Implementation of Structured Radiology Reports

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DESCRIPTION OF THE PROBLEM

The literature suggests that structured reporting in radiology improves the clarity, consistency, and completeness of communication between radiologists and referring clinicians and thereby improves patient care [1-8] while addressing medicolegal risk [9-11]. The ACR and the RSNA, through their quality guidelines, encourage radiology departments to implement structured reporting to facilitate complete documentation of findings, focus on core findings, improve communication of results, and facilitate data mining for quality assurance and research purposes [5,12].

Despite the potential benefits and endorsement by national organizations, many centers still have not implemented structured reporting. Furthermore, there is a paucity of literature regarding the implementation process. We report our experience implementing structured reports and the subsequent process evaluation we conducted. Our findings shed light on possible challenges in implementing structured reporting that could help other departments design effective structured reporting implementation processes.

WHAT WAS DONE

We implemented structured reporting in the ultrasound department at our center. This department was chosen because it was smaller, people seemed interested, and there was support from departmental champions.

The project involved three phases: (1) template development, (2) implementation, and (3) evaluation of the process by auditing template use and qualitative interviews exploring radiologists' perceptions as to why templates were used or not used.

Phase 1: Template Development

Templates from the RSNA library and ACR and in the existing literature [13,14] were modified. The study team held focus groups with three clinician groups (general pediatrics, emergency, and general surgery) to obtain the end users' input on content and format. A focus group was then held with three radiologists to determine the extent to which clinician input could be practically incorporated into radiology reports. Draft templates were circulated to all radiologists for further refinement, and final templates were reached by consensus. Four templates (appendicitis, intussusception, testicular torsion/scrotum, and female pelvis) were made available in the diagnostic imaging radiology information system and PACS for electronic use.

Phase 2: Implementation

Over a 7-month period, several implementation strategies were used.

Announcements of the availability of the templates were made in weekly e-mails, on signage in reporting rooms, and in person at department and trainee meetings. Notably, the department chair held specific meetings with trainees to discuss the importance of using the structured reports.

Champions from within the department were identified, and they encouraged peer use on a one-to-one level. Champions from another hospital with successful recent implementation shared their experiences with the department.

IT personnel and a study team member were present at strategic times in the reporting rooms providing real-time coaching and troubleshooting. Radiologists' feedback was solicited. Problems with the templates were dealt with immediately, resulting in minor template changes or fixing IT glitches.

Six months after the implementation strategies were started, a 1-month period of "audit and feedback" occurred. Weekly individual feedback via e-mail was provided to the staff members and trainees (fellows and residents) regarding percentage use, with a copy to the department chair.

Phase 3: Evaluation

Weekly manual audits by a study team member throughout the implementation determined percentage use of the structured report templates by each staff radiologist and trainee. To explore radiologists' perceptions of the

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implementation process and suggestions for template improvement, in-depth interviews were conducted with six radiologists (three staff members, three trainees). The six selected interviewees covered a spectrum from nonusers of the templates, through midlevel users, to 100% users to capture rich, diverse comments. Interviews were audio-recorded and transcribed verbatim.

The transcripts were analyzed using a conventional content analysis approach that describes a phenomenon by interpreting meaning from the content of text data. Text data were interpreted through the systematic process of coding and identifying themes or patterns. All transcripts were read repeatedly to achieve immersion. Data analysis captured key concepts and derived codes. Codes were then sorted into categories on the basis of how different codes were related and linked [15]. The investigators held coding meetings for further theme refinement. Discrepancies were handled by referring to the transcripts and reaching consensus.

OUTCOMES

Results

Before the final 1-month audit and feedback, uptake was consistently low. A small number consistently used the templates, but most did not use the templates at all, whereas a few others tried the templates once and then stopped. Interestingly, during the 1-month audit and feedback phase, reasonable uptake by the trainees was noted, with persistent low staff use. The reasons for low uptake were explored through interviews, and several themes and subthemes emerged. An overview of these themes is presented in Table 1, and they are explained in more detail in the following text.

Themes and Subthemes

Purposes of Radiology Reports. Participants consistently mentioned that the purposes of radiology reports are multiple. Communication between radiologists and referring physicians and a record of reference data were believed to be well served by a template approach. However, the additional purpose as a reflection of a radiologist's personal work product seemed to be in direct conflict with the use of templates.

Benefits of Structured Reporting. Despite low uptake of the structured reports, participants readily shared what they perceived to be benefits to structured reporting. They believed that it should save time and could improve communication, completeness, standardization, and

Table 1. Themes and subthemes that emerged during interviews with radiologists

Theme	Subtheme	Description
Purposes of radiology reports		Communication between radiologist and referring physician
		Record of reference data
		Individual radiologist's work product
Benefits of structured reporting		Save time
		Improve communication, completeness, standardization, and organization
		Serve as a useful training tool
Indications/suitability of studies for a structured format		Normal studies, little variability in pathology, many quantitative data are more suitable
		Not well suited when there are many abnormalities to report
Tensions/problems with structured reporting	Loss of autonomy	Loss of choice in report presentation, and radiologists encountered instances when "their" way of presenting a report was better than what was prescribed by the template
		Loss of independence felt when implementation process is perceived as a "top-down" approach
	Depersonalization of perceived personal work product	Radiology reports are thought by some to be a personal reflection of one's work, and using templates depersonalized this process
	IT workflow barriers	Better IT infrastructure/interface would improve workflow to realize more of the benefits of structured reporting