

NEW JERSEY PHYSICIAN

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Imaging Subspecialists of North Jersey, LLC

*Advanced Imaging Technology,
Subspecialty-Trained Physicians and a
Mission to Reach Out to the Community*

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By **Iris Goldberg**

With locations in Paterson, Clifton, Montclair and Wayne as well as an impressive team of 20 subspecialty-trained American Board of Radiology (ABR) certified radiologists, Imaging Subspecialists of North Jersey, LLC (ISNJ) is one of the largest and most comprehensive radiology practices in the state (see Table 1). ISNJ prides itself on offering its patients the most advanced imaging technologies in order to provide the highest level of diagnostic and treatment services.

For example, **Matthew P. Forte, MD**, who serves as Chief of Interventional Radiology at all ISNJ sites, has brought a new dimension into the interventional lab. Originally trained as a surgeon before choosing to practice radiology, Dr. Forte is capable of utilizing the most innovative technology in the interventional procedures that he performs for the patients who are treated at ISNJ. Similarly, ISNJ radiologist **Warren Freitag, MD**, was originally board-certified in internal medicine and served as Assistant Professor of Medicine at Albert Einstein School of Medicine prior to his decision to pursue radiology.

Dr. Forte, along with **Steven Kwon, MD** and **Orestes Sanchez, MD**, oversees ISNJ's Vascular Access Center which is right on site where patients receive dialysis, allowing them to be treated immediately and get back on dialysis as soon as possible.



▲ Dr. Yuppa is reviewing a functional MRI of the brain showing speech centers illuminated

Women's imaging is another area in which ISNJ excels as is demonstrated by the impressive array of diagnostic and interventional radiology services it offers. At Mountainside Hospital ISNJ has instituted state-of-the-art breast imaging and intervention as part of a multidisciplinary breast disease program. **Madelyn Danoff, MD** is Chief of Women's Breast Services. She along with **Kalavathy Balakumar, MD** and **Marianne T. Centanni, MD** were instrumental in developing the breast services program and perform more than 35 interventional breast procedures collectively at all ISNJ sites each week.

Frank Yuppa, MD, RVT is President of ISNJ. He also serves as Chairman of Radiology at St. Joseph's Regional Medical Center and Mountainside Hospital. Dr. Yuppa specializes in cardiovascular computed tomography (CCT), oncological radiology and interventional radiology. He is board-certified in diagnostic radiology, neuroradiology and vascular technology. Also, Dr. Yuppa is Level 3, board-certified in cardiovascular CT and holds certifications in body, neurologic and orthopedic magnetic resonance imaging (MRI) and in mammography. Most recently, he became board-certified as a "registered physician in vascular interpretation." Dr. Yuppa shares some additional exciting technology that he and his colleagues at ISNJ are employing to enhance their imaging capabilities.

It has been discovered recently that MRI can be used to map changes in brain hemodynamics that correspond to mental operations, which extends traditional anatomical imaging to include maps of human brain function. This ability to observe the structures and also observe which structures participate in specific functions is made possible by a new technique called **functional MRI (fMRI)**. Dr. Yuppa reports that this ability to directly observe brain function opens up an array of new opportunities to advance our understanding of brain organization, as well as a standard for assessing neurological status and risk.

"Functional MRI can be used to determine the proximity of eloquent or very functional centers prior to surgery. It can be used for lateralization of speech function and functional MRI may also help in determining the

Table 1:**Radiology Services Offered at ISNJ**

- **Cardiovascular/Heart:** Two Level 3-certified and Cardiovascular Board Certified radiologists interpret cardiac/coronary artery CT angiograms performed on 64 slice CT scanners.
- **Women's Imaging:** Full spectrum of women's imaging including digital mammography, ultrasound (breast, abdomen and pelvis), hysterosalpinography (HSG) and breast MRI. Highly trained mammographers perform ultrasound-guided, stereotactic-guided and MRI-guided biopsies of the breast.
- **Musculoskeletal:** Three fellowship-trained musculoskeletal radiologists perform all MSK services including: MRI and CT, including 3D images (all joints: finger, wrist, hand, elbow, shoulder, hip, knee, ankle, foot, toes, spine, SI joints, etc), X-ray, MRI arthrograms, joint pain management/injection (shoulder, hip, knee, ankle, wrist, thumb, sacroiliac, acromioclavicular, etc). Biopsies of bone and spine are performed at St. Joseph's and Mountainside Hospital. Hip ultrasound (US) and US-guided procedures are performed at Clifton office, St. Joseph's Hospital and Mountainside Hospital. Dynamic patellar tracking study/patellofemoral dysplasia is also performed. ISNJ holds Clinical Magnetic Resonance Imaging Society (CMRS) certifications in MRI of brain/neck, orthopedics, and spine and body. ISNJ administers more than 600 joint injections yearly, including steroid injections and contrast injections for CT and MR arthrography.
- **Neuroradiology:** Three radiologists with Certification of Added Qualification (CAQ) in neuroradiology, in addition to American Board of Radiology (ABR) certification. MRI and CT of the brain, neck, spine, peripheral nerves. MRI spectroscopy, perfusion and functional MRI. Advanced neuroimaging of brain, internal acoustic canal (IAC), pituitary, seizure, neck, brachial plexus and spine imaging. Advanced stroke imaging, including CT perfusion, MR angiogram and venogram (MRA/MRV) of the carotid, subclavian, vertebral and intracranial vessels.
- **Interventional:** Four fellowship-trained interventional radiologists perform all interventional procedures including vascular access and full dialysis related procedures as well as CT, US and fluoroscopy image-guided procedures and biopsies.
- **Pediatrics:** Full pediatric diagnostic imaging is performed by a fellowship-trained radiologist. US, MRI, CT with radiation dose reduction, fluoroscopy, GI and GU diagnostic procedures, x-rays. MRI and CT procedures performed with sedation are monitored by board-certified anesthesiologists at St. Joseph's Hospital. ISNJ performs congenital pediatric cardiac/chest MRI and MR angiogram imaging.
- **Body Imaging:** Fellowship-trained radiologists perform MRI, CT, barium/fluoroscopic studies, virtual colonoscopy, CT enterography, US (including gallbladder, biliary tree, liver, spleen, kidneys, prostate, bladder).
- **Nuclear Medicine:** All aspects of nuclear medicine are performed including PET/CT, thyroid, bone, body, neuroendocrine, thyroid nuclear medicine treatment.



▲ Dr. Yuppa and Dr. Aluri-Vallabhaneni review functional MRI of the brain

prognosis for patients who have suffered a stroke or who have been diagnosed with a brain tumor," Dr. Yuppa explains.

He is pleased to share that with the installation of upgraded software now completed, the radiologists of ISNJ are performing fMRI at St. Joseph's Regional Medical Center on a wide scale basis. As one of only a few facilities in the tri-state area capable of performing fMRI, ISNJ will undoubtedly continue to receive referrals from various locations within New Jersey, as well as from neighboring states.

In order for fMRI to be accomplished, the patient must be capable of cooperating by responding to visual or auditory signals. During a typical functional imaging series for speech localization, there are hundreds of images running continuously for three to four minutes. In one particular paradigm, the patient will be shown a series of objects for 30 seconds and asked to name them silently. This is followed by a thirty second control where the patient's eyes are fixated on a control object such as a geometric shape. This will preferentially enhance Broca's speech area. There are many other paradigms available for language and motor function.

The potential role of fMRI in neurosurgical planning, which relies on precise delineation of the structural and functional aspects of the brain, cannot be overstated. The need for individualized maps of brain function is crucial when the presence of a tumor alters the expected location of a function, or when

the location of the tumor is in an area with an uncertain function such as association cortices or language-related processes.

In fact, some have reported fMRI results consistent with electrophysiology, PET, cortical stimulation and magneto-encephalography. "While in many places functional MRI does not replace electrical cortical mapping, it does save doctor time," Dr. Yuppa elaborates, indicating a reduction in the amount of procedure time when the neurosurgeon does not need to search for the affected area.

Bhanu Aluri-Vallabhaneni, MD and other neuroradiologists at ISNJ are taking part in clinical trials at St. Joseph's Medical Center that are focusing on therapies for stroke victims. Specifically, the "Attack Program" is investigating therapies for inter-cerebral hemorrhage and another trial looks at a clot-buster called desmoteplase which is an alternative to TPA.

Desmoteplase is a chemical found in the saliva of vampire bats that has the effect of catalyzing the conversion of plasminogen to plasmin, which is the enzyme responsible for breaking down fibrin blood clots. TPA must be administered within 3 hours of the onset of stroke symptoms, while desmoteplase offers a window of 3 to 9 hours.

For treating stroke victims Dr. Yuppa sees the tremendous potential of following up with fMRI to determine prognosis and duration of therapy. He discusses neuroplasticity,

which is the re-formation and re-distribution of neurons as a result of an abnormality. Therapy can enhance the process and this can be documented with fMRI. Although Dr. Yuppa cautions that reporting on this is still very early in the literature, he does foresee the possibility that fMRI can play a significant role in post-stroke rehabilitation.

After traumatic brain injury a type of fMRI called **tractography** is helpful in diagnosing deficits from major and minor trauma, including those in athletes, when other studies are normal or equivocal. Dr. Yuppa is actively involved in determining the significance of this technology in terms of prognosis and treatment for those who have sustained injury to the brain.

In fact, the potential future applications of fMRI are numerous. Besides neurosurgical planning and improved assessment risk for patients and treatment for stroke and brain trauma, possible future directions include improved assessment and strategies for the treatment of chronic pain, improved seizure localization and improved physiology of neurological disorders.

At ISNJ utilizing sophisticated imaging technology to improve quality of life and also to save lives goes beyond treating those patients who are referred for imaging studies by their physicians. Compassionate care is also a top priority at ISNJ as is the commitment to initiate community outreach programs that support various timely and worthwhile causes. The radiologists at ISNJ are committed to reaching out in order to help those in need of medical care. Perhaps the most compelling example is the work ISNJ has done, especially in the aftermath of 9/11, to offer its **Cardiac Outreach to First Responders**, in order to identify those who are at increased risk of suffering a deadly



heart attack while on the job of saving the lives of others.

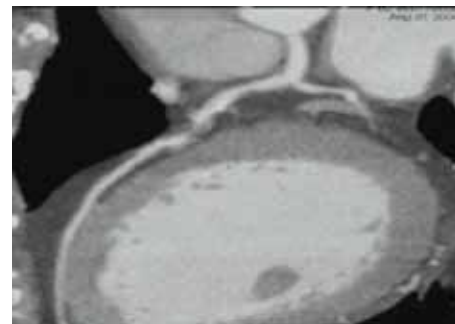
Particularly worrisome for this group is that many are unaware of the silent danger they face beyond the actual threat imposed by the disaster to which they are responding. Soft plaque that is undetectable by ECG or stress test may be accumulating on arterial walls, even in those who are relatively young. For emergency responders with undetected coronary artery disease, the high intensity stress they face while on the job can be the catalyst for a serious, if not deadly heart attack.

Dr. Yuppa and the cardiac imaging team at ISNJ have been involved in an ongoing program to educate firefighters and other first responders by traveling throughout the state to speak at firehouses, police stations, conventions and other events. For those who wish to undergo screening, the radiologists at ISNJ perform cardiac calcium scanning, which is the most accurate technology to predict subsequent coronary events. Then, for those who have a calcium score that is concerning, the radiologists at ISNJ can perform ultra-fast cardiac CT angiography to look directly inside the coronary vessels in order to see if and how much dangerous soft plaque is present. Once



a problem has been identified, aggressive treatment can be initiated and a major cardiac event can be prevented.

One of ISNJ's proudest accomplishments is the Sergio Award presented back in 2000 to two of its radiologists for their work with **"Healing the Children."** Dr. Yuppa and **Robin Frank-Gersberg, MD**, who is one of the few board-certified pediatric radiologists in northern



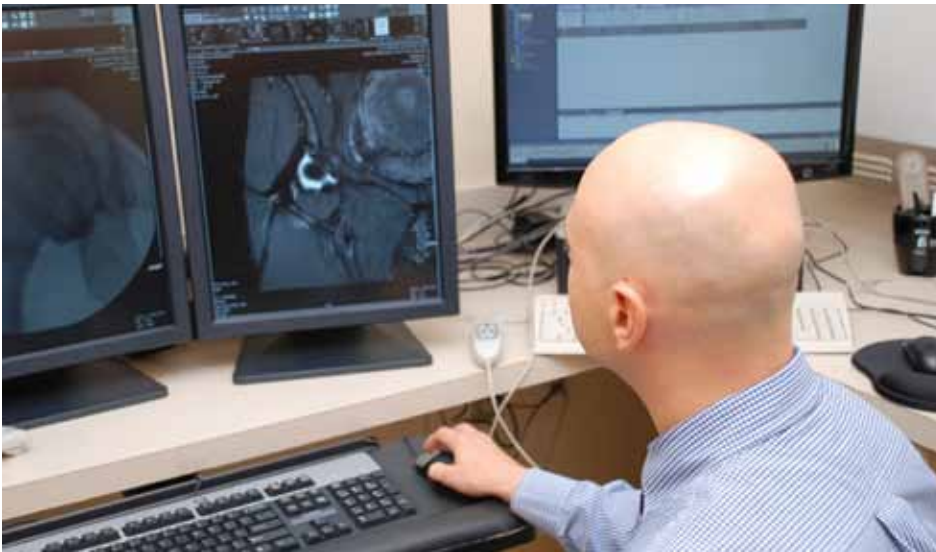
▲ CTA Angiography can look directly inside the coronary vessels to identify the presence of soft plaque

New Jersey, were instrumental in providing the imaging for surgery to separate conjoined twins. It is the imaging that allows surgeons to see which anatomy the twins share and how and where it is attached. This information is used to plan the ensuing surgery in the most safe and efficient way possible.

Another way in which ISNJ reaches out to the community is through its participation in **PAST** which stands for Pain Alternatives, Solutions and Treatments for the **Retired Professional Athlete's Group**. PAST is made up of a prominent group of medical professions from many specialties donating their time and services to treat aging former professional athletes who find themselves without health insurance or funds to cover their much needed health care.

Edward Milman, MD is the Medical Director of ISNJ at Wayne Valley Imaging, Director of MRI at all ISNJ locations and Section Chief Diagnostic and Interventional Musculoskeletal Radiology at St. Joseph's Regional Medical Center. Dr. Milman is certified by the American Board of Radiology and holds Clinical Magnetic Resonance Society Certification in body MRI, orthopedic MRI and neuroradiology MRI. Like Dr. Yuppa, he is one of a handful of New Jersey radiologists who are recognized as Level 3 Coronary CTA certified and Cardiovascular CT board-certified.

It was through Dr. Milman's ongoing relationship with many of New Jersey's leading orthopedic surgeons that ISNJ became the exclusive provider of radiologic services to PAST. He explains that many of the retired athletes suffer the effects of injuries they sustained during their careers. They require joint replacements,



▲ Dr. Milman looks at hip arthrogram

spine surgeries, etc. “We are their radiology connection. Whether they need MRI, CT scan – whatever, we donate those services,” Dr. Milman shares.

Going forward, Dr. Milman is most excited about utilizing fMRI to examine the brains of the PAST athletes who have suffered numerous concussions during their careers. “Many of these former NFL players that I see have some sort of cognitive impairment with completely normal anatomical MRI and CT scan. There is some functional brain injury that results from continuous head trauma,” Dr. Milman asserts.

Dr. Milman carries the mission of compassionate care and treatment beyond the charitable services provided. He emphasizes the importance everyone associated with ISNJ places on treating each patient seen with the utmost kindness and consideration. “My stand on this is ‘patient first’ and we started this approach from day one,” Dr. Milman states.

A very large part of the musculoskeletal work done at ISNJ is procedural. Working with Dr. Milman, **Romulo Baltazar, MD** also performs interventional musculoskeletal procedures. These include:

- Bone biopsy
- Spine biopsy
- Imaging-guided advanced biopsy of tumors
- Joint injections
- MR arthrography

MR arthrography is an MRI of a joint (usually shoulder, hip, wrist or elbow) with an injection of contrast and saline directly into the joint prior to the imaging. This distends the joint and permits visualization of the smallest structures within the joint with much more clarity than with MRI alone. MRI contrast material contains gadolinium, which affects the local magnetic field, outlining the structures, thereby allowing them to be evaluated.

In addition to gadolinium, Dr. Milman also injects CT contrast (Iohexol), which permits fluoroscopic guidance, letting him know that he is where he needs to be inside the joint. Also, if for some reason it is not possible to perform an MRI, if perhaps the patient is extremely claustrophobic or if there is another

contra-indication, Dr. Milman can perform a CT scan instead.

Besides for imaging purposes, Dr. Milman does fluoroscopically-guided therapeutic joint injections to alleviate pain. Along with the contrast material these injections contain steroids and numbing agents. Some areas that can be injected under fluoroscopy for resolution of pain include but are not limited to:

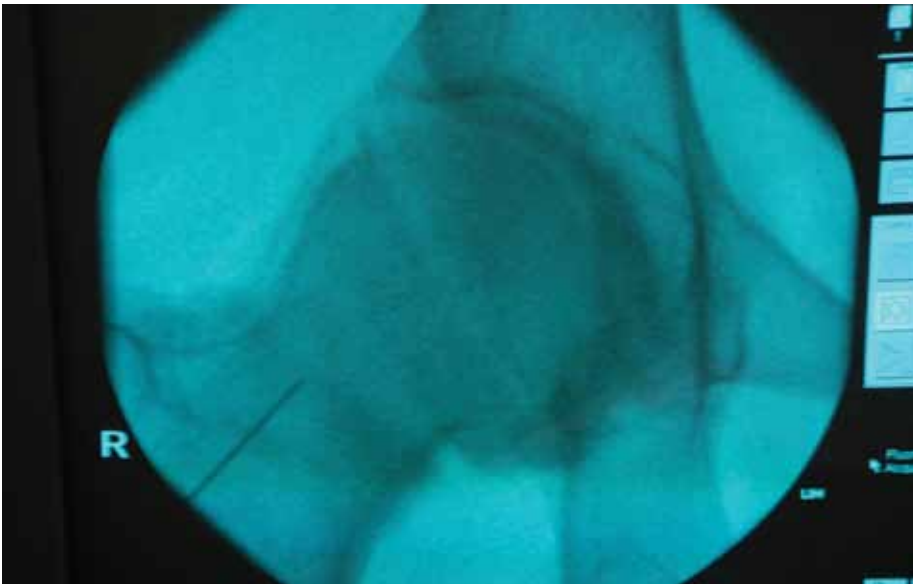
- AC joints (acromioclavicular)
- SI joints
- Elbow
- Thumb
- Hip

Dr. Milman discusses why it is crucial to employ fluoroscopic guidance when administering therapeutic injections. He actually participated in a study, working with an orthopedic resident at St. Joseph’s Medical Center, comparing the accuracy of “blind” injections to the AC joint, done merely by palpation vs. those performed with the help of fluoroscopy. “In the AC joint, because the anatomy is so variable, injections administered in a physician’s office can miss the target 20 to 30% of the time,” Dr. Milman reports.

In fact, in his study group consisting of consenting patients, Dr. Milman was inaccurate in 12 out of 20 patients when he injected blindly. Those patients were then re-injected with contrast added to confirm proper placement within the AC joint. “I don’t inject medicine unless I have fluoroscopically proven that I’m in the joint,” Dr. Milman emphatically states.



▲ Dr. Milman is administering a fluoroscopically guided injection into the hip



▲ Fluoroscopic guidance guarantees that the injection is placed properly inside the joint

For this reason, many orthopedists refer their patients to ISNJ for therapeutic injections so they can be certain that their patients are definitely getting the medication delivered correctly. Hopefully, this will serve to alleviate the problem. If, however, a patient returns to the orthopedist after a guided injection and is still complaining of pain, then the physician would be fairly certain that another source of the pain or a more aggressive treatment would need to be investigated.

At ISNJ Dr. Milman also provides ultrasound-guided aspirations of baker cysts in the knee, ganglion cysts, as well as paralabral cysts in the shoulder. Additionally, he now performs ultrasound-guided aspiration of calcific tendinopathy. This disorder is characterized by deposits of a crystalline calcium phosphate called hydroxyapatite, which can accumulate in any tendon in the body but occur most often in the tendons of the rotator cuff, causing pain and inflammation. In many cases ultrasound-guided aspiration can avoid surgery for debridement. By aspirating with a needle and at the same time, injecting steroids, Dr. Milman relates that even in the most severe cases, many patients obtain immediate and permanent relief.

Image-guided intervention at ISNJ is a valuable tool for area orthopedists, therefore, allowing them to refer patients for treatment that is definitely on-target. Patients then return to the

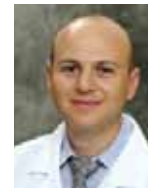
orthopedist and he or she now has concrete feedback to use in order to deliver the most appropriate follow-up care. Dr. Milman and the other interventional radiologists at ISNJ see their role as one of working with the referring physician to provide supportive diagnostic and treatment capabilities with the highest level of patient care as the ultimate goal.

Whether incorporating advanced imaging technology for diagnosis and/or minimally invasive interventional care for patients who are referred by their physicians, or reaching out to the community at large, all of the subspecialized radiologists of ISNJ pride themselves on the significant contribution they have been able to make towards exemplary health care in New Jersey. Looking towards the future, ISNJ will continue to explore innovative developments within radiology in order to best serve referring physicians and patients.

Please visit Imaging Subspecialists of North Jersey at www.isnjllc.com



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