Communicating radiological findings : The written radiology report

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Abstract

The radiology report is the most common and sometimes the only method of communication between the radiologist and clinician. Unfortunately, the radiology residents in training receive very little instruction regarding how to write the reports and this may lead to poor quality of reporting compromising the patient care and leading to serious medico-legal consequences. In this article, we have provided advice how to write good radiology report based on the available guidelines and reviewing the studies and surveys conducted so far involving the radiologists, clinicians and primary care physicians. We have first discussed about the components of a radiology report and then talked about describing the radiological findings in more detail. At the end, we have discussed the matters related to the length, style and language of the report.

Key words

Radiology report, guidelines, radiological findings, documentation, radiology residents, radiological procedures

Introduction

Radiology report is the final output of the imaging procedure conducted in radiology department and the most commonly used method of communication between the radiologist and the clinician who provides the patients with the appropriate clinical management on the basis of the findings documented in this report. . In a medical audit in the year 2011 that was sent to clinicians and radiologists, about 92% of the clinicians and 94% of the radiologists opined that the reporting of radiological studies should be taught in a systematic and mandatory way to the radiology residents in training.[1] Despite this level of awareness about the importance of teaching reporting, another study shows that the duration of time allowed for teaching reporting to about 86% of the radiology residents in training does not exceed 1 hour per year.[2] A study that reviewed the medico-legal cases against radiologists for 3 consecutive years has revealed that about three fourths of these cases are related to various communication errors.[3] The available data about more than two hundred medico-legal claims in a ten year period that complained of communication errors against radiologists show that these claims has caused one American insurance association to pay in compensation a total of about 16 million dollars.[4] Until now, there is no complete agreement on what is meant by a good radiology report.[5] However, various professional bodies have formulated guidelines for writing radiology reports on the basis of the best available evidences from research and survey, such as the guidelines published by the European Society of Radiologists (ESR)[5], the ones published by the Royal Australian and New Zealand College of Radiologists[6,7] and those published by the American College of Radiology[8].

In this paper, we have brought about some advice regarding writing radiology report based on aforementioned guidelines and on the published reviews, surveys and research work regarding writing radiology report.

Components of a radiology report

The standard for interpreting imaging investigations and reporting formulated by the Royal Australian and New Zealand
College of Radiologists appears to be the simplest one[9] and according to this standard the radiology report is structurally composed of three main following parts.

- Clinical details
- A description of the findings
- A conclusion or interpretation

Every report should begin with the name, age and sex of the concerned patient. Moreover, the type of investigation performed must be mentioned including the date and time of the investigation done. The name of the referring physician, the radiologist who performed the investigation and the name of the facility where the investigation has been conducted must be mentioned.[10] The clinical finding of the patient is of immense importance, but this part is missing from a significant portion of

the radiology reports.[7] The clinical history and finding of the patient, if available to the radiologist, should be summarized at the beginning of the report, if they are not already available to the physician who is going to receive the report.[7,9] In addition, the source of the clinical finding should be noted in the report if this source has not requested stage of the disease or when they are relevant to the final diagnosis or when they have an effect on the subsequent management of the patient. The normal findings should also be mentioned in the report if the radiologist thinks that they are useful for the physician or if the report is itemized in order to avoid ambiguity.[7] The abnormal findings should be described in the report using the correct and accurate anatomical, radiological and pathological terms.[8] More elaborate description of the findings will be added in a following section of this article because of the importance of this section. The radiologist should also interpret the findings in the context of the clinical condition of the patient and information available to him at the time of writing the report.[8]

In one survey that included the clinicians from various specialities like internal medicine, surgery and emergency medicine, about 95% of the responding clinicians mentioned that radiology report should include the recommendation regarding further studies.[13] Another survey that was addressed to the general practitioners showed that 96% of the responding practitioners thought that the radiology report should include recommendation for further imaging if felt necessary and about 97% of the responding practitioners thought that the report should also include recommendation for further non-radiological investigation if felt necessary.[14] If these recommendations are made, they should be added to the conclusion section of the report. If any further investigation is recommended in the report, its role in the diagnosis or management, e.g. to rule out a diagnosis, as well as its urgency should be indicated.[12]

Other information that should be included in the report but are usually omitted due to one reason or another are as follows:[5,8,12]

for the investigation. If the available clinical finding is not sufficient, this should also be mentioned in the report.[5] Both the normal as well as abnormal findings should be mentioned in the report. The normal findings are especially important if they become part in assessing the severity or the

this issue. The conclusion/impression section of the radiology report is of immense importance. In one survey, more than half of the responding physicians said that they read only the impression/conclusion section of the reports that they received.[11] If no abnormal finding is detected, this should be mentioned in this section of the report.[12] If abnormal findings are detected, the radiologist should mention in this section if these findings are insignificant. If the findings are relevant, then a diagnosis or differential diagnosis should be included, if possible, in

- Technique (procedure and material)
- Examination quality/limitations
- Comparison with previous studies, if available

Various surveys have shown disagreement among the general practitioners and clinicians regarding their understanding about the necessity of including the details of the radiological procedure in the radiology report. Among the responding general practitioners 27% think that the radiological procedure should be included in the report,[14] and the same opinion is carried by 65% of the responding clinicians also.[15] In one survey among the radiologists, about 65% of the responding radiologists agree that the technical details documented and the type of contrast material, its dose and its route of administration should also be mentioned. In addition, any adverse reaction took place during the procedure including the treatment that the patient received for the same should also be documented in the procedure section of the report.[5,8,12] The sequences used should be mentioned for MRI studies.[7] More detailed description is necessary while documenting invasive procedures like biopsy, drainage, angiography and other, such as the site of entry, type and size of the catheter and the tube used, the nature of aspirated material. If therapeutic injection is should be mentioned explicitly while reporting CT and MRI studies.[1] If the procedure is simple one, mentioning the name of the procedure in the report is enough, but if any contrast material or medication is being used in the procedure or if it is an invasive procedure, the technical details of the procedure should be mentioned in a separate section of the report.[11] While writing a report for a procedure that included the use of a contrast material, the informed consent of the patient for the same should be

used in the procedure, the injected material and the site of injection should be documented in the report.[7,8] If there is any factor that can limit the technical quality of the radiological procedure, that should be noted in the section of the report meant for quality of the examination. The nature of the limiting factor, e.g. patient movement, should be mentioned and its effect on the sensitivity and specificity of the study should be clarified.[7,8,12] If old reports and images of the same study are available, they should be compared to the current study mentioning the dates of the old studies.7,8,12

Describing the findings

Although various surveys have shown that a good number of referring physicians go only through the conclusion part of the report[11] and some physicians accept reports with no report. Both normal as well as abnormal findings should be described in this section.[7] This section should begin with the most important finding.[10] The precise anatomical site involving the pathological finding should be described using accurate anatomical terms including the surrounding structures related to the lesion. The lesion should be described in terms of its size, extension, margins, echogenicity or density, blood flow characteristics, internal calcification or cavitation and enhancement pattern including any other feature that helps in diagnosing the lesion or in deciding its management.[5,7] A relevant normal finding should be included in the finding section of the report that helps in confirming or excluding a certain diagnosis, can contribute to the assessment of the severity of the disease process or its extension, can cause confusion if not mentioned.[13] Measurement of the pathological finding should be included. A subjective quantification of the pathological finding should be added if it can not be measured.[10] Regarding mentioning the measurement of normal organs, one survey that addressed both clinicians as well as radiologists showed that only one fourth of the responding clinicians and one fourth of the responding radiologists thought that those measurements should be included in the report.[13]

Report length, style and language

There is no appropriate length specified for writing a radiology report, although a quarter of the respondents in one survey stated that they find those reports too long that are longer than one page.[10] It is advisable while writing a report to be as precise as possible without omitting neither any important pathological finding nor any important negative finding.[5,10,12]

Some radiologists prefer to use prose style in writing a report while the others use tabulated form. In one study involving the general practitioners in which multiple reports were given to them in both the formats and they preferred the tabulated version over the prose one.[14]

In one study, the respondents were asked to rank multiple non-diagnostic attributes of the radiology reports based on their importance

description of the findings[16], the section of the report meant for findings remains an important part of the

to them. They ranked clarity as the most important attribute.[17] The radiology reports appear to be clearer if ambiguous words are avoided and simple sentences are used.[10] In order to make the report easier to go through, the description can be organized in paragraphs and the sentences in a paragraph can be grouped according to the structure described or according to the abnormality being described.[10]

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