

## Case Study: Engaging the Physician

*Using R-SCAN™, radiologists collaborate with family medicine clinics to enhance imaging appropriateness of lumbar spine orders.*

By Amena Hassan

### Key Takeaways:

- Baylor College of Medicine radiologists worked with referring physicians to reduce unnecessary imaging for low back pain through R-SCAN.
- Incorporating educational interventions into a CME track within the health system encouraged involvement by referring providers, nurse practitioners, and physician assistants.
- Following a radiologist-led educational intervention, clinicians ordered nearly 38 percent fewer imaging studies for low back pain and increased their appropriateness rating for such orders by approximately 23 percent.

Sometimes the best patient care involves no imaging at all. So when the radiologists at Baylor College of Medicine noticed that some referring physicians were ordering more MRIs for low back pain than seemed appropriate, they took the lead to study the situation and deploy a solution for improved patient care.

In doing so, the radiologists turned to the [ACR's Radiology Support, Communication, and Alignment Network \(R-SCAN™\)](#), an innovative quality improvement initiative that brings radiologists and referring clinicians together to enhance image ordering and reduce unnecessary imaging.

Funded through the [Centers for Medicare & Medicaid Services' Transforming Clinical Practice Initiative](#), R-SCAN offers radiologists and referring physicians tools to study image ordering practices, institute educational interventions for improved ordering, and conduct post-intervention impact analyses. Among these tools is [ACR Select™](#), a clinical decision support (CDS) system that uses the [ACR Appropriateness Criteria® \(AC\)](#) to optimize image ordering, reduce unnecessary imaging exams, and lower the cost of care.

To begin, radiologists and referring physicians enroll in R-SCAN and select a targeted improvement area from a list of [Choosing Wisely®](#) topics.

In Baylor's case, the radiologists chose the "Imaging for Low Back Pain" topic and collaborated with referrers from Harris Health System in Harris County, Texas, to improve image ordering in that area. Their efforts led to a nearly 38 percent reduction in lumbar spine MRI orders and an approximately 23 percent increase in the appropriateness rating for such orders. Here's how they did it.

### Approaching the Clinicians

Christie M. Malayil Lincoln, MD, assistant professor of radiology and neuroradiology and faculty senator at Baylor College of Medicine, and Melissa M. Chen, MD, who was a neuroradiology fellow at Baylor College of Medicine at the time, led Baylor's effort to reduce



Christie M. Malayil Lincoln, MD, assistant professor of radiology and neuroradiology and faculty senator at Baylor College of Medicine, co-led the effort for reducing imaging for low back pain at Baylor.

inappropriate imaging for low back pain using R-SCAN.

They selected the topic after noticing that two of Harris Health System's high-volume family practice clinics were ordering more imaging studies for low back pain than were probably necessary. (Most patients with uncomplicated acute low back pain do not require imaging.<sup>1</sup>) Lincoln and Chen wanted to explore whether the clinics were ordering the the studies as a force of habit. "When a patient complained of back pain, was the automatic response to order imaging time and time again?" Lincoln wondered.

To answer their question, Lincoln and Chen approached Brian C. Reed, MD, director of disease control and clinical prevention at Harris County Public Health, who at the beginning of the project was the vice chair of community health in the Department of Family & Community Medicine. Reed immediately recognized the value of the project and how it aligned with Harris Health System's commitment to

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As a neuroradiology fellow at Baylor, Melissa M. Chen, MD, who is now a clinical neuroradiologist and assistant professor in the department of diagnostic radiology at the University of Texas MD Anderson Cancer Center, co-led the effort to reduce inappropriate imaging for low back pain.

implementing higher quality standards in line with the [Institute for Healthcare Improvement's Triple Aim](#).

In addition to reducing unnecessary imaging, Reed hoped the project would shorten wait times for patients who truly need MRIs. "We were involved in [another quality improvement project](#) that reduced wait times for patients who needed imaging for osteoarthritis of the knee," says Reed, who is also an associate professor of family and community medicine. "I thought this project might have a similar effect for patients who required imaging of the lumbar spine."

Reed introduced Lincoln and Chen to Samuel Willis, MD, and Luu Phong, MD, the directors of the two Harris Health clinics with the highest incidence of inappropriate image ordering for low back pain. Both clinicians were receptive to using R-SCAN to enhance imaging appropriateness, and they recommended a third clinic that also struggled with appropriate image ordering.

### Coaching the Clinics

With the referring clinicians on board, Lincoln and Chen partnered with three other members of the radiology group — Christopher J. Yen, MD; Darshan Variyam, MD; and Kevin Y. Wang, MD. Together, the radiologists reviewed the 300 MRIs that referring clinicians from the three clinics ordered for patients experiencing low back pain during a 10-month period.

Focusing on outpatient studies, the team used the ACR Select tool through the R-SCAN portal to analyze 90 of those exams and determine whether they met the evidence-based guidelines in the AC.

"When we looked at the lumbar MRIs, we focused on the outpatient population because they all have very different acuity levels than inpatients or emergency room patients, and we didn't want to dilute our information," Lincoln explains.

The review process confirmed that the referrers were in fact ordering lumbar spine MRIs inappropriately based on the evidence-based guidelines.

In response, the radiologists attended the monthly continuing medical education (CME) luncheons at each of the three health clinics and taught referring providers, nurse practitioners, and physician assistants about appropriate image ordering for lumbar spine. Incorporating the lessons into scheduled CME time limited the impact to the clinicians' regular workflow.

During each session, the radiologists highlighted various scenarios — for example, one showing a patient who has cancer and another presenting a choice between ordering a lumbar spine MRI in the acute or chronic stage. At the conclusion of each session, attendees were given time to contemplate the different scenarios and ask questions before determining whether imaging should be ordered.

The educational effort had a positive impact on radiologist/clinician relationships. "The sessions allowed me to meet with the referring providers, whether they were physicians, nurses, or physician assistants," Lincoln says. "It let us engage in a conversation about how providers should order studies in a more targeted way and helped us understand their predicament as well."

According to Lincoln, the "predicament" refers to the number of patients providers see on a daily basis and the difficulty they have in finding the time, in peripheral clinics, to assess whether or not the imaging is necessary. In some cases, patients want imaging regardless of the situation.

### Achieving Positive Results

In the 10 months following the educational period, clinicians from the three clinics ordered a combined 187 MRIs for low back pain, down from the 300 orders made during the pre-intervention period.

Using ACR Select, the radiologists found that referring physicians consulted the AC for 79, of the post-intervention scans, equating to 42 percent of the total

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scans ordered. The combined average appropriateness rating for MRIs from all three clinics was 5.8 during the post-intervention period, significantly more than the 4.7 rating received during the pre-education period. These results indicated that the educational intervention led to improved image ordering.

The results also indicate that referring clinicians are now looking for other ways to treat lower back pain before turning to advanced imaging. "After we suggested that physicians should explore alternate ways to treat patients before ordering an MRI, we saw an increase in the time from the initial clinic visit to the MRI exam," Chen explains. "Physicians are now recommending treatments such as medication, physical therapy, or other interventions before they send their patients for imaging."

As Reed had hoped, the reduction in unnecessary imaging also seems to have reduced wait times for patients who urgently needed MRIs. The Baylor team is working to measure this reduction in patient wait times for MRI as part of the next iteration of the project.

Lincoln attributes the project's positive results in large part to the camaraderie that developed between the radiologists and referring clinicians. "The back-and-forth dialog through the educational sessions opened a direct, two-way line of communication we didn't have before, positioning us as consultants who now guide appropriate imaging," she says. "We wanted to impact patients in a positive way, and we wanted to do it in partnership with our referring providers. We achieved both objectives."

Along the way, the radiologists cemented their role beyond image interpretation as partners in providing quality patient care. "R-SCAN allows radiologists to be seen as leaders in decreasing inappropriate imaging in a meaningful way," Chen says. "It allows radiologists to be more in control when caring for patients, rather

than sitting back and waiting for things to happen."

For more information about R-SCAN, visit the [website](#) or email [rscaninfo@acr.org](mailto:rscaninfo@acr.org).

#### Endnote

1. Patel ND, Broderick DF, Burns J, et al. ACR appropriateness criteria for low back pain. *JACR*. 2016; 13(9):1069-1078. Accessed on Dec. 21, 2017.

### Next Steps

- Uncover opportunities for improving imaging appropriateness at your institution.
- Reach out to referring providers about participating in an R-SCAN project to improve imaging appropriateness.
- Explore providing CME credit for the educational intervention phase of an R-SCAN project.

### Join the Discussion

Want to join the discussion about how radiologists can lead quality improvement projects for improved image ordering? 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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