

Case Study: Quality Assurance



A focused team is resolving quality and safety issues within the radiology department at the University of Mississippi Medical Center.

By Jenny Jones

Key Takeaways:

- Radiologists at the University of Mississippi Medical Center in Jackson, Miss., formed a team dedicated to addressing quality and safety issues within the department.
- The team implemented programs to track follow-up care, improve communication, reduce reading room interruptions, and render consults on outside imaging.
- As a result of these initiatives, about 15 more patients a month receive appropriate follow-up exams for incidental findings and report turnaround times have improved.

The University of Mississippi Medical Center (UMMC) is a tertiary care hospital, receiving some of the most complex cases in the state. Many UMMC patients, especially those in the emergency department (ED), undergo imaging studies that frequently reveal potentially clinically relevant incidental findings, such as pulmonary nodules. But as ED physicians focus on treating patients' acute conditions, pulmonary nodules and other relevant incidental findings can easily be overlooked, often delaying follow-up care.

To prevent this from happening, the UMMC radiology department recently created two complementary programs: The critical and incidental findings communication system directly informs ordering clinicians about critical findings, pulmonary nodules, and other clinically relevant incidental findings; the clinical outcomes coordinator program tracks lung nodules and other incidental findings alerts to ensure patients receive timely and appropriate follow-up care.

"Since launching these programs, more patients have received proper diagnoses as a result of appropriate follow-up care and better communication with the patient," says Cyrillo R. Araujo, MD, associate professor of radiology at the University of Mississippi and director of ultrasound at UMMC.

The critical and incidental findings communication system and clinical outcomes coordinator programs are just two of several projects UMMC's radiology department has initiated since forming a dedicated quality and safety team two years ago. As the department's quality and safety officer, Araujo leads the team, which comprises radiology leaders, nurses, radiology technicians, a referring physician representative, medical physicists, residents, and, soon, a patient advocate.

"Before 2014, the radiology department did not have a committed quality and safety team," Araujo explains. "Now the team meets for an hour every month to address quality and safety issues in radiology and is part of the hospital's larger efforts to improve quality and safety throughout the institution."



Cyrillo Araujo, MD, associate professor of radiology at the University of Mississippi and director of ultrasound at UMMC, leads the department's quality and safety team.

Communicating Findings

To start, the team conducted a strengths, weaknesses, opportunities, and threats (SWOT) analysis to identify the department's quality and safety successes and shortcomings (Read "[Analyze the Situation](#)" to learn more). In response to this analysis, one of the team's first projects addressed challenges associated with communicating critical and incidental findings in imaging studies.

Even before the team formed, the department had a results communication solution embedded within its dictation system to expeditiously deliver imaging findings to referring clinicians. But the program was underutilized and didn't work with referring clinicians outside of the health system, Araujo says. Instead, the radiologists used a manual process to communicate and document critical and incidental findings. The approach was time consuming and prone to substantial variation which could delay and negatively impact patient care.

To address the issue, Araujo and his team implemented a department-wide policy requiring all radiologists to use the critical and incidental findings communication

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Continued on next page

Case Study: Quality Assurance



Continued from previous page

system and upgraded the program to send communication alerts to referring physicians outside of UMMC. The team also added alerts specifically for pulmonary nodules, which frequently require follow-up care.

Now when the radiologists find a lung nodule in an imaging study, they enter a pulmonary nodule alert into the results communication system, which automatically sends a notification to the ordering provider and documents that the automated communication system has been initiated. Once the ordering provider receives the recorded voice message, he or she has the option to close the message, verifying that the system was used and the communication loop was closed, or reply with a recorded message back to radiology.

Wendy Howell, BSN, RN, CCRN, clinical outcomes coordinator in the UMMC radiology department, says the alerts ensure patients receive timely follow-up care. "For example, we had a patient who came through the ED for trauma and whose full-body scan revealed a pulmonary nodule," she explains. "A suspicious alert was created, and the patient had his first oncology appointment within 19 days, whereas before the nodule probably would not have been followed up on as quickly, leading to a less favorable outcome."

James C. Kolb, medical director in UMMC's ED, says the alerts are more than convenient — they help save lives. "I used to lie awake at night and wonder how many nodules the radiologists mentioned while the patient was in the ED for trauma that nobody followed up on," Kolb explains. "With these alerts, patients are receiving the care they need, when they need it."



Melissa L. Stevens, CEN, and Wendy Howell, BSN, RN, CCRN, are clinical outcomes coordinators in UMMC's radiology department. They track follow-up care of incidental findings, including pulmonary nodules.

Tracking Follow-Up Care

While the digital alerts help the radiologists communicate imaging findings more effectively, they do not track follow-up care. To close this gap, the quality and safety team developed the clinical outcomes coordinator program. "We have two coordinators within the department who make sure the findings are appropriately documented within each patient's electronic medical record (EMR) and that the patients show up for their follow-up imaging or clinical appointments, as recommended," Araujo says.

Each week, the coordinators run a report of all the results communication system alerts, paying particular attention to incidental findings and pulmonary nodules that require follow-up care. "When we see an incidental finding or a pulmonary nodule, we pull the medical record to see whether the finding has been documented in the patient's chart," explains Melissa L. Stevens, CEN, clinical outcomes coordinator in UMMC's radiology department. "If the documentation is not there, per policy, we email the ordering physician and ask him or her to add the finding to the EMR to ensure the patient doesn't fall through the cracks as a result of uncoordinated care."

The coordinators also set reminders in their digital calendar to check on patients with incidental findings and pulmonary nodules and see whether their follow-up exams were actually done within the timeframe the radiologists recommended. If the follow-up exam is not in the patient's chart at that time, the coordinators send a letter to the patient about the finding.

"Two months after we send the initial letter, we'll go back into the patient's chart," Howell says. "If the follow-up exam still has not been completed, we'll send a second, certified letter to the patient to remind him or her to get the finding checked." As a result, Araujo says, roughly 15 more patients per month now receive follow-up exams for incidental findings than they did before the program began. To streamline the follow-up care tracking process, the team is working to integrate the alerts and follow-up reminders directly into the patient EMR.

Reducing Interruptions

After implementing the clinical outcomes coordinator program, the quality and safety team focused on reducing reading room interruptions. Its goal was to decrease imaging interpretation errors due to frequent distractions, improve report turnaround times, and streamline communication with referring clinicians. To that end, the team developed a program that puts radiology navigators in the reading room during

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Continued on next page

Case Study: Quality Assurance



Continued from previous page

weekdays to answer the phone and call referring clinicians on the radiologists' behalf.

"Our main ED/body reading room phone rings every 10 minutes," Araujo says. "The navigators' primary job is to triage the calls and connect the callers with the appropriate radiologists, as needed." The navigators also perform administrative duties, such as tracking each radiologist's non-clinical activities, including radiation planning consultations, tumor board cases and attendance, and hospital committee participation, on a spreadsheet. The department can share [this log](#) with hospital administrators, demonstrating the added value the radiologists bring to the health system.

Once the navigator program was underway, the quality and safety team built on that effort by adding radiology facilitators to the department. The facilitators are senior radiology residents who perform the same duties as the navigators on nights and weekends, when fewer staff radiologists and residents are available to read all of the ED and inpatient exams. In addition to answering the phone, the facilitators protocol imaging studies performed at UMMC during nights and weekends and assist with consultations on outside imaging from referring hospitals.

"We receive a lot of requests for outside imaging consults after hours, when the department is shorter of staff," Araujo explains. "The facilitators help expedite the consultation process by talking to the referring physician or care team about the request, opening the images in PACS, reviewing the clinical information, and presenting the case to the staff radiologist. This makes the interpretation more efficient and provides a quicker answer to the clinical question."

Since the navigators and facilitators joined the department, reading room interruptions have decreased sharply, Araujo says. "Before, the radiologists would get halfway through these huge studies and have to start over whenever the phone rang," notes departmental business administrator Cheryl Williams. "Now the radiologists say they don't know how they ever managed without the navigators and facilitators in the reading room." In fact, [a survey of radiology residents](#) and staff indicates that having the navigators and facilitators in the reading room has improved everything from the accuracy of the radiologists' reads to their relationships with referring providers. "We don't have any interruptions or disturbances while reading complex cases, which reduces the error rate and increases efficiency," says Manohar S. Roda, MD, assistant professor of radiology and a body and MRI imaging radiologist at UMMC.



The University of Mississippi Medical Center is a tertiary care hospital and the only academic medical center in the state.

Araujo and his team are in the process of data mining to determine how much turnaround times have improved since the navigators and facilitators joined the department. While he doesn't have these statistics yet, Araujo says anecdotal evidence indicates that turnaround times have improved notably. Bethany Sabins, MSN, FNP-C, nurse practitioner in UMMC's department of obstetrics and gynecology, says her department has noticed a significant improvement in turnaround times as a result of the program.

"The radiology navigator and facilitators help the radiologists communicate important findings in a much more efficient and quick manner," Sabins says. "This allows us, as referring providers, to discuss the imaging results with our patients face-to-face during their office visit, rather than having to bring them back for another visit or discuss the findings by phone. It's a huge plus, especially since some of our patients travel up to 3 ½ hours to be seen."

Forming Partnerships

With the success of these programs, the quality and safety team is working to expand some of its existing projects where needed and launch new initiatives to further enhance patient care. The team's latest program involves improving the process for consultations of outside imaging studies. Through these multifaceted quality and safety projects, Araujo and his team have elevated the UMMC radiology department from a place where imaging exams are simply interpreted to a critical junction along the path to coordinated care.

"Ultimately, our quality and safety program demonstrates the radiology department's commitment to partnering with other departments throughout the hospital to provide better and coordinated care for patients," Araujo says. "These partnerships are critical in the new value-based model of care and have proven to enhance patient care and improve outcomes."

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Continued on next page

Case Study: Quality Assurance

Continued from previous page

Next Steps

- Assemble a multidisciplinary group of radiologists, technologists, referring clinicians, physicists, and other stakeholders to uncover and address your group's challenge areas.
- Upgrade or install results communication software to timely deliver critical and clinically relevant incidental and pulmonary nodule findings directly to referring clinicians.
- Create a reading room call center to reduce interruptions and improve communication between radiologists and referring physicians.

Read More about UMMC

- In *Teaming Up*, learn how radiologists and surgeons formed a collaborative partnership to develop imaging-driven treatment plans for complex cases. The approach has expedited patient care and reduced repeat scans.

- In *Analyze the Situation*, learn how the quality and safety team used process improvement tools to identify and address the radiology department's challenges.

Join the Discussion

Want to join the discussion about how radiologists can develop and implement initiatives to address a host of quality and safety challenges? 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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