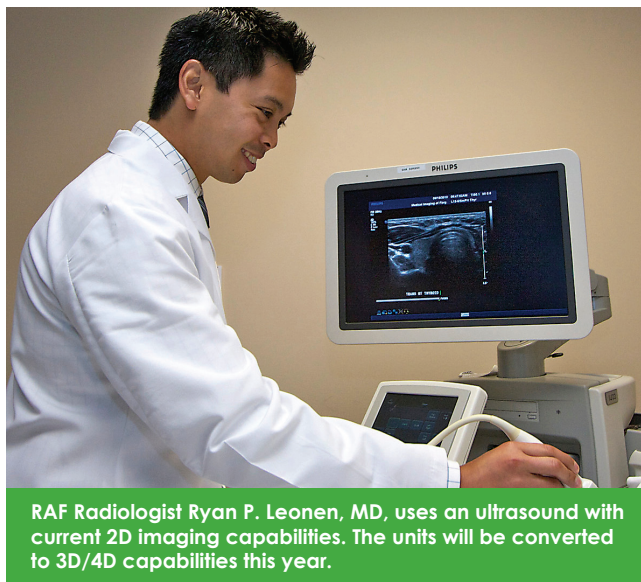


Advanced Ultrasound and MRI Coming to the Region in 2011

3D/4D ultrasound advancements, and a powerful 3 Tesla (3T) magnetic resonance imaging (MRI) unit, will be introduced to the Fredericksburg area in 2011 through the combined efforts of Mary Washington Healthcare and Radiologic Associates of Fredericksburg (RAF). Both technologies will provide more detailed images for diagnosis and treatment, and will reduce patient exam times, said Ed Swager, CEO of RAF.

3D/4D Ultrasound

In addition to serving Mary Washington Healthcare's two local hospitals and their own private vascular center, RAF physicians provide radiology services to four outpatient imaging centers that are part of Medical Imaging of Fredericksburg (MIF): MIF on the Mary Washington Hospital campus, the Imaging Center for Women, Medical Imaging at Lee's Hill, and Medical Imaging of North Stafford. MIF facilities are converting



RAF Radiologist Ryan P. Leonen, MD, uses an ultrasound with current 2D imaging capabilities. The units will be converted to 3D/4D capabilities this year.

their 14 2D ultrasound units to 3D/4D units this year and adding another 3D/4D unit.

Compared with the relatively flat appearance of 2D ultrasound images, 3D shows depth and contours within the body, revealing a virtual anatomical view, while 4D delivers real-time, dynamic images. According to Swager, the new technology offers several distinct benefits:

- Enhanced imaging of abnormalities in fetal hearts, bones, and the placenta; gynecological cysts; tumors; conditions affecting the kidney, liver, or bowels; and many diseases. Enhanced images not only aid referring physicians in diagnosing conditions and patients in visualizing their disease; they can improve treatments in several medical specialties.
- More comprehensive images than 2D ultrasound, enabling studies with more clinical information to be performed in less time, reducing patient wait times.
- Accelerated workflow, using software that automatically captures existing patient data so less re-keying of patient information is needed.

"3D/4D ultrasound can determine the volume of breast tumors more precisely, and skin tumor infiltration to better define the margins of a tumor," Swager noted. "When used during biopsies, this technology helps physicians guide exact needle placement to a level not experienced before. That's a real advantage."

"...this technology helps physicians guide exact needle placement to a level not experienced before."

Advanced Ultrasound and MRI continued page 2

Interventional Radiology Cancer Treatments Improve Quality of Life

Radiologists Provide Services throughout Cancer Care

Working closely with referring physicians, interventional radiologists with Virginia Interventional & Vascular Associates (VIVA) perform thermal ablation, chemoembolization, and other specialized procedures usually available only in major metropolitan areas. Interventional radiology treatments are enhancing and improving the care of patients with cancer.

VIVA is the interventional radiology and vascular surgery practice of Radiologic Associates of Fredericksburg (RAF). R. Donald Doherty, Jr., MD, board-certified interventional radiologist with VIVA, noted that the group's diagnostic radiologists and interventional radiologists also provide 24/7 services throughout the continuum of cancer care. Their services cover:

Cancer Diagnosis – needle biopsy

Cancer Treatment – minimally invasive interventional therapies

Cancer Management – venous access, procedures to manage pain and complications

Cancer Diagnosis

Needle Biopsy. Image-guided needle biopsy, performed by interventional radiologists, provides a minimally invasive option for many patients requiring cancer testing. Through a tiny incision in the skin, interventional radiologists guide a needle to the suspicious mass to obtain tissue samples, using ultrasound or CT images as an anatomical roadmap. Pathologists later examine the specimens to determine a diagnosis.

Interventional Radiology continued page 3

The Alliance for Radiation Safety in Pediatric Imaging
We pledge to
image gently

Image Gently Campaign Goal: 'Child Size' Doses for Children

Radiologic Associates of Fredericksburg (RAF) has partnered with the Image Gently Campaign to increase awareness of opportunities to lower radiation dose when imaging children. Image Gently is an initiative of the Alliance for Radiation Safety in Pediatric Imaging.

“RAF radiologists and technologists have undergone additional training in ways to reduce radiation exposure, especially with CT scanning. We now have age and weight based CT protocols. This helps proportion the radiation dose when imaging children,” said Christopher M. Meyer, MD, a radiologist partner of RAF who serves as medical director of radiology at Mary Washington Hospital and physician coordinator of the Image Gently Campaign. “These protocols are similar to those used at the Children’s National Medical Center in Washington, D.C., and other leading children’s hospitals.”

Prior to the weight based protocols, RAF implemented several programs aimed at decreasing radiation dose. Before this campaign, the radiologic technologists would manually decrease the dose based on less precise methods that are still followed by most imaging facilities today. RAF’s process is now a structured and automated formula.

All four outpatient imaging centers of Medical Imaging of Fredericksburg, as well as imaging facilities at Mary Washington Hospital and Stafford Hospital, are participating in the Image Gently Campaign. Whenever a child enters any of these facilities, there is a coordinated effort by staff to image the child in the safest way possible while still providing the highest quality diagnostic studies. “This commitment to radiation safety goes beyond CT and crosses all modalities, including Xray and fluoroscopy,” Dr. Meyer added.

“We want to assure referring physicians and the community that when they choose facilities served by RAF, they will be imaged in the safest way possible. We will continue to incorporate new technologies and practices as they arise, so we can provide the highest quality and safest imaging possible,” Dr. Meyer said.

For more information about imaging safety protocols for children and adults, please visit www.imagingway.com/safety.

Advanced Ultrasound and MRI continued from page 1

Swager added that while some local businesses offer 3D ultrasound of fetuses as “keepsake” images for expectant parents, outpatient imaging facilities served by RAF provide 3D/4D ultrasound only for diagnostic and treatment purposes. The long term affects of ultrasound on a fetus have not yet been fully evaluated. In addition, the American College of Radiology and U.S. Food and Drug Administration do not support the use of ultrasound images for anything other than healthcare purposes.

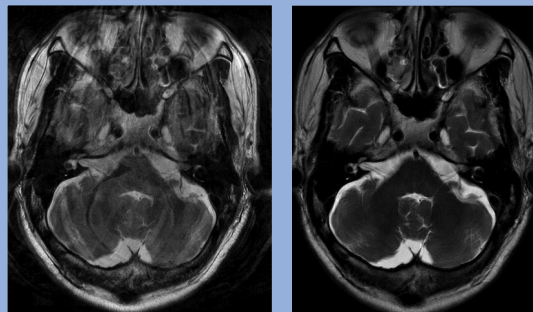
3T MRI

Medical Imaging at Lee’s Hill has the area’s only true open MRI. Now, adding to the open MRI and existing complement of 1.5T MRI systems, MIF will go live with the latest in 3T MRI technology and suite design. The 3T, now being installed at MIF on the Mary Washington Hospital campus, will be the most powerful of its kind between Richmond and Northern Virginia.

“The 3T provides faster scans with greater detail of patient anatomy and disease,” Swager said.

Because current MRI quality is already above an acceptable level, 3T can be used to reduce imaging time by half compared with the 1.5T MRI. This can be important when imaging a patient who is in intense pain and has difficulty lying still, for example. When improved image quality is a greater concern, as in certain brain studies and musculoskeletal studies of the knee, 3T can provide twice the imaging detail in the same time as a 1.5T MRI scan. 3T MRI studies also can be adjusted to provide both benefits, for example, 50% improvement in detail in 50% less time.

3T also minimizes the brightness of body fat, which can hide an abnormality. The more detailed images possible with 3T enable patients to receive less contrast agent, an advantage when imaging patients with renal failure or similar conditions, Swager noted.



(Left) Patient movement during an MRI affected image clarity. (Right) “Propeller” software compensated for the movement and reprocessed the image. The 3T MRI arriving this year will include propeller software.

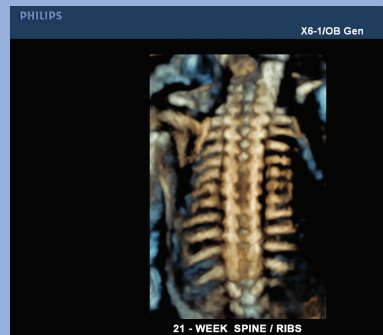
Referring Physician Technology

RAF is leveraging technology advances not only for patient imaging, but also for more effective, efficient communications with referring physicians, Swager said.

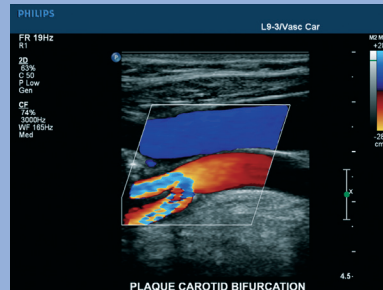
For example, RAF in collaboration with Mary Washington Healthcare information services is implementing the Primordial application at referring physicians’ offices that request it. The application provides referring physicians live, on-line communication with RAF radiologists, regardless of the hour, to discuss imaging findings, procedures, and questions. The application can also be set up to schedule appointments at imaging centers.

Referring physicians who would like to view an online tutorial about the system can visit <http://rafimaging.com/physician-area/primordial-tutorial/>.

For more information, contact Ed Swager at eswager@rafadmin.com or call him at (540) 361-1000.



3D ultrasound image of the spine and ribs of a fetus. Compared with the relatively flat appearance of 2D images, 3D reveals a virtual anatomical view.



3D ultrasound image highlighting carotid plaque, which is impeding blood flow.

One particularly intriguing feature of the 3T MRI, that MIF will be installing, is its “propeller” software. “Patients are frustrated when motion interferes with a study,” Swager said. “If any part of the body moves in the scan, the propeller software compensates for the movement to remove or reduce the effect of motion on the image.” This feature will be especially useful when image quality is affected by the movement of young children and those whose conditions prevent them from remaining still.

Images courtesy of Philips

Images courtesy of GE

Interventional Radiology continued from page 1

Needle biopsy is a same-day procedure for most patients and a time saver for medical and surgical oncologists. “It is so much easier for the surgeon to plan a procedure based on needle biopsy results than to perform an open biopsy, wait for the results, and then plan the procedure,” explained John D. Statler, MD, board-certified interventional radiologist with VIVA.

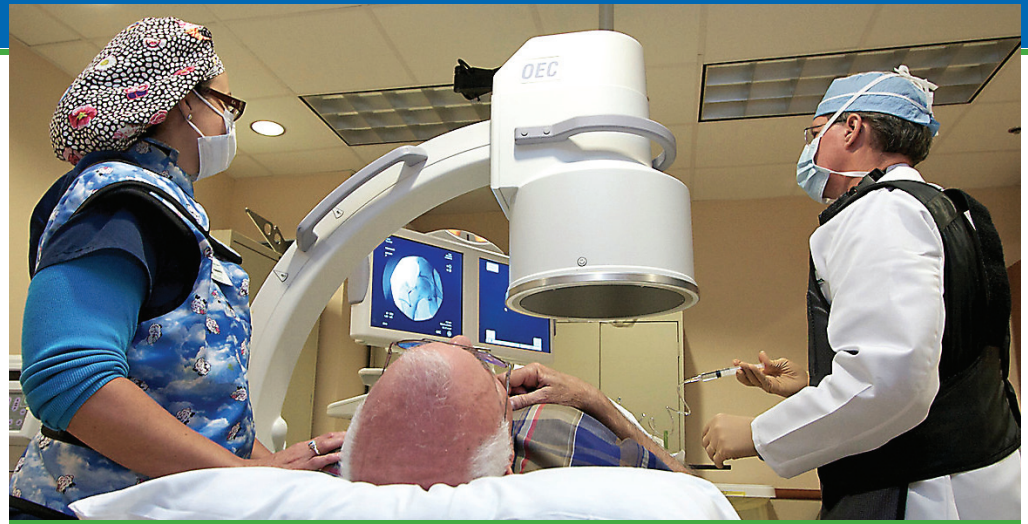
Cancer Treatment

Interventional radiology cancer treatments are minimally invasive procedures performed through a tiny incision in the skin. Interventional radiologists use medical imaging technology to help them guide treatments directly to the tumor.

Thermal Ablation. In this procedure, which can benefit certain patients with bone, breast, kidney, liver, or lung cancer, interventional radiologists use either radiofrequency ablation (RFA) to destroy tumor cells with heat, or cryotherapy, also known as cryoablation, to freeze tumor cells, while sparing healthy tissue nearby. Depending upon the type of tumor, thermal ablation can reduce pain, improve quality of life, and provide treatment options for inoperable cancers.

“Thermal ablation allows us to directly target tumors, and it is tissue sparing,” Dr. Statler said. “Years ago a patient with kidney cancer, for example, would have to have their kidney removed. Today, we can often spare the kidney and, with very small tumors, cure the cancer.”

Chemoembolization. This interventional radiology cancer therapy is used primarily for certain liver tumors that are too large to treat – or are in locations that cannot be treated – with thermal ablation. Chemoembolization delivers a high concentration of chemotherapy drugs targeted directly to the tumor by using the patient’s arteries as a pathway to the tumor. Interventional radiologists then close the arteries feeding the tumor, allowing the chemotherapy drugs to work for a longer period of time. The procedure can



John J. McLaughlin, MD, performs an interventional radiology procedure at VIVA with the assistance of Kim Calamos, RT. VIVA services include procedures for cancer diagnosis, treatment, and management.

be combined with other cancer treatments and, depending upon the type of cancer, can alleviate pain and improve quality of life.

“The goal of chemoembolization is to reduce the tumor and protect the liver as much as possible,” explained Dr. Doherty. “In some cases, the procedure also extends survival. We have been treating one patient, who had an estimated 18 months’ survival, for five years.”

A relatively recent advance in chemoembolization is the use of drug-eluting beads, which release chemotherapy agents over time for sustained treatment of tumors, Dr. Doherty noted.

Cancer Management

Central Venous Access. By inserting tiny catheters beneath a cancer patient’s skin, interventional radiologists provide venous access for chemotherapy, giving oncologists a pathway for delivering medications without repeated needle sticks. Interventional radiologists maintain the catheters throughout the course of treatment, which can last months and even years, Dr. Statler said.

Managing Complications. Sometimes cancer patients experience biliary, kidney, or other drainage as a complication of their

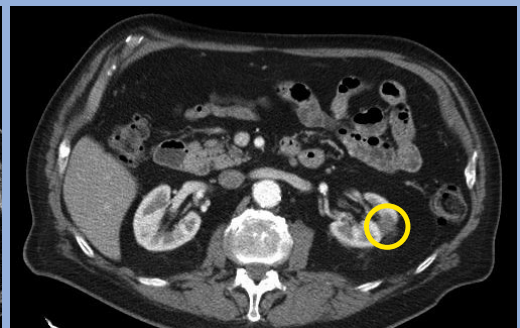
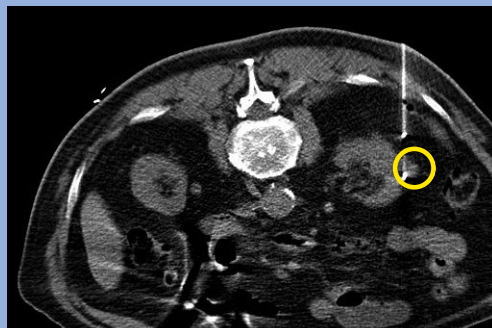
conditions. Interventional radiologists can relieve discomfort by implanting catheters to drain excess fluids, Dr. Doherty said.

Spinal fractures are another painful condition that can affect patients with bone cancer, particularly multiple myeloma. Interventional radiologists can inject bone-grade cement into the fractures to strengthen the spine and eliminate pain, a procedure known as vertebroplasty or kyphoplasty.

Interventional radiologists also assist cancer patients when needed by implanting intravenous catheter filters to reduce the risk of fatal blood clots, establishing feeding tubes for delivering nutrition, and providing other interventions.

“We see patients frequently throughout their cancer journey. Working closely with oncologists, surgical oncologists, and other members of the healthcare team, we strive to provide an optimized plan of care for every patient,” Dr. Doherty said. ■

For more information, contact R. Donald Doherty, Jr., MD, at doherty@vivassociates.com, and John D. Statler, MD, at statler@vivassociates.com; call (540) 361-1000 and leave a message for the doctors; or visit www.vivassociates.com/Cancer.



Kidney Cancer Treatment at VIVA. (Left) CT scan showing small, biopsy-proven renal cell carcinoma of the patient’s left kidney. (Center) CT scan during treatment, showing cryo probe placed through a skin nick into the cancer. (Right) CT scan 6 months after therapy, showing a scar with no residual tumor.

www.imagingway.com
(540) 361-1000

Ed Swager, Chief Executive Officer

Radiologic Associates of Fredericksburg (RAF) is the largest provider of medical imaging services in the Fredericksburg, Stafford and Spotsylvania area. RAF's interventional radiology and vascular services group, Virginia Interventional & Vascular Associates (VIVA), performs minimally invasive procedures, vascular lab studies and vascular surgery.

RAF publishes *Imaging Advances* periodically for referring physicians and the greater medical community. For more information, please contact Irene Valentino, RAF Project Manager, ivalentino@rafadmin.com, (540) 361-1000.

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Radiologist Spotlight: Donald M. Allen, MD



When Dr. Donald Allen envisioned a career while growing up in Tallahassee, Florida, medicine was far off his radar. "I wanted to be an attorney," he remembers. "My senior year in high school, I was part of a debate team that made it to the Southeastern finals. I was certain that law was my calling."

That all changed when he started college at the University of Florida and developed an interest in medicine. He went on to graduate from the University of Miami Medical School in 1971, completing his internship at Jackson Memorial Hospital and his residency at the University of Virginia. After two years of service with the US Army, Dr. Allen joined Radiologic Associates of Fredericksburg (RAF) in 1977. He is board-certified in diagnostic radiology, with a focus on women's imaging.

Along with Ed Swager, RAF's chief executive officer, Dr. Allen co-founded RAF's Imaging Center for Women (ICW) in 1996. He served as physician director for the center until 2009, and was instrumental in envisioning and developing the new ICW that opened in July 2010. The center, a partnership between RAF and Mary Washington Healthcare, is located on the Mary Washington Hospital campus. ICW physicians see an average 150 imaging patients a day.

"The new facility is the fulfillment of a vision we had for many years," Dr. Allen noted. "We truly believe it ranks with the country's best women's imaging centers."

Dr. Allen also was medical director during the development of three other important outpatient imaging centers: Medical Imaging of Fredericksburg on the Mary Washington Hospital campus, Medical

Imaging at Lee's Hill, and Medical Imaging of North Stafford.

Dr. Allen's love of his profession has led him to service in a number of other capacities. He is past president of the medical staff of Mary Washington Hospital, the local medical society, and the Virginia Chapter of the American College of Radiology. He is a councilor and fellow in the American College of Radiology, and a member of the Eastern Radiological Society.

For more than three decades, Dr. Allen also has been involved in community service as a member of the Fredericksburg Rotary. In recent years he has developed a keen interest in national affairs, working on the congressional campaign of Rep. Rob Wittman (VA-1) and serving on the congressman's First Congressional District Health Care Advisory Council.

On the home front, Dr. Allen enjoys golfing and gardening in the warm months and skiing in the cold ones. (Steamboat Springs, CO is a frequent destination.) A favorite pastime for all seasons is woodworking. From his basement workshop, he has crafted everything from bookcases to bathroom vanities.

He and his wife, Carol, who have been married for 41 years, also enjoy spending time with their son, Paul Gregory Allen, daughter-in-law, Lissa Steves, and two granddaughters, Penelope Galt and Charlotte Elizabeth Allen, in San Antonio, TX; and daughter, April Elizabeth Sapp, and son-in-law, Jaime Sapp, in Winston-Salem, NC.

Dr. Allen now works half time at RAF, sharing a job with Dr. George Fish. "It's been a great way to transition into retirement without putting on the brakes," he noted.

"My work means the world to me. So often, the patients we see have significant concerns about cancer. With mammograms and other screenings, we are finding cancers at a much earlier stage—and helping patients take the next steps toward life-saving treatment and recovery." ■

"...we are finding cancers at a much earlier stage—and helping patients take the next steps toward life-saving treatment and recovery."