ARTICLE IN PRESS Radiology Resident Education

Improving Care and Education Through a Radiology Residentdriven Clinical Consultation Service

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Rationale and Objective: As health care moves toward bundled payment systems and merit-based incentive models, increasing awareness of the value of the radiologist is essential. A resident-driven clinical imaging rounds (CIR) program initiated at our institution allows radiologists to actively and directly participate in the team-based medical model. A retrospective review of survey data evaluated the qualitative and quantitative effects of CIR on clinical management, communication, and education of referring providers and radiology residents.

Materials and Methods: The initial 10 months of a resident-organized CIR were evaluated in a retrospective study. Twenty radiology residents and 150 internal medicine physicians and medical students participated in imaging rounds. An anonymous survey of participants was performed and results were analyzed.

Results: Eighty-five percent of radiology resident participants completed the survey (N = 17). Approximately 30% of internal medicine participants completed the survey (N = 45). There was an overwhelming positive review of imaging rounds, with a large majority of all groups agreeing that imaging rounds improve education, communication, and patient care.

Conclusions: Resident-driven imaging rounds provide a valuable opportunity to improve communication, education, and patient care. We have created a CIR with a sustainable workflow that allows direct and regularly scheduled imaging-medicine consultation valued by both radiologists and internal medicine physicians, improving the quality of patient care and providing education to our radiology residents in value-based care.

Key Words: Education; Imaging 3.0; consultation; resident.

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BACKGROUND

R adiology consultation by referring physicians has traditionally been a part of standard clinical practice and reported as a preferred method of decision support for imaging (1). Before the widespread availability of picture archiving and communication system (PACS), traditional film rounds provided an opportunity for direct and iterative information exchange between the radiologist and the remainder of the care team, and served as a showcase for the expertise of the radiologist (2). Dedicated radiology consultation services have been implemented in the past (3). However, these have not become widespread likely as a result of the volumebased fee-for-service payment, which favors interpretations over consultative activities. As health care moves toward meritbased incentive models and alternative payment models, increased opportunities will arise for the radiologist to add value

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through improving quality and limiting costs. Awareness and documentation of contributions by radiologists are essential for radiologists to be recognized and compensated for the value they add (4).

The need for such a system has been emphasized by our professional organizations, which have developed campaigns to educate radiologists on the importance of value and quality of care in addition to quantity, as more and more focus is placed on the patient experience and referring physician satisfaction. Imaging 3.0, as defined by the American College of Radiology, is a "multiphase program consisting of services, technology tools and processes that enable radiologists to adapt how they manage their practices, patient care and their own futures." Its purpose is to position radiologists as expert consultants to referring physicians and health systems, to support radiologists as diagnosticians and consultants, to empower patients and providers, and to align incentives, as payment incentives increasingly focus on value-based care (5). Based on the principles of Imaging 3.0, Action Case Studies have demonstrated the impact attending radiologists can make by providing accessible consultation services. "Case Study: Radiology's Open Door" illustrates that traveling to the referring clinician work site to educate and listen to referring clinicians strengthens the visibility and credibility of radiologists as locally available consultants (6). "Case Study: The Value

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of Hard Work" demonstrated how quantifying radiologists' contributions with a "Radiology Value-Added Matrix" resulted in a hospital-wide paradigm shift. Radiologists came to be considered "among the strongest physician leaders" within the hospital (7).

The Radiological Society of North America developed the "Radiology Cares" campaign to revitalize patient-centered imaging. The goal of the campaign is to improve awareness and appreciation for the integral role radiologists play in health care (8). As part of this initiative, Mangano et al. developed a diagnostic radiology consultation clinic, providing an opportunity for staff radiologists to meet directly with patients to review imaging. Their study demonstrated that patientcentered consultation activities improved the patient's understanding of their disease process as well as their understanding of the radiologist's role in their medical care (9).

Although these efforts have resulted in reported successes, most have not directly involved resident radiologists. The next generation of attending radiologists should receive dedicated educational experiences in value-based care models to prepare them for future practice in the ever-changing health-care landscape. These initiatives will create transformative leaders who can readily respond to the needs of their institutions, practices, referring colleagues, and patients (10). This topic was discussed at the American Alliance of Academic Chief Residents in Radiology annual meeting where chief residents discussed ways to improve senior radiology resident training. Proposed were several models for increasing radiology's clinical presence in their institutions, including the embedded reading room, the embedded radiologist, and the radiology consult pager (11).

Clinical imaging rounds (CIR), an innovative and sustainable resident-driven consultation service, allow resident radiologists to actively and directly participate in clinical management by meeting with medicine teams on the wards. A retrospective review of survey data determined the qualitative and quantitative effects of CIR on clinical management, communication, and education of referring providers and radiology residents. With results, CIR will be modified to better serve patients and providers. Additionally, by documenting the CIR structure and outcomes, this program can be developed at other institutions to improve education, patient care, and radiologists' role in the greater medical community.

METHODS

The initial 10 months of CIR were evaluated in a retrospective cohort study.

Four 30-minute sessions were held weekly with internal medicine services on the inpatient wards. The referring service submitted case requests via email 24 hours before the scheduled CIR time, providing patient demographics, history, and specific studies or findings for review. This lead time allowed the radiology resident to consult subspecialty attending radiologists with any questions before meeting with the medicine teams. CIR were structured with the medicine team presenting the relevant patient history. The radiology resident demonstrated relevant imaging findings on our WebPACS (GE Medical Systems, Milwaukee, WI), clarified imaging related questions, and discussed management options and recommendations with the referring service. Residents documented their CIR encounters in a standard Health Insurance Portability and Accountability Act-compliant note in our dedicated consultation database.

An institutional review board application was submitted and approved to review data from a survey designed to determine the perceived usefulness of CIR as a form of consultation. The anonymous web-based electronic survey was distributed to radiology residents and internal medicine attending physicians, residents, and medical students who participated in imaging consultation rounds (Appendices 1 and 2). Qualitative and quantitative analysis of survey responses was performed to demonstrate the impact of CIR on patient care and education.

Data are presented as number and frequency. A chisquare test was used to determine the association between level of training and individual survey responses for both departments. A chi-square test was also used to determine if there was an association between survey response and resident department (medicine or radiology). All P values are twosided and evaluated at the 0.05 alpha level. All analyses were performed in SAS v9.3 (SAS Institute, Cary, NC).

RESULTS

Twenty radiology residents and 150 internal medicine physicians and medical students participated in imaging rounds. On average, three patient cases per session are discussed and four sessions per week are held. Based on the needs of the medicine teams, usually 10 minutes were used to discuss each patient and review imaging, diagnostic considerations, and next steps. The cases chosen for review were often complicated and required in-depth discussions of imaging and management options. Over 10 months, approximately 500 patient cases were reviewed during rounds.

The survey was completed by 85% of radiology resident participants (N = 17) (Chart 1 and Appendix 1). Approximately 30% of internal medicine participants completed the survey (N = 45) (Chart 2 and Appendix 2). There is no statistically significant difference in answers between medicine attendings, residents, and medical students (P value range: 0.10–1.00). There was also no significant difference between the responses of the medicine teams and the responses of the radiology residents (P value range: 0.18–1.00), with the exception of one question discussed in the following.

All responders (100%) feel that the imaging rounds were appropriate to their current level of training.

Survey results demonstrate that CIR provides an important educational opportunity for all members of the care team: 93.3% of medicine and 88.2% radiology participants assert that CIR is beneficial to their education; 75.6% of medicine providers became more confident in ordering imaging studies; Download English Version:

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