

# ACTIONABLE REPORTING: AUDIT OF RADIOLOGY REPORTS AT A TERTIARY CARE HOSPITAL

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## ABSTRACT

**PURPOSE:** To assess the radiology reports in department by focusing on three major parameters: 1. Answer to the clinical question/s asked by the referrer. 2. Tentative diagnosis and/or differential diagnosis. 3. Suggestion for the next appropriate step. **MATERIAL AND METHODS:** This study was conducted at Radiology department of Tertiary Care Hospital in Peshawar and data of 100 patients was randomly collected from hospital's Health Management Information Systems (HMIS), spanning from May to September 2020. Out of 100, 24 were Ultrasound reports, 44 were CT scan reports and 32 were MRI reports. Reports were checked whether the concluding remarks had answered the clinical question, listed any diagnosis or differential diagnosis and suggested some future advice or not. Confidentiality of the patients was made sure. **RESULTS:** Data of 100 radiology reports was obtained. Clinical question asked by the referrer clinician was answered in 100% of the reports. 56% of the reports contained a tentative/differential diagnosis (modality wise: U/S (37.5%), CT (45.4%), MRI (81.2%)) and 48% reports had advice about the next appropriate step. 100% of ultrasound reports contained an answer to the question asked by the clinician, 25% with a differential diagnosis and 50% of the reports had some advice about the next best step. **CONCLUSION:** We concluded from our results that the radiology reports are being focused mainly on answering the question asked by the clinicians, which is internationally accepted Radiology Report Standard, however the remaining parts of a standard actionable report was found to be ignored in a huge number of cases.

**Keywords:** Radiology, Reports, Diagnosis.

## Introduction

Radiology report is the translation of images into words. An ideal radiology report should convey as much information as needed by the clinician in a precise and understandable way. During the whole process of imaging, the Radiology Report is the final product of a tangled process of image acquisition and interpretation, which should have some recommendations that may help in further management of the patient. A radiology report becomes part of the patient's health record; interprets and interconnects

the patient's symptoms, previous investigations and further suggestions in a clinical context.<sup>2</sup>

There are no agreed upon international standards for a radiology report, but it must be uniform, timely, consistent and readable to both humans and machines.<sup>3</sup> Some say it must be clear, concise, complete, consistent and has a high level of confidence popularly known as 6Cs of reporting.

Radiologists across the globe have developed their own style for reporting images, however this must be

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standardized, and awkward situations can be avoided when a miss or error has occurred by a senior radiologist and juniors must inform them. If standards of reporting be followed, this can be avoided.

Radiology reporting serves as the only bridge between a clinician and radiologist. In order to generate a productive radiology report there must be a system of constant assessment and monitoring that is in accordance with modern standards. This audit was a look over study to help find out the inadequacies and point out the areas that can be improved further. Main objectives were: To assess the radiology reports in department by focusing on three major parameters: 1. Answer to the clinical question/s asked by the referrer. 2. Tentative diagnosis and/or differential diagnosis. 3. Suggestion for the next appropriate step.

**Target:** The report should answer the clinical question (100%). A diagnosis or differential diagnoses must be there in the report (100%). There must be some advice for the next best step (100%).

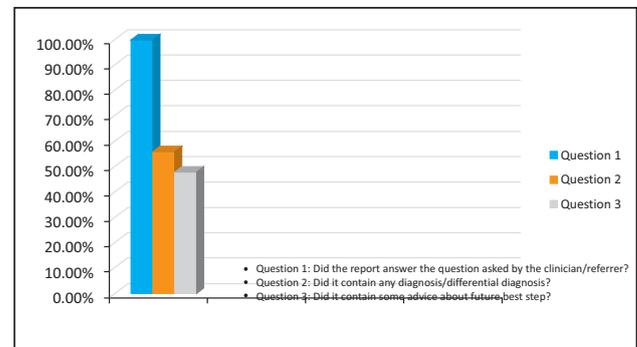
## Materials and Methods

This study was conducted at Radiology department of a Tertiary Care Hospital in Peshawar after approval from the ethical board and clinical lead. Radiology Reports data of 100 patients was randomly collected from hospital's Health Management Information Systems (HMIS), spanning from May to September 2020. Out of 100, 24 were Ultrasound reports, 44 were CT scan reports and 32 were MRI reports. Only those reports were taken into consideration in which the referrer had asked specific question/s for the imaging. Reports were checked whether the concluding remarks had answered the clinical question, listed any diagnosis or differential diagnosis and suggested some future advice or not. Confidentiality of the patients was made sure. The experience years and level of the reporting consultants were also taken into consideration. Data was put in tables using MS Excel to calculate the statistical values.

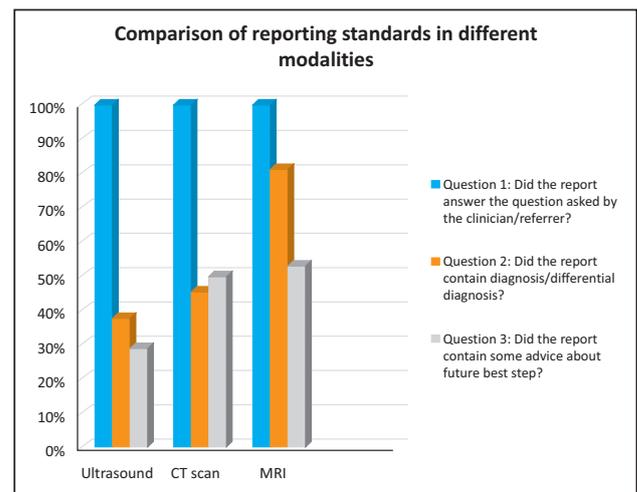
## Results

Data of 100 radiology reports was obtained. Clinical question asked by the referrer clinician was answered

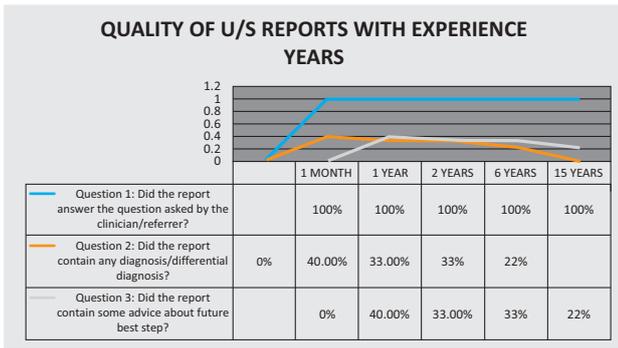
in 100% of the reports. 56% of the reports contained a tentative/differential diagnosis (modality wise: Ultrasound (37.5%), CT (45.4%), MRI (81.2%)) and 48% reports had advice about the next appropriate step. All the CT reports had answered the question, on average 52% of the reports had a tentative or differential diagnosis with a bimodal trend that peaked during initial and last experience years of radiologists and on average 50% of the reports had suggested next best step with a bimodal curve that peaked during initial and last experience years. 100% of the MRI reports had answered the question, on average 75% contained a tentative or differential diagnosis with a downward trend during experience years, 76% reports contained some advice for the next best step



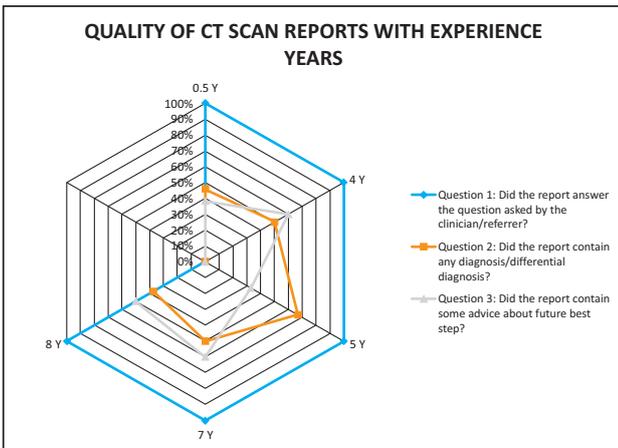
**Figure 1:** Showing bar graph representing the three main parameters to assess the radiology reports in department by focusing on three major parameters: 1. Answer to the clinical question/s asked by the referrer. 2. Tentative diagnosis and/or differential diagnosis. 3. Suggestion for the next appropriate step.



**Figure 2:** Showing Comparison of reporting standards in different modalities i.e. Ultrasound (U/S), Computed Tomography (CT) and Magnetic Resonance Imaging (MRI).



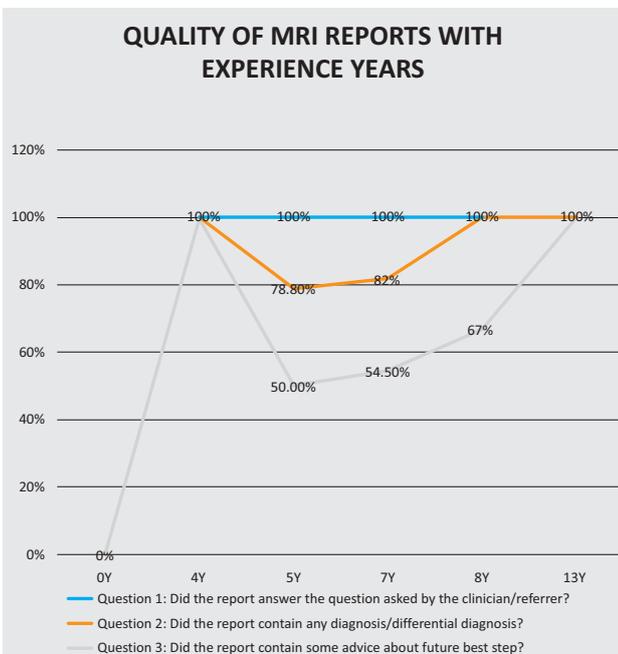
with a bimodal trend that peaked during mid-experience years. 100% of ultrasound reports by post-FCPS consultants (Board-certified) contained an answer to the question asked by the clinician, 25% with a differential diagnosis and 50% of the reports had some advice about the next best step. Regarding reporting done by sonologists (not board certified), on average 52% Ultrasound reports contained a tentative or differential diagnosis with a bimodal trend that peaked during initial and maximum experience years, 34% of reports contained future advice with downward trend during experience years.



**Figure 4:** Showing relationship of CT radiology reporting standards with experience years of reporting radiologist.

## Discussion

In 2018 Royal college of radiologists updated its guidelines for imaging reports. This updated document outlines the standards and steps for producing an imaging report. A standard radiology report should be actionable i.e. it must contain the answer to the question asked, a diagnosis/differential diagnosis and some future advice as well. Royal College emphasize on understanding the patient s clinical information, technical knowledge and skills required for imaging, careful observation/cross checking, image and medical information analysis, advice for further imaging or non-imaging investigation/s, communication with the referrer and patient.



**Figure 5:** Showing relationship of MRI radiology reporting standards with experience years of reporting radiologist.

In 2007/8 a study was conducted on National Audit of Generic Reporting and Effective Communication by the Royal College of Radiologists. The study showed that national compliance with standards ranged from 45% to 98% and only 3 out of 6 targets were met.

Another study involving radiologists and neurologists and residents suggest that imaging reports contained adequate information for residents but received less appreciation from neurologists. This clearly demonstrates that the referrer satisfaction is dependent on his own experience as well as the quality of the report. Production of a concise report that answers the question, possesses a diagnosis or differential diagnosis, and contains recommendations for further laboratory investigations, or imaging is a complex skill that requires a lot of efforts both during training and practice. An RSNA published study in Feb, 2020 stated

that radiology report must be organized, concise and devoid of redundant and technical terms.

Sometimes an imaging report is not understandable for the clinicians. This either indicates lack of clarity or the understanding ability of the clinician and may result in a huge communication gap in either case. An imaging report must be clear in terms of clinical relevance, likelihood or unlikelihood of the disease. A study that included GPs indicates that they have difficulty in understanding the radiological terms. They wanted the reports to clarify the probability or non-probability of a disease in a clear understandable way.

## Conclusion

We concluded from our results that the radiology reports are being focused mainly on answering the question asked by the clinicians, which is internationally accepted Radiology Report Standard, however the remaining parts of a standard actionable report was found to be ignored in a huge number of cases. Answering clinical question is of paramount importance but providing tentative or differential diagnosis and suggesting the next step will standardize the report even further. Furthermore, the deficiencies in radiology report writing were generalized irrespective of the experience years and no clear direct or indirect relation was found between the consultant's experience and the quality of radiology report.

### Suggestions:

Regarding the results obtained, improvements need to be made through feedback via departmental or interdepartmental meetings and MDTMs. **Re-audit:** Identification and elimination of the causes of deficiencies in radiology reports will be made sure and a re-audit will be done after 6 months.

**Conflict of Interest:** None

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