Recent Measures to Improve Radiology Reporting: Perspectives From Primary Care Physicians

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**Purpose:** There is considerable interest in improving radiology reporting practices. It has been suggested recently that reporting practices could be improved by more direct involvement of radiologists in delivering results to patients and by making clear recommendations within the radiology report. The opinions of primary care physicians about these initiatives are not well known. The authors surveyed primary care physicians to better understand their views.

**Methods:** An online survey was distributed to 229 primary care physicians through an internal list server, and responses were collected confidentially.

**Results:** There were 100 responses (a 43.6% response rate). The majority of respondents were satisfied with radiology reporting and recommendations in general. Ninety-five percent of respondents felt that ordering physicians should deliver the results of examinations. No respondents felt that radiologists should deliver results directly to patients. Ninety-four percent of respondents felt medicolegally obligated by recommendations made by radiologists within their reports. Twenty-three percent of respondents felt more medicolegally obligated if the recommendation is set apart from the clinical impression, while 58% of respondents felt less medicolegally obligated if qualifying language is added to the recommendation.

**Conclusions:** Primary care physicians prefer to deliver the results of examinations themselves and feel medicolegally obligated by recommendations within radiology reports, even though this seems to be influenced by the wording and location of the recommendations within reports. Radiologists should consider these factors when contemplating changes in reporting practices.

**Key Words:** Radiology reporting, primary care physicians, quality improvement


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**INTRODUCTION**

The radiology report is the principal means of communicating the findings of an examination to both the patient and the patient’s care team. It is the primary work product of the radiologist [1] and serves as both medical and legal documentation of provided care [2]. The radiology report is of particular importance to the primary care physician in the outpatient setting [3,4]. Primary care physicians often find themselves occupied with increasingly demanding clinical responsibilities and physically removed from the location of the radiology reading room, precluding the in-person consultation and participation in multidisciplinary conferences that are frequently afforded to specialists and inpatient providers. This inherent lack of interaction between radiologists and primary care physicians is a natural barrier to effective feedback regarding reporting practices [4], which ultimately compromises patient care [5].

There have been multiple attempts made to improve reporting practices [3,4,6-13]. The authors of this report primarily surveyed physicians regarding their preferences and opinions with respect to the overall quality, format, language, length, content, and turnaround time of reports. Despite the information obtained from these studies, dissatisfaction with radiology reporting among...
referring physicians and patients remains [14,15]. This continuing dissatisfaction may be secondary to the wide variance of reporting practices currently in use in addition to the difficult task of creating reports that attempt to meet the needs of patients, primary care physicians, and specialists.

More recent efforts to improve reporting practices have included the suggestion that radiologists should play a more central role in delivering the results of examinations to patients [14-18]. In this scenario, the results could be delivered to patients directly from radiologists in hard-copy form, via an online portal, or in person at the time of the examination. This has the benefits of patient satisfaction, improved turnaround time, and greater public understanding of the role radiologists play in patient care [14-18]. Radiology specialty societies have also published guidelines regarding the radiology report that help direct radiologists toward best reporting practices [19,20]. Some of these guidelines suggest that radiologists should recommend further diagnostic studies, when appropriate [19]. However, the opinions of primary care physicians about these radiologist-driven efforts to improve reporting practices and potential effects on their practice are not well known. Therefore, we surveyed primary care physicians at our institution to better understand their views.

METHODS
An online survey was created and managed using Research Electronic Data Capture [21], a secure, Web-based application designed to support data capture for research studies, providing (1) an intuitive interface for validated data entry, (2) audit trails for tracking data manipulation and export procedures, (3) automated export procedures for seamless data downloads to common statistical packages, and (4) procedures for importing data from external sources. The online survey was distributed to 229 primary care physicians at our institution via an internal list server, and results were collected confidentially.

RESULTS
There were 100 responses (a 43.6% response rate) from physicians with an average of 19.1 years in practice (range, 2-50 years), the majority of whom (95%) order <20 examinations per week. Overall, a majority of respondents (79%) were either very satisfied or somewhat satisfied (mean, 3.93 on scale ranging from 1 to 5) with radiology reporting. Diagnostic accuracy (39%) was chosen as the most important component of a radiology report (Fig. 1). Clarity of language (14%), a detailed discussion of the findings (12%), and recommendations for further testing or treatment (12%) were also cited by a significant number of respondents as the most important components of radiology reports. No other response was selected by >10% of respondents. Too many recommendations for further testing or treatment (36%) was identified as the most significant problem with radiology reporting, while unclear or nonspecific language (19%) and no recommendations for further testing or treatment (12%) were also identified as significant problems (Fig. 2). No other response was selected by >10% of respondents.

Ninety-five percent of respondents thought that the most appropriate way for a patient to learn the results of an imaging examination was from the ordering provider. Five percent of respondents thought that the most appropriate way was for patients to access the results themselves through an online portal. No respondents thought that results should be communicated to patients directly by radiologists. Given that patients at our institution have access to their results through an online portal system, a data from external sources. The online survey was distributed to 229 primary care physicians at our institution via an internal list server, and results were collected confidentially.

![Fig 1](image1.png)

Fig 1. Primary care physicians were asked to identify the single most important component of a radiology report. Diagnostic accuracy was identified as the most important component by 39% of primary care physicians, 14% selected clarity of language, 12% selected detailed discussion of the findings, and 12% selected recommendations for further testing or treatment. No other response was chosen by >10% of primary care physicians.
plurality of respondents (43%) thought that radiologists should adjust the language used within reports, while 35% thought that no such adjustment should be made.

The majority of respondents (65%) have been either very satisfied or somewhat satisfied with the recommendations made by radiologists within the report (mean, 3.56), although this level of satisfaction is lower than that ascribed to radiology reports in general ($P = .02$). When allowed to choose any number of items that the respondent felt should be included in the radiology report, 88 respondents selected recommendations for further imaging, 43 respondents selected recommendations for consultation, and 42 respondents selected recommendations for treatment. This suggests that the preferred type of recommendation is one for further imaging studies. A majority of respondents (94%) felt medicolegally obligated by radiologists’ recommendations made within their reports. The sense of medicolegal obligation was increased for 23% of respondents when the recommendations were set apart from the clinical impression within their own section of the report. However, if qualifying language such as “if clinically indicated” were added to the recommendation, 58% of respondents felt less medicolegally obligated (Fig. 3).

**DISCUSSION**

The radiology report is the primary means of communication between the radiologist, the patient, and the patient care team and serves an important role in facilitating patient care [5], especially for primary care physicians in the outpatient setting [3,4]. The ACR [19] has published the “Practice Guideline for Communication of Diagnostic Imaging Findings” [19] to assist radiologists in providing appropriate care for patients through proper reporting techniques. This document gives detailed information about the components of an effective radiology report, the principles behind quality radiology reporting, and best practices regarding both routine and nonroutine communications with referring physicians. Additionally, RSNA has put forth the Radiology Reporting Initiative [20], which aims to make reporting more standardized and comprehensive by creating a library of report templates that can be downloaded at no cost. These radiologist-driven initiatives are important for enhancing patient care [5] and because dissatisfaction with radiology reporting could potentially cause referring physicians to find alternatives for their imaging needs [4]. As radiologists propose measures to improve reporting, it is wise to obtain an understanding of the needs and
opinions of referring physicians, particularly primary care physicians, regarding these measures so that their feedback and ideas can be incorporated into any change in practice.

In our study, primary care physicians were generally satisfied (mean, 3.93) with radiology reporting. Diagnostic accuracy was selected as the most important component of a radiology report, and too many recommendations for further testing or treatment were identified as the most significant problem. With regard to the communication of imaging findings to patients, 95% of respondents preferred to deliver the results themselves, while no respondents thought that radiologists should be delivering results to patients. These findings run against the current trend of increasing the amount of direct communication between radiologists and both referring physicians and patients, which has been fueled by regulatory, legal, consumer, and entrepreneurial forces [16-18,22]. In contrast to the primary care physicians in our study, prior studies have shown that patients value the expertise and improved turnaround time provided by direct communication from radiologists [16-18]. In our survey, we did not specify the type of communication radiologists would have with patients or address situations in which radiologists and patients were already in contact, such as fluoroscopy. For example, one might imagine varying results if we had specified that the communication was requested in person by a patient during a fluoroscopic examination, delivered in person by a radiologist without prompting at the time of an examination, via an online portal, or via a hard copy of preliminary results. Despite this, these data do demonstrate a hesitation on the part of primary care physicians in allowing radiologists to deliver the results of imaging examinations. Our findings concur with the results of focus group and experiential data [15,18] suggesting that referring physicians worry that radiologist-led delivery of results could lead to patient confusion, increased patient anxiety, and a loss of the physician-patient relationship.

The ACR [19] “Practice Guideline for Communication of Diagnostic Imaging Findings” states that the radiologist should suggest further diagnostic studies within their reports, when appropriate. At our institution, we have adopted these guidelines by encouraging the inclusion of a separate “recommendation” section within the structured radiology report in an attempt to make recommendations clear and recognizable to the reader. However, it was unknown how primary care physicians felt about this practice. Overall, 65% of respondents were either very satisfied or somewhat satisfied with the recommendations within the report (mean, 3.56), although this level of satisfaction was lower than that seen with radiology reports in general ($P = .02$). The opinions of primary care physicians regarding radiology recommendations are somewhat variable, with 36% of respondents identifying too many recommendations for further testing and treatment as the most significant problem with radiology reports, while 12% identified no recom-
mendations for further testing and treatment as the most significant problem. These results are in accord with prior reports that have found a wide range of opinions regarding the utility of radiologists’ recommendations among primary care physicians, specialty providers, and even radiologists [8,10,23-25]. This attitudinal variability may be due to the difficulties encountered by referring physicians, especially primary care physicians, in balancing radiologists’ expertise with the desire to avoid any clinically unnecessary examinations. Furthermore, Gunderman et al [25] suggested that referring physicians may dislike radiologists’ recommendations because they feel medicolegally obligated to perform examinations once they have been suggested. Indeed, 94% of primary care physicians at our institution felt medicolegally obligated by radiologists’ recommendations. Interestingly, this sense of medicolegal obligation seems to be influenced by both the location and wording of the recommendation, with respondents feeling more obligated if the recommendation is found within its own section in the report and less obligated if qualifying language is added to the recommendation. The reasons for this observation are likely to be multifactorial and to vary from physician to physician. One potential explanation may be that by setting the recommendation apart within its own section, the radiologist has, either intentionally or unintentionally, made the recommendation seem more important. This perceived emphasis may make the primary care physician hesitant in not following the recommendation. Additionally, qualifying language in the recommendation may be interpreted by the primary care physician as an attempt at nuance on the part of the radiologist regarding the recommendation, which may give the primary care physician more flexibility.

Unfortunately, there seems to be a necessary tension between referring physicians and radiologists regarding the implications of recommendations in radiology reports. For example, if a radiologist fails to make an appropriate recommendation, he or she could potentially compromise patient care or be at risk for litigation, while the same could be said for a referring physician who fails to follow a radiologist’s recommendation. Thus, it behooves radiologists to consider these factors when making recommendations and to be proactive in resolving this apparent reporting conundrum. Potential solutions could include the addition of qualifying language to all recommendations for further testing and treatment as the most significant problem. These results are in accord with prior reports that have found a wide range of opinions regarding the utility of radiologists’ recommendations among primary care physicians, specialty providers, and even radiologists [8,10,23-25]. This attitudinal variability may be due to the difficulties encountered by referring physicians, especially primary care physicians, in balancing radiologists’ expertise with the desire to avoid any clinically unnecessary examinations. Furthermore, Gunderman et al [25] suggested that referring physicians may dislike radiologists’ recommendations because they feel medicolegally obligated to perform examinations once they have been suggested. Indeed, 94% of primary care physicians at our institution felt medicolegally obligated by radiologists’ recommendations. Interestingly, this sense of medicolegal obligation seems to be influenced by both the location and wording of the recommendation, with respondents feeling more obligated if the recommendation is found within its own section in the report and less obligated if qualifying language is added to the recommendation. The reasons for this observation are likely to be multifactorial and to vary from physician to physician. One potential explanation may be that by setting the recommendation apart within its own section, the radiologist has, either intentionally or unintentionally, made the recommendation seem more important. This perceived emphasis may make the primary care physician hesitant in not following the recommendation. Additionally, qualifying language in the recommendation may be interpreted by the primary care physician as an attempt at nuance on the part of the radiologist regarding the recommendation, which may give the primary care physician more flexibility.

Continuing improvements in radiology reporting practices are essential to the service that radiologists provide to patients and referring physicians. These improvements, however, should consider the preferences of both patients and referring physicians to optimize patient care. Future research, such as patient focus groups, patient satisfaction surveys, and surveying other medical specialties, is necessary to better delineate and understand these preferences.

REFERENCES