

Improving the Transcription of Patient Information From Image Requisitions to the Radiology Information System

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Abstract

Purpose: The purpose of this study was to improve the transcription of patient information from imaging study requisitions to the radiology information database at a single institution.

Methods: Five hundred radiology reports from adult outpatient radiographic examinations were chosen randomly from the radiology information system (RIS) and categorized according to their degree of concordance with their corresponding clinical order indications. The number and types of grammatical errors and types of order forms were also recorded. Countermeasures centered on the education of the technical staff and referring physician offices and the implementation of a checklist. Another sample of 500 reports was taken after the implementation of the countermeasures and compared with the baseline data using a χ^2 test.

Results: The number of RIS indications perfectly concordant with their corresponding clinical order indications increased from 232 (46.4%) to 314 (62.8%) after the implementation of the countermeasures ($P < .0001$). The number of partially concordant matches due to inadequate RIS indications dropped from 162 (32.4%) to 114 (22.8%) ($P < .001$), whereas the number of partially concordant matches due to inadequate clinical order indications increased from 22 (4.4%) to 57 (11.4%) ($P < .0001$). The number of discordant pairings dropped from 84 (16.8%) to 15 (3%) ($P < .0001$). Technologists began to input additional patient information obtained from the patients (not present in the image requisitions) in the RIS after the implementation of the countermeasures.

Conclusions: The education of technical staff members and the implementation of a checklist markedly improved the information provided to radiologists on image requisitions from referring providers.

Key Words: Patient information, image requisition, transcription, RIS, radiology information system, transcribing information, improving, improvement, improving communication, communication, technologists, indication, clinical order, RIS indication, CPOE, computerized physician order entry

J Am Coll Radiol 2016;13:950-955. Copyright © 2016 American College of Radiology

INTRODUCTION

Asynchronous communication between referring physicians and radiologists facilitates a significantly higher workflow capacity for both parties; however, it can also contribute to incomplete and suboptimal communication [1]. Conveying the necessary and appropriate patient information between the two parties is even more difficult when the imaging requisitions, specifically the

“study indication/history,” does not contain complete and accurate information. Even though the availability of relevant clinical information has been shown to improve the interpretive accuracy of imaging studies, the persistence of inaccurate or incomplete information provided to radiologists is a well-recognized challenge [2-5]. One study revealed that nearly 30% of requisitions lacked the clinical indications for the studies, and 24% of requisitions did not have adequate or complete clinical information necessary for proper image interpretation [5,6].

Ward clerks, front office radiology staff members, and technologists can compound this problem by picking and choosing which information to transfer from the clinical provider when they are ordering radiology studies (conveyed either verbally or on some form of hard-copy

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The authors have no conflicts of interest related to the material discussed in this article.

or digital requisition) to the hospital and, ultimately, the radiology department order entry system [6,7]. Whereas other studies have referenced this problem, our study seems to be the first to quantify it.

Despite stage II meaningful use guidelines requiring that 50% of imaging orders be initiated via computerized physician order entry (CPOE) systems, CPOE adoption has been slow, with only 9.6% of US hospitals having CPOE completely available [8,9]. Even when CPOE is available, the imaging order system on the clinical side—although the exact percentage is unavailable on the basis of a literature review—frequently is not integrated into the radiology order entry system or radiology information system (RIS). This complicating factor is currently the case at our institution. Although projects have been undertaken to address the necessity to improve the information contained on the image requisition, there are no available studies that provide a method of improving the translation of information from the clinically generated imaging requisition to the RIS [3-5].

At our institution, front-office staff members and/or technologists manually transcribe the clinical information (study indication and patient history) from the clinical order requisition into the RIS. Our radiologists then view this information to help guide them during image interpretation. The study indication (manually entered in the RIS) then automatically populates the “study indication/history” field in the radiologist’s report. The final, signed imaging report then becomes visible to both patients and providers. Billing and coding staff members also use the radiologist’s report, specifically the “study indication/history” section, for revenue recovery. The transition to *International Classification of Diseases, 10th rev*, makes it even more important that the “study indication/history” be as complete and accurate as possible.

Indications that are incomplete, are incorrect, or contain grammatical errors can be a confounding factor for radiologists during image interpretation and may even cause complications for patient safety and appropriate revenue recovery. The aim of this study was to identify the most common issues associated with the “study indication/history” section in the RIS. After a root-cause analysis, we implemented specific countermeasures to reduce the number of inadequate study indications. The goal of this initiative was twofold: we wanted to first reveal the extent to which information on the image requisitions was improperly transcribed to the RIS and then use this information to improve the communication between referring physicians and radiologists at our institution.

METHODS

A root-cause analysis was used to determine the reason that many indications in our RIS failed to adequately match their corresponding clinical orders (Fig. 1).

Data Collection Before the Countermeasures

A sample of 500 adult outpatient plain films chosen randomly from the period of August 3, 2015 to August 8, 2015, between 2 and 4 PM, was collected from the RIS. The reports for these films were analyzed for their degree of concordance with their corresponding clinical order indications. Four categories were established for this analysis: concordant, partially concordant (inadequate RIS indication), partially concordant (inadequate clinical order indication), and discordant. The RIS indication and its clinical order indication were considered concordant if the descriptions matched verbatim. The indications were categorized as partially concordant (inadequate RIS indication) or partially concordant (inadequate clinical order indication) if the RIS indication did not contain all of the information present in the clinical order indication or vice versa. Reasons for partially concordant indications included “indication is not relevant to the body part under study” and “specific location or sidedness is unspecified.” The indications were considered discordant if substantial information was missing from the RIS indication. For example, a clinical order might specify “right wrist injury from fall, pain,” whereas only “pain” is written in the RIS.

The RIS indications were also inspected for grammatical errors. Common errors including incorrect capitalization, unwanted abbreviation, misspelling, and misplaced punctuation were catalogued.

Concordant matches were further classified by their level of concordance. The RIS indication was “perfectly” concordant if it matched the clinical order verbatim, contained a complete and informative patient history, and was free of grammatical errors. One step down on this scale of concordance was an indication that was perfectly concordant but contained grammatical errors. At the lowest level of these concordant matches were RIS indications that matched verbatim with their clinical order indications but failed to provide radiologists with complete and/or accurate histories of the patients.

Because there were a variety of clinical order forms and entry methods, the type used for each image requisition was also recorded.

Countermeasures

Radiology schedulers were informed of this quality improvement project, which included additional education

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