Key Takeaways:

- An imaging center in Florida performs interpretations for US/MRI fused images during prostate biopsies.
- An enterprise imaging system enables instantaneous transfer of patient data for same-day advanced care.
- The initiative highlights radiology’s value in the team management of prostate cancer.

Many of the greatest technological and clinical developments in medicine start small. But innovators dream big, tempered by a cautiously optimistic approach in the face of today’s challenging health care climate. In central Florida, Radiology and Imaging Specialists (RIS) and the Hollis Cancer Center of Lakeland Regional Health joined forces with a simple idea to improve prostate cancer detection and care. Their dream became reality in the summer of 2014 through a synthesis of three key initiatives: an enterprise imaging platform that enables the instantaneous sharing of MRI reports; software enhancements with dedicated radiology interpretation, enabling the most accurate mapping possible for targeted biopsies; and creative scheduling between centers for optimal efficiency and satisfaction.

This collaborative approach is delivering high-value care to Lakeland. Patients are afforded same-day advanced prostate care, enabling both diagnostic confidence for clinicians and convenience for patients. RIS’s partnership with the Hollis Cancer Center — and other specialist groups — delivers an excellence of care typically found at tertiary centers, and brings a paradigm of success for higher volume, higher value, and new potential for collaborative medicine. This excellence won RIS the 2015 Patient-Centric Imaging Award (PCIA) from Health Imaging.

Since the 1980s, urologic oncologists have used ultrasound (US) guidance with needles in the prostate gland for random tissue sampling. David Marichal, chief technology officer at RIS, explains the “search and destroy biopsies” his dad underwent years ago for prostate cancer. “They’d run the labs, and the patient would have to undergo an awful saturation biopsy procedure that was incredibly painful and required quite a bit of recovery time,” he says. These random biopsies can miss harmful tumors and also identify others that are insignificant, leading to unnecessary treatment.

“There is considerable tension and stress for the patient with this approach,” says Magge S. Lakshmi, MD, board certified radiologist at RIS. After almost a decade of research at the National Cancer Institute, a new approach took shape thanks to software released in 2013 that fuses MRI and US images for 3-D rendering of the prostate for precise biopsies. “Now, MRI is a groundbreaking diagnostic tool in the arsenal for prostate cancer detection. It’s very exciting to be at the forefront of offering something that’s really a paradigm shift,” says Lakshmi.

Technology and Time

In partnership with urologic oncologists, who perform prostate biopsies using real-time ultrasound guidance, radiologists can help the treatment team achieve much higher specificity with MRI. The US/MRI prostate fusion software allows the urologist to sample the exact location of the highest-grade lesion. The fused images will no doubt become clinically imperative in the fight against prostate cancer. But how RIS and the Hollis Cancer Center utilize technology and teamwork for their patient-centered paradigm is what earned them the PCIA award.

Using network communications technology and an advanced enterprise imaging platform, the cancer center receives the interpreted MR images from RIS, annotated by Lakshmi, with detailed mapping in three dimensions. The software provides analysis of the
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prostate gland, circumscribing the area the urologist should target for suspicious lesions. If a biopsy is required, the surgeon performs the highly targeted procedure then and there, thanks to the instantaneous transfer of data.

The cancer center converted to the enterprise imaging platform (vendor neutral archive) in 2014, which was a tool both partners could leverage for a collaborative care strategy. Marichal explains that RIS has invested heavily in their communications network, including fiber connection to all of the hospitals and practices they read for to enable seamless image transfer, which has helped increase MRI volumes. Using DICOM tags to automatically route images — in this case, MR prostate images — the platform itself takes care of getting the images where they need to be for post-processing and other applications. The “simple, but nice and elegant solution,” according to Marichal, has streamlined workflow for the technologists and radiologists with “all the rules of logic happening in the background.” Both back- and front-end imaging logistics are greatly improved in tandem with the patient experience. Routine prostate imaging time slot duration has decreased 16 percent, reducing patient time in the scanner.

The imaging center and cancer center collaborated to establish a biweekly schedule for fusion biopsy patients, especially for those traveling from outside Lakeland. All prostate exams are scheduled between 8:00 a.m. and 12:00 p.m. to allow for same-day visits to the cancer center, if necessary. Lakshmi reads and marks the prostate MRI immediately after the exam in the morning, and the cancer center retrieves the data on their system instantaneously to perform the real-time biopsy with guidance. Instead of anxiety-ridden waits over days or weeks, patients are typically released by midday, says G. Byron Hodge Jr., MD, urologic oncologist at Hollis Cancer Center. “Our patients really can’t believe they can drive two and a half hours [to the Lakeland area] and get something like that done, and at that level of quality.”

This partnership has brought great value to imaging’s role in team care. Radiology becomes integral in the detection and management of prostate cancer patients. “Remember,” Lakshmi reminds, “as radiologists, we don’t want to be replaceable.”

Both RIS and the Hollis Cancer Center agreed that for radiology to play a vital role in patient management, only one primary radiologist would read the prostate MR scans to achieve ultimate confidence and trust. Lakshmi, who has been the sole reader for the program — handling over 200 cases personally — now shares the duty with only one other radiologist. She also meets weekly for a tumor board conference at the cancer center to review patient cases. This established face time with other specialists further demonstrates radiology’s value as a member of the patient-care team. With access to the RIS enterprise imaging platform, Lakshmi retrieves the MR images on the PACS server in concert with the pathologist pulling up their slides to enhance dialogue about cases.

It’s a true team approach to patient care that does not stop at detection. MRI’s specificity is so advanced that radiologists can now provide clinical data for better treatment plans. The added degree of detail may suggest a strategy that forgoes immediate treatment for a “wait-and-see” approach on a lower-grade cancer. The team can also better predict the possibility or degree of incontinence or erectile dysfunction based on lesion location, aiding in preoperative counseling and treatment decisions. “With the MRI, we are able to stage it with much more confidence than ever before,” explains Lakshmi.

“With the availability of images I can be directly involved in the patient selection for biopsies,” Lakshmi adds. “I also fine-tune my expertise by working with the urologist to review all the cases so I know when my interpretations were accurate and when they were

Magge S. Lakshmi, MD, is the primary radiologist at RIS who reads and interprets prostate MR scans and annotates them with detailed mapping in three dimensions to guide the treatment team.
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not. This is the only way to learn and keep building to improve care.”

Hodge is thrilled to be part of the Hollis Cancer Center/RIS collaboration that delivers streamlined care to his patients. As most specialists would agree, clinical competency was the top priority in this imaging center partnership. “The quality control has been impeccable,” he says. “This is all on top of the high-quality scans that give us greater confidence in what we do.”

Next Steps

Radiology practices that want to partner with cancer centers for prostate care should:

• Reach out to hospital-based practices to gauge interest in partnering to offer US/MRI fusion biopsies.

• Demonstrate to referrers the clinical and workflow value of adding MRI to ultrasound for prostate biopsies.

• Evaluate existing network communications systems to determine how they can be leveraged for image/data sharing.

• Explore vendor options for post-processing software and enterprise imaging platforms.

Join the Discussion

Want to join the discussion about how radiologists can collaborate with urologic oncologists to improve prostate cancer care? Let us know your thoughts on Twitter at #imaging3.

Have a case study idea you’d like to share with the radiology community? Please submit your idea to http://bit.ly/CaseStudyForm.

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