been building the Upstate Radiology department to provide the most advanced imaging and related services in the region.

The approach to developing advanced clinical imaging includes more than equipment. Thirty-six medical faculty, including three PhD medical physicists, support 10 divisions/sections within the department. They collaborate to provide diagnostic imaging services and treatments. Some specialize on specific areas of the body. Others provide treatments to cancer patients or other specific patients, such as children and women.

“For children, for example, you would have to travel to Boston as the next city to find some of the services available at Upstate, which includes our intra-operative interactive MRI capabilities,” Feiglin commented.

Among the technology the department offers is a 3-T MRI, an open high field MRI for bariatric and claustrophobic patients, a 320-slice CT scanner, and new intraoperative MRI and angio suites, which allow imaging immediately adjacent to the surgical suite.

The medical university setting also means faculty guide residents and medical students. There are 24 diagnostic radiology residents as well as fellows in Neuroradiology.

“Our advanced technology, while benefitting patients, also supports this learning environment,” Feiglin added. “Imaging can provide a tour through the human body that adds a huge degree of understanding.”



Hamid Rajebi, MD, postdoctoral research fellow in radiology

Kent Ogden, PhD, is director of the 3-D visualization lab which offers imaging that, literally, jumps off the screen. Visitors to his lab don 3-D glasses to view a highly detailed image of organs and vessels that can be turned and viewed seemingly in mid air.

Ogden, an associate professor of radiology, provides image processing capabilities for CT, MRI, and multi-modal datasets as well as made-to-order plastic models of actual radiologic images.

For referring physicians, requests for services and patient appointments are handled by a new processing system and call center, explains Jennifer Caldwell, administrative director of radiology. “We are committed to getting patients in to the first available slot, and are especially sensitive to urgency from our referrers.” Referring physicians can call 315-464-5189. ■



David Feiglin, MD, Jennifer Caldwell, and Kent Ogden, PhD, in the 3-D radiology lab at Upstate with made-to-order plastic models of patients' bones and organs.



Gwen Tillapaugh-Fay, technician, in the radiology 3-D lab

### IMAGING REFERRALS: 315.464.5189

Upstate Radiology welcomes referrals for a variety of advanced imaging services, including:

- 3-T MRI
- digital mammography
- tomosynthesis (3-D)
- ultrasound
- advanced high field open MRI
- PET CT
- advanced multi-slice/high volume CT scanning
- advanced interventional radiology
- digital x-ray units
- advanced biplane angiography

## DO YOUR PATIENTS NEED THE PILL THAT PREVENTS THE SPREAD OF HIV?

Truvada is a pill that is commonly paired with other medications to treat HIV infection. It is also being used — together with safe sex practices — to help reduce the risk of becoming infected. Used this way, the therapy is called pre-exposure prophylaxis, or PrEP.

“If people taking PrEP take the medicine regularly and it is detectable in their system, they have about a 90 percent reduction in acquisition of HIV. So it’s highly effective,” said Elizabeth Reddy, MD, medical director of Upstate’s Immune Health Service.

Truvada is designed for people who are healthy, uninfected, free of kidney disease and at high risk for HIV transmission. Those at highest risk in America are young men having sex with men, Reddy said.

Some primary care doctors prescribe the drug. Others refer patients to the clinic. (Call 315-464-5533 for referrals.)

Reddy said that “for the most part, Truvada is extremely well tolerated. It has no side effects in most people.” Most side effects, including headache, abdominal pain and decreased weight, subside within a few weeks.

Gilead Sciences, the maker of Truvada, cautions that Truvada can cause serious problems with the liver or a buildup of lactic acid in the blood.

It can also worsen hepatitis B symptoms if a person suddenly stops taking Truvada. The medication can also cause kidney problems including kidney failure, bone problems that may make one prone to fractures, changes in body fat and changes to the immune system.

Before a person receives pre-exposure prophylaxis, a blood test must confirm that they are not infected with HIV. People taking Truvada for prevention are supposed to be tested regularly for HIV and other sexually transmitted diseases, which can increase a person’s risk for HIV.

Reach Elizabeth Reddy and the Immune Health Service at 315-464-5533. ■



Elizabeth Reddy, MD, with a bottle of Truvada.

## BACK TO SLEEP POLICY SETS GOOD EXAMPLE

For 20 years, parents have been advised by the American Academy of Pediatrics to put babies to sleep on their backs, to help reduce the risk of Sudden Infant Death Syndrome. It’s especially important for a baby born prematurely, whose SIDS risk is four times greater than that of a full-term baby.

Pre-term infants are routinely hospitalized, sometimes for months. During that time, nurses position babies on their sides and tummies for medical and developmental reasons.

The problem, says a researcher from Upstate’s College of Nursing, is that parents are liable to replicate practices they see in the hospital.

Sherri McMullen, PhD, an assistant professor of nursing, recommends the babies be transitioned to sleep on their backs before they are sent home “so that both the infant and parents are comfortable prior to discharge and use this position after discharge,” she wrote with a colleague in the journal, *Advances in Nursing Science*.

“Twenty-four hours is not enough time before discharge for an infant to be transitioned to his or her back,” McMullen said. “Educating the parents about sleep safety and modeling correct practices for positioning the infant before the family leaves the hospital is essential.”

The researchers acknowledge that a



balance must be found that allows enough time for the infant to become acclimated to the supine position without impacting neuro-development. They say hospital policies that promote a “back to sleep” transition can help protect babies from SIDS after discharge.

Reach Upstate’s College of Nursing at 315-464-4276. ■

## VOLUNTEERS NEEDED FOR DENGUE FEVER VACCINE TRIAL

Upstate researchers are looking for healthy adult volunteers to help find an effective vaccine for dengue fever.

Upstate's Mark Polhemus, MD, directs the Center for Global Health and Translational Science, where two promising dengue vaccines have been evaluated over the past two years. Because animals do not contract the human forms of dengue, researchers seek humans between the ages of 18 and 45 who are willing to be injected with an attenuated, or weakened dengue virus.

Our goal is to be able to produce an uncomplicated dengue, a mild form of dengue," Polhemus explains. If that develops consistently in the people who participate in the trials, the researchers will be able to use the attenuated virus for vaccine trials involving many people, in areas of the world where dengue fever is prevalent.

Volunteers will have to commit to about a month's worth of medical appointments every other day at the center, with phone calls on alternate days. Those who become ill will be admitted to a room at Upstate University Hospital's community campus for care and monitoring.

"In all clinical trials, there is a level of danger," Polhemus says. "But this sort of trial has been done before with dengue. This has been done before with other diseases. This virus is attenuated, and we have multiple safety measures in place to ensure that this goes well without complications."

Learn more by visiting the center's website at [upstate.edu/cghats](http://upstate.edu/cghats), calling 315-459-3031 or emailing [trials@upstate.edu](mailto:trials@upstate.edu) ■



Mark Polhemus, MD

## SEEKING WOMEN ON AROMATASE INHIBITORS TO TEST DULOXETINE

Upstate researchers are seeking volunteers for a national study of a medication that may reduce muscle, bone and joint pain caused by anti-hormone therapy.

Post-menopausal women who have or have had breast cancer may qualify for the study of duloxetine (Cymbalta) if they are taking an aromatase inhibitor and have muscle, bone or joint pain.

Aromatase inhibitors are increasingly used to treat post-menopausal women who have had breast cancer. But half of the women taking the drugs suffer muscle, bone or joint pain that doesn't respond to common pain medications.

A pilot study of 35 women at the University of Michigan showed a majority got relief from duloxetine. The study involving Upstate researchers builds on this.

It is organized by a cancer research cooperative that is supported primarily by the National Cancer Institute.

Women in the study will either receive a 60 milligram capsule of duloxetine or a placebo each day and regularly report their pain levels to the study team. The study lasts for 13 weeks, with a final follow-up visit at 24 weeks. During that time, volunteers will make four office visits, complete questionnaires and a pill diary.

For details, contact the clinical coordinator, nurse Linda Ellinwood at 315-464-1852. ■



Nearly a dozen city buildings in Syracuse — including city hall and the courthouse — were bathed in blue light for the month of April in recognition of World Autism Day. Above, center: Carroll Grant, PhD, director of Upstate's Margaret L. Williams Developmental Evaluation Center, addresses the crowd at the World Autism Day celebration at the Onondaga Tower in Syracuse on April 2.

### Epic EMR marks one-year anniversary at hospital

Upstate marked the first anniversary of bringing the Epic electronic medical record system online at the downtown hospital on March 1.

Upstate earned the MVP award from Epic in November, an honor given to organizations that successfully launch the electronic medical record program. Upstate also received a \$305,200 rebate in March in return for a seamless rollout.

Five thousand staff members participated in hours of training. Attending physicians, resident physicians, nurse practitioners, physician assistants, nurses, pharmacists, therapists, technologists, aides and dietitians all received training. Also, non-clinical staff from various departments, including Finance, Environmental Services, Patient Access Services, Security and Volunteer Services were trained in using the Epic system, while at the same time attending to their daily responsibilities.

The change over to Epic replaced nearly a dozen different computer systems that had been in use at the hospital, some for as long as 15 years.

Terry Wagner, Upstate's chief information officer, who oversaw the Epic installation at Upstate, says all the staff training and technological work in the end provides a product and a system that empowers patients. "The ability to provide patients with their medical records on devices like

smart phones, tablets and computers can greatly increase their participation in their care," she said.

Already, 25,100 patients are using the Upstate MyChart application that allows patients to access their medical information from their devices.

A benefit of the Epic system is the seamless transfer of medical records from one institution to another. If a patient who has been treated at Upstate is hospitalized or seeks emergency treatment at another facility with an Epic EMR system, the patient's medical file can be sent securely to doctors and nurses to aid them in his or her treatment.

Wagner said the system is helping to improve access to critical information, coordination of care and medication administration accuracy.

In the last three months, nearly 5,000 medical records have been transmitted by Upstate to other facilities to aid in a patient's care. On the flipside, Upstate has received more than 3,000 records from other facilities to help treat patients.

"For the patients, this secure exchange of information is really the electronic medical record in action," Wagner said. "We've brought medical records to the point of treatment, no matter where the patient is, and that's good for care."

The Community Campus celebrates its first anniversary of Epic May 3. Upstate's outpatient sites began offering electronic medical records in 2012.

**TARGETING TUMORS,***continued from page A1***Unique features**

The Vero provides real-time, six dimensional exact patient positioning.

The Vero offers high mechanical accuracy, with a tighter isocenter than competitors —  $\pm 0.1$  mm vs. 0.75 mm. Superior isocentric accuracy means a more tightly focused beam, unmatched in its flexibility, design and delivery ability.

The Vero has the only gimballed multileaf collimator (MLC) linear accelerator on the market, allowing the linear accelerator to swivel in multiple directions. With a  $\pm 60^\circ$  rotation on its vertical axis, the Vero enables beam delivery from almost any angle.

Innovative imaging provides dynamic tumor tracking. With dual-diagnostic x-ray, the Vero provides for simultaneous radiographic and fluoroscopic stereo imaging. The machine can “chase” a tumor through the full extent of its motion and has the ability to image the



*The TrueBeam and Tomotherapy linear accelerators at the Upstate Cancer Center. The TrueBeam system is also available at Oswego Radiation Oncology.*

target at any gantry angle and at any point in the treatment process. This provides unmatched confirmation of treatment accuracy.

**Additional resources**

The Vero complements Upstate's existing stable of treatment technology, which includes Tomotherapy, Calypso, Gamma-knife Perfexion and RapidArc. With these resources available, Upstate offers the greatest breadth of treatment options in the region, providing customized treatment for every patient. ■

**Preceptors needed for nursing students**

Upstate's **College of Nursing** is working to enhance the clinical experiences of its graduate students.

In addition to completing their coursework, students working on their nurse practitioner degree are required to have 600 hours of clinical experience, which is supported by a preceptor, who is usually a nurse practitioner or physician.

The clinical experience can take place in a number of health care settings, from physician offices, hospitals, nursing homes and urgent care centers, among others. Depending on student schedules, the clinical experiences can take place any day of the week at almost any hour.

“While we maintain our current preceptors, we are networking to develop new clinical sites throughout Central New York with a focus on our large programs in family, pediatric and psychiatric mental health nurse practitioners,” says Carrie Rewakowski, a nurse who is the clinical placement coordinator.

She and Bambi Carkey, an assistant professor in the College of Nursing, want to formalize relationships and establish new preceptors throughout Central New York, particularly among

alumni. Preceptors earn credit hours toward re-certification, discounts on college CEU offerings and free access to the campus Health Sciences Library and NursingCentral.com.

Alumni interested in serving as preceptors should contact Rewakowski at 315-464-9828 or rewakowc@upstate.edu.

**Food composting = sustainability leader**

The **Onondaga County Resource Recovery Agency** lists Upstate University Hospital as a sustainability leader in the community, thanks mostly to Upstate's food composting project. Upstate has diverted more than 150,000 pounds of food scraps from the trash by teaming up with its food service provider, Morrison Healthcare, and OCRRA.

A recent Harris Poll of healthcare professionals reported that 54 percent say their hospitals currently incorporate sustainability into purchasing decisions and 80 percent expect that to be the case within two years. According to the study, 64 percent of respondents said green initiatives are an important factor for patients when choosing a hospital. Healthcare professionals also believe green initiatives make good financial sense for hospitals, the survey said.