The Current State of Radiology Call Assistant Triage Programs Among US Radiology Residency Programs

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Abbreviations

RCAT
radiology call assistant triage

APDR
Association of Program Directors in Radiology

Rationale and Objectives: Given increasing volume and workflow interruptions in radiology, we sought to identify and characterize radiology call assistant triage (RCAT) programs among US radiology residency programs.

Materials and Methods: A survey was created using Qualtrics survey software and emailed to all members of the Association of Program Directors in Radiology listserv. A total of 296 active members belong to this listserv, including program directors and assistant program directors. The survey included questions about the existence and specifics of a call triage assistant program.

Results: Data were obtained from 88 active members of the Association of Program Directors in Radiology (30% response rate). Of those, 20 programs (23%) have an RCAT program. Triage assistant staffing includes nonmedical or clerical staff (60%), medical students (30%), first-year radiology residents (5%), and technologists (5%). All respondents with RCAT programs report satisfaction with their program and plan to continue. A significant majority (75%) have no plans to change, whereas the remaining 25% are considering program expansion and pay increases. Among residency programs without RCAT programs, none reported termination of their triage program. The most common reasons for not having triage assistants include cost, lack of awareness, differing opinions on utility, and the presence of 24/7 attending coverage.

Conclusion: Twenty US radiology residency programs report having an RCAT program. All report satisfaction with their program despite different staffing models. RCAT programs may represent an effective measure in limiting interruptions and potentially decreasing interpretative errors made by residents on call.

Key Words: Triage; residency; call; assistant.

INTRODUCTION

The volume and complexity of radiology studies continue to climb nationally on an annual basis. Between 1998 and 2001, there was a 5% annual increase in radiology studies performed in the United States (1), largely driven by magnetic resonance imaging, computed tomography (CT), ultrasound, nuclear medicine, mammography, and interventional procedures. In contrast, the number of radiologists was estimated to be increasing at a rate of only 1.5% annually (1). To compound this issue, the complexity of examinations is also increasing: relative value units per full time equivalent increased by 22% from 2003 to 2006 (2).

Community and academic practices alike are feeling the effects of the increasing volume and complexity of radiology examinations. Radiology residents might be particularly sensitive to increases in volume, especially during independent call. This has driven radiology residency programs to evaluate radiology workflow structure to help address rising volumes, increase workflow efficiency, and minimize the impact of frequent interruptions.

It is increasingly recognized that interruptions can lead to accidents and mistakes, ultimately putting people's lives at risk. In medicine alone, it is estimated that errors contribute to 98,000 deaths and at least 1 million injuries each year (3). A recent study by Dhanoa et al. reported that radiologists spend only 36% of their workday on image interpretation, whereas 44% of their time is spent on noninterpretive tasks (4). These noninterpretive tasks include telephone conversations, in-person consultations, study protocoling, contrast agent injections, and managing adverse reactions, all of which are essential to

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the practice of radiology, but can distract radiologists from the primary responsibility of interpreting imaging studies. Many of these tasks are crucial responsibilities of the radiologists, but others can be handled by physician extenders, allowing the radiologist to focus on interpretation. For those noninterpretive tasks requiring the radiologist's direct attention, it may be helpful to have some control over when these tasks are performed to minimize interruptions during active image interpretation.

Telephone calls present one of the most common interruptions in radiology reading rooms. Yu et al. found that a radiology resident spends a total of 2 hours on the phone during a 12-hour shift and is interrupted two to three times while reading a single CT of the abdomen and pelvis (5). Unpublished internal data from the authors' institution showed a similar rate of interruptions. Related work by Balint et al. showed a positive correlation between the number of phone calls and the generation of a discrepant preliminary report, indicating that even one phone call above the observed average baseline number of calls within the hour preceding the report generation resulted in a 12% increase in the probability of generating a discrepant preliminary report (6).

At least three academic centers (Yale, Dartmouth, and the University of Iowa) have reported their efforts to address the number of distractions and growing volume by employing third- and fourth-year medical students as call triage assistants to help the on-call radiology residents (7–9). These assistants help manage and triage clinical and administrative tasks, such as answering phones, fielding questions from clinicians, and relaying study results. Not only have these programs been useful in addressing the workflow issues, but those that utilize medical students in this role provide exposure to diagnostic radiology and experience in imaging appropriateness and radiology workflow (7–9).

Our own institutional weekend CT volume increased by 29.6% in a 5-year time frame from 2011 to 2015 (unpublished data). This stimulated departmental interest in implementing a radiology call assistant triage (RCAT) program, so we sought to compare and contrast different models. Our goal was to identify and characterize RCAT programs and to gather operational information about each program, both to inform our own decision about a call triage program and to help other residencies or practices considering such a program.

MATERIALS AND METHODS

To understand the current state of RCAT programs across the country, a survey was created using Qualtrics survey software (www.qualtrics.com, Provo, UT; Version 12.2015) and sent to all members of the Association of Program Directors in Radiology (APDR) listserv. A total of 296 active members belong to this listserv, representing program directors and assistant program directors from US radiology residency programs. The survey was emailed to all the members followed by one reminder email. The survey included questions about the existence of an RCAT and the qualifications, responsibilities, hours, compensation, and training of the triage assistant. We also asked for reflections on the effectiveness of the program and the barriers to success. A copy of the full survey can be found in Appendix S1.

We requested single responses from each program. Duplicate submissions and insufficient responses were excluded. The only duplicate submissions that were excluded were those that were submitted very close in time to one another and from the same IP address. Of the duplicate entries, the more complete answer set of the pair was retained for analysis. The responses that were excluded for insufficient data included those responses that answered "yes" to having a call triage assistant program but then did not provide any additional information.

This study was declared exempt from institutional review board review.

RESULTS

Of the 296 active APDR members, a total of 96 responses were recorded with 8 responses being excluded for duplicate entries or insufficient data. This left a total of 88 responses (30% participation). Of these, 20 members (23%) reported that their programs have an RCAT in place. None of the programs without RCAT previously had a program that was terminated. The most commonly cited reasons for not having a program included cost, lack of awareness of such programs, the presence of 24/7 attending coverage, and differing opinions on the utility of such a program.

Of the 20 institutions with RCAT programs, 60% ($n = 12$) were staffed by nonmedical or clerical staff and 30% ($n = 6$) were staffed by medical students. One program was staffed by first-year radiology residents and one program was staffed by technologists. Weekday evening and weekend shifts were the most common shifts staffed by a call triage assistant. Only 35% ($n = 7$) of programs were staffed all night.

The responsibilities of the call assistant varied by program, but all initiate, answer, and route phone calls, as well as take messages (Fig 1). At 75% ($n = 15$) of institutions, the call triage assistant also gathers and processes information for the radiology resident. This includes searching the medical record and looking at previous imaging reports. The assistants also help with direct communication of results with the ordering provider and independently answer simple questions (eg, contrast allergy steroid preparation guidelines) from the ordering clinicians at 60% of programs ($n = 12$). A few less common responsibilities include answering protocol questions and coordinating image-guided procedures. The responsibilities did not vary significantly based on whether the triage assistant was clerical or a medical student.

For the RCAT programs that employed clerical staff ($n = 12$), 58% of those individuals had some experience within the medical field. For the programs that employed third- and fourth-year medical students as their triage assistants ($n = 6$), all were voluntary and all paid for the medical student's time, with wages ranging from $10 to $30/hour. Program directors felt that medical students had improved their understanding