Case Study: Structured for Care

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An academic tertiary care center implements structured reporting, achieving 94 percent compliance among radiologists.

By Jenny Jones

Key Takeaways:

- Radiologists at Montefiore Medical Center led an effort to implement structured reporting templates across the department for CT, MRI, and ultrasound exams.

- The team developed the templates through an iterative process that included input from nearly all of the department's radiologists.

- Within two years, the team released templates for 95 percent of corresponding exams by volume and achieved a 94 percent compliance rate among radiologists, who bought into structured reporting after being directly involved in the template development process.
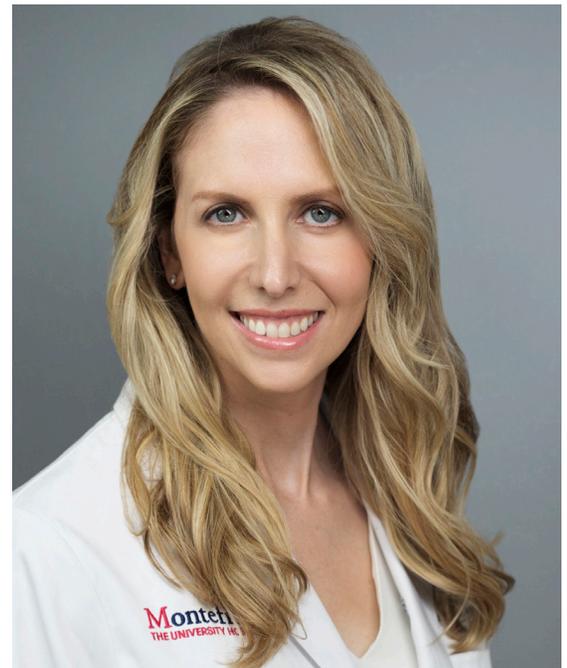
Shlomit Goldberg-Stein, MD, a musculoskeletal radiologist at Montefiore Medical Center, and Meir Scheinfeld, MD, PhD, director of Montefiore's Division of Emergency Radiology, both completed training at an institution that used department-wide structured reporting. The experience gave them a great appreciation for the benefits of consistent, quality reporting.[1,2] So when Goldberg-Stein and Scheinfeld began working together at Montefiore in 2014, they enthusiastically proposed replacing the radiology department's traditional reports with structured templates. The challenge was getting their colleagues to agree to the change.

Convincing even a small group of radiologists to abandon their traditional reports for structured ones, which organize findings in a standard way and use consistent language to describe common findings, can be difficult. Change is hard for everyone, and structured reporting requires a major change for radiologists to overhaul the product at the heart of their work — their imaging reports.

At Montefiore, the challenge was even greater because its imaging department is no small group and is also physically separated across several hospitals and outpatient centers. The department has well over 100 radiologists, including more than 80 attendings, more than 35 residents, and about a dozen fellows, who serve four hospitals and 11 outpatient facilities for the academic tertiary care center in the Bronx, N.Y.

"We have a large faculty and many of our members have been dictating reports their individual way for 20, 30, 40, or more years. Even some of our young attendings have very strong opinions about how their reports should look," says Goldberg-Stein, who is also director of imaging report quality and an assistant professor in the department of radiology at Albert Einstein Medical Center. "We knew our biggest challenge would be getting everybody on board to standardize our reports across the sprawling enterprise."

In 2014, with strong support from radiology department chair E. Stephen Amis, MD, FACR,

Shlomit Goldberg-Stein, MD, musculoskeletal radiologist and director of imaging report quality at Montefiore Medical Center and assistant professor in the department of radiology at Albert Einstein Medical Center, is co-chair of Montefiore's Structured Reporting Committee.

Goldberg-Stein and Scheinfeld committed to overcoming this challenge. They became co-chairs of the department's Structured Reporting Committee and launched a performance improvement project to develop and implement structured reporting templates for all cross-sectional imaging exams. Within two years, the team released templates corresponding with 95 percent of dedicated exams by volume, and the department's radiologists were using the templates 94 percent of the time.[3] Here's a look at how the team at Montefiore achieved this difficult task.

Identifying the Problem

Before Montefiore instituted structured reporting, its radiologists typically used traditional narrative reports. Goldberg-Stein says the problem is that narrative reports are highly variable, and the actionable

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information within them may be hidden. "Some radiologists believe their personal reporting style and idiosyncrasies are valuable," she says. "But the intended subtleties may not be appreciated or understood by referring physicians. If radiologists as a group don't communicate findings clearly and consistently, that can be detrimental to patient care, and can lead to inappropriate treatment down the line."

This is especially true when it comes to emergency medicine, where minutes often matter. Danielle B. Weinman, MD, emergency medicine attending physician at Montefiore, says she spent a lot of time scouring the unstructured reports to find the information she needed to care for patients. "I felt like I was reading on and on, looking for the meat within the text," she says. "As an ER physician treating a high volume of patients who have varied needs, I don't have time to hunt for information in a report."

Goldberg-Stein and Scheinfeld knew structured reporting could resolve many of these issues. With this in mind, they began working together to develop a plan for instituting structured reporting within the department and pitched the idea to Amis, who was immediately receptive to the proposal.

"I thought it was a great idea, because every so often I would sit down and review about 100 of our reports, and they were all over the place," says Amis, who is also a professor in the department of radiology at Albert Einstein College of Medicine. "With structured reporting, our reports are consistent, and we confirm that the interpreting radiologist has gone through everything in a structured way and has recorded exactly what he or she saw."

Defining the Scope

After giving his approval for the project, Amis worked with Goldberg-Stein and Scheinfeld to outline three project criteria: First, the project would focus on CT, MRI, and ultrasound reports. (X-ray reports were excluded from the project's first phase because they were generally succinct.) Second, they would develop the templates using a consensus approach, with input from radiologists throughout the department. And finally, while findings would be presented in a structured order within the report, the radiologists would still be able to describe the findings in the manner they wanted (no standardized lexicon was mandated).

"We established these criteria because we wanted to make sure we had complete buy-in from the faculty," Amis explains. "Structured reporting can be pretty onerous if you don't approach it in the right way. It was extremely important to me that we got input from the members of each division and that we gave them some latitude in how they phrased their interpretations. I didn't want to just shove this down their throats."

Educating the Radiologists

Once the ground rules were established, Goldberg-Stein and Scheinfeld drove the project. Their first step was to educate their colleagues about structured reporting. They delivered presentations during staff and resident meetings, publicized the goals of the structured reporting initiative through internal communication channels, disseminated examples of structured reports, and shared several peer-reviewed papers and other literature about the benefits and challenges of structured reporting.

From there, Goldberg-Stein and Scheinfeld asked the radiologists to provide their impressions of structured reporting through an online survey. Eighty-two radiologists participated in the survey, the results of which indicated that while 79 percent of residents favored instituting structured reporting, only 39 percent of attendings approved. Twenty three percent of attendings and 7 percent of residents opposed the move, and the remaining respondents were unsure how they felt about structured reporting.

Mordecai Koenigsberg, MD, FACR, director of ultrasonography and director of the residency program at Montefiore, was one of the radiologists who were initially skeptical of the initiative. "I have very strong feelings that reports should be organized in a certain

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manner, and I was concerned that one person would determine how the reports would be structured and then everyone else would just have to follow along," explains Koenigsberg, who is also a professor of radiology at Albert Einstein College of Medicine. Koenigsberg quickly realized his assumptions about the process were inaccurate.

Testing the Templates

After gauging Montefiore radiologists' initial impressions of structured reporting, Goldberg-Stein and Scheinfeld recruited approximately 35 representative radiologists from all of Montefiore's sites to serve on the Structured Reporting Committee. The committee was then divided into six subcommittees that corresponded with the six primary subspecialties that perform cross-sectional imaging: abdominal, cardiothoracic, musculoskeletal, pediatric, ultrasound, and neuroradiology. These subcommittees were responsible for crafting the initial drafts of the reporting templates.

As the subcommittees created the draft templates, they rolled each template out for a limited trial with the radiologists who read those exams most often. Based on the feedback the radiologists provided during this limited trial, the subcommittees revised the templates before releasing them again, this time for a site-wide trial open to all of the department's radiologists, including trainees.

During this second two-week trial, the co-chairs again collected feedback from the radiologists and shared it with the subcommittee members, who voted on whether to implement each suggested change. They then shared the voting results with the entire department. "We took everyone's comments seriously and addressed every comment by either accepting or rejecting it," Scheinfeld says. "For those comments that we rejected, we provided a reason why they were rejected. This transparent approach was critical to getting everyone to go along with the project."

Implementing the Templates

As the Structured Reporting Committee finalized each template, the co-chairs worked with the IT department to optimize and standardize the voice command fields, ensuring the template would load and auto-populate correctly during dictation. From there, the committee announced a predetermined date when the new standard department-wide template would begin to auto-populate for all users at the start of exam dictation. These "go live" events were facilitated by the IT department to ensure a continuous and uninterrupted workflow.

E. Stephen Amis, MD, FACR, chair of the radiology department at Montefiore Medical Center and professor in the department of radiology at Albert Einstein College of Medicine, immediately supported the structured reporting initiative.

Within two years of initiating the project, the team released templates corresponding with 95 percent of dedicated exams by volume. Many of the templates were disease-specific and facilitated increased adherence to national reporting guidelines, including Lung-RADS, Li-RADS, and Pi-RADS. Additionally, an analysis of 12 exam types showed that the radiologists used the templates 94 percent of the time.

"We're pleased with the high level of compliance, especially since we don't offer an incentive for using the templates or a penalty for not using them," Scheinfeld says. "People have ultimately come on board because they think it's a good idea, and they have realized that structured reporting has benefits."

In Koenigsberg's case, he made a conscious decision to give structured reporting a try and soon his skepticism dissolved. He says the committee's iterative process, which included input from all of the department's radiologists, was especially motivating. "I bought into the approach as I used it," Koenigsberg says. "I found that it made me more efficient because a lot of the housekeeping that you've got to address in your reports is already taken care of. This allows you to spend time talking about a particular area where there is a pathology that you'd like to really go in-depth on."

Referring physicians also appreciate the structured reports. "I like the organization of the structured reports," Weinman says. "I can move through the report

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more quickly and look at everything more thoroughly. I can easily check the organ system I am most concerned about and check for anything that could have masqueraded as a different symptom and led us astray. This allows me to provide better patient care. It's a real change for the positive."

Scaling the Approach

While Montefiore is a large academic center, institutions of any size can implement and benefit from structured reporting, Goldberg-Stein says. "The main thing is to tailor your initiative and implementation timeline to your organization," she says. "A small private practice might have to come to different compromises than a large academic center to bring as many people on board as possible, but that's OK. Be responsive to those radiologists who are skeptical of structured reporting, while maintaining a focus on the ultimate goal of improving reporting quality."

Endnotes

1. Boland GW, and Duszak R. "Structured reporting and communication." Journal of the American College of Radiology. 12.12 (2015): 1286-1288.

2. Schwartz LH, Panicek DM, Berk AR, et al. Improving communication of diagnostic radiology findings through structured reporting. *Radiology*. July 2011;260(1):174-81.

3. Goldberg-Stein S, Walter WR, Amis ES, et al. Implementing a structured reporting initiative using a collaborative multi-step approach. Current Problems in Diagnostic Radiology, *http://dx.doi.org/10.1067/j.cpradiol.2016.12.004*. Accessed Feb. 9, 2017.

Further Reading

To explore the resources Goldberg-Stein and Scheinfeld used during the educational phase of the structured reporting project, check out these resources:

1. Larson DB, Towbin AJ, Pryor RM, Donnelly LF. Improving consistency in radiology reporting through the use of department-wide standardized structured reporting. *Radiology*. 2013;267(1):240-50.

2. Schwartz LH, Panicek DM, Berk AR, Li Y, Hricak H. Improving Communication of Diagnostic Radiology Findings through Structured Reporting. *Radiology*. 2011; 260:174-181

3. Marcovici PA, Taylor GA. Journal Club: Structured radiology reports are more complete and more effective than unstructured reports. *AJR American journal of roentgenology*. 2014;203(6):1265-71.

4. Weiss DL, Langlotz CP. Structured reporting: patient care enhancement or productivity nightmare? *Radiology*. (2008); 249: 739–747

5. Hawkins CM, Hall S, Zhang B, Towbin AJ. Creation and Implementation of Department-Wide Structured Reports: An Analysis of the Impact on Error Rate in Radiology Reports J Digit Imaging (2014) 27:581–587

Next Steps

- Educate your team about structured reporting and conduct a survey to gauge members' impressions of the reporting method.

- Create a timeline for developing, testing, and implementing structured reporting templates, including radiologist input every step of the way.

- Partner with your technical team to ensure radiologists can access the templates within their existing workflow.

Join the Discussion

Want to join the discussion about how radiologists can implement an effective structured reporting project at their institutions? 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*.