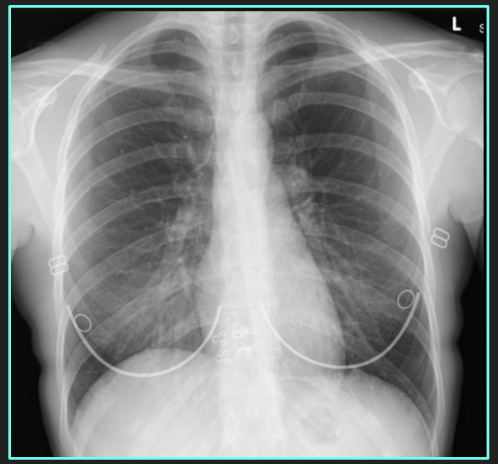
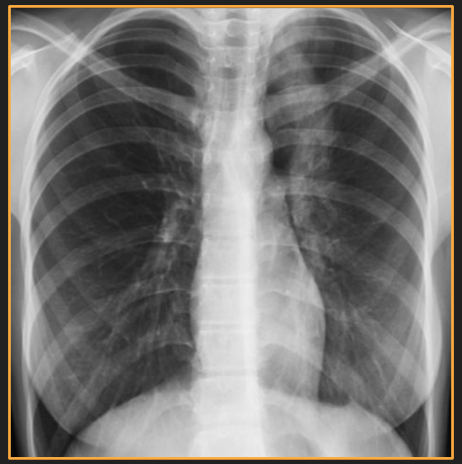
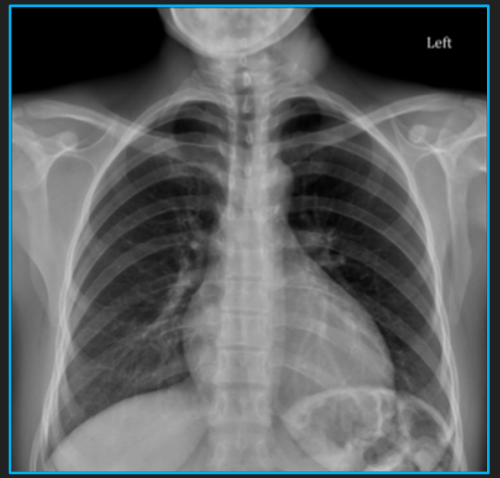
Utilization of QA Notes to Improve X-Ray Image Quality in the Digital Age







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Learning Objectives

- Demonstrate the importance of a robust Quality Assurance (QA) note entry system to maintain high standards in diagnostic imaging
- Understand the importance of utilizing the Plan-Do-Study-Act (PDSA) cycle and root cause analysis to identify recurring issues and develop corrective actions pertaining to radiograph quality
- Educate radiologists and technologists to increase utilization of the QA system and improve radiographic quality

Disclosures

None of the authors have a financial relationship with a commercial organization that may have a direct or indirect interest in the content.

Introduction

Quality Assurance (QA) notes in the Radiology Information System (RIS) enable radiologists to report image artifacts, poor technique, missing images, and defective equipment. This can enhance image quality, improve diagnostic accuracy, and increase communication between radiologists and technologists. This project aimed to institute department-wide QA note training sessions to encourage radiologist QA system utilization. The following metrics were obtained:

- Radiology attending and resident QA note system utilization rates
- Pre and post-training assessment scores
- Resident underreporting rates
- Number and classification of reported QA issues

Methods

Plan
- Identify specific issues affecting X-ray image quality such as artifacts, positioning errors, or inadequate exposure
- Develop corrective actions and strategies to increase QA reporting volume

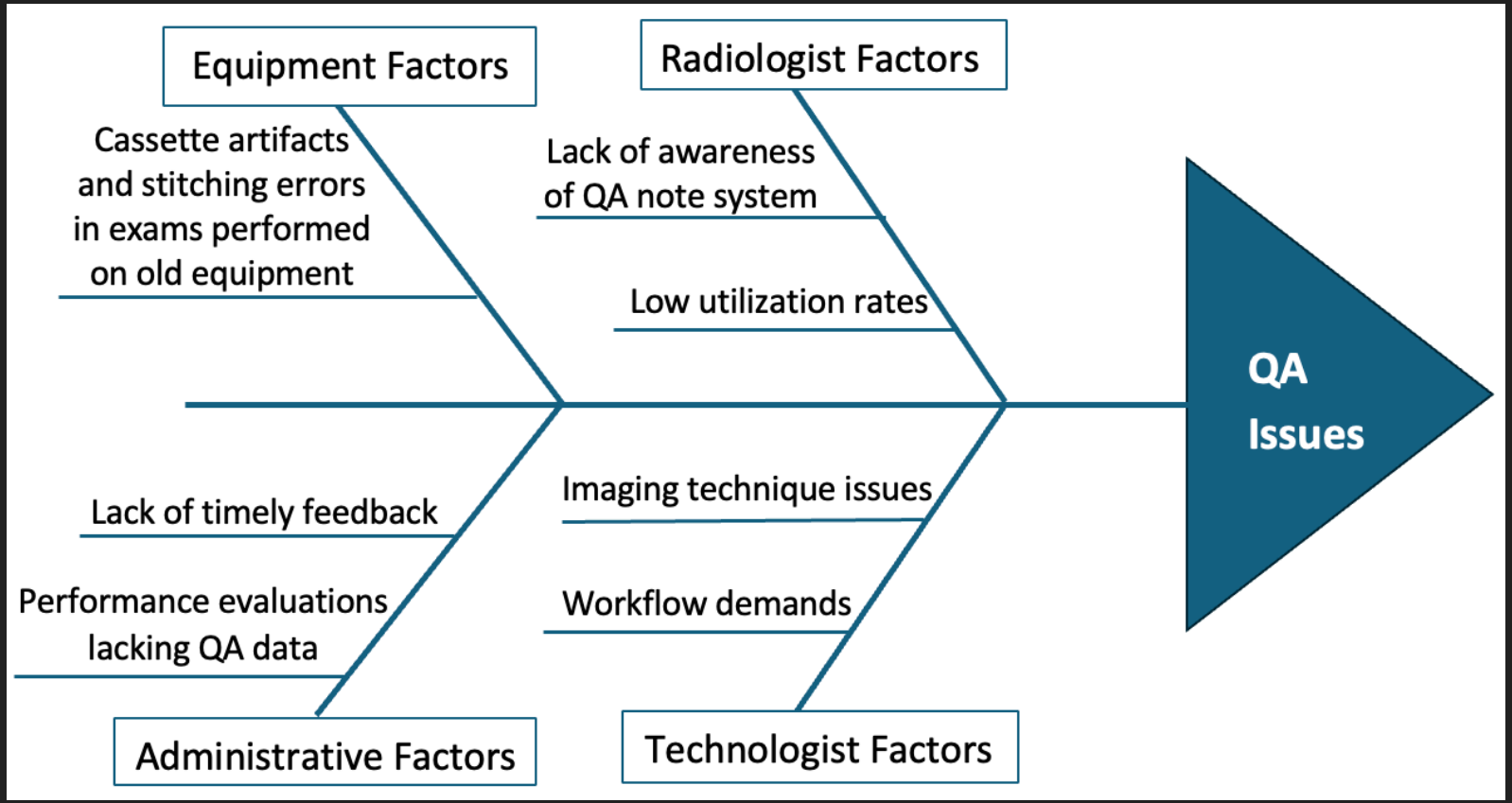
Do
- Create department-wide QA note teaching session
- Train radiologists to document QA notes in RIS for radiology procedures
- Administer pre- and post-teaching assessments

Act
- Create teaching modules and assessments for technologists
- Execute corrective actions for common QA issues
- Continue analyzing data and providing feedback for continuous improvement

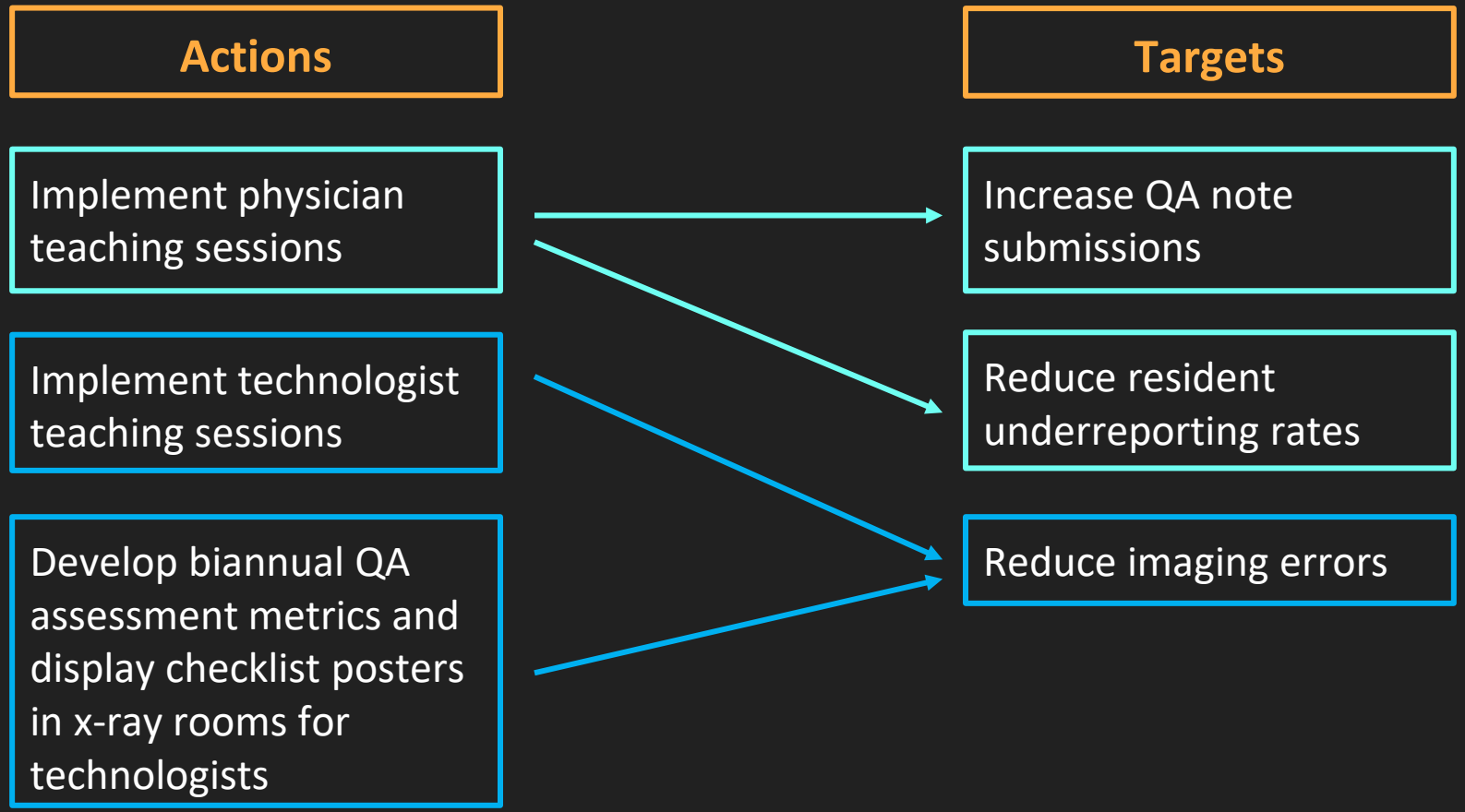
Study
- Analyze submitted QA notes to identify common issues and determine radiologist reporting rate and resident under-reporting rates*
- Monitor progress; regularly review QA notes

*Residents pre-dictate cases, which are subsequently signed off by attendings. If the resident did not enter a QA note and the attending did, it is considered “underreporting.”

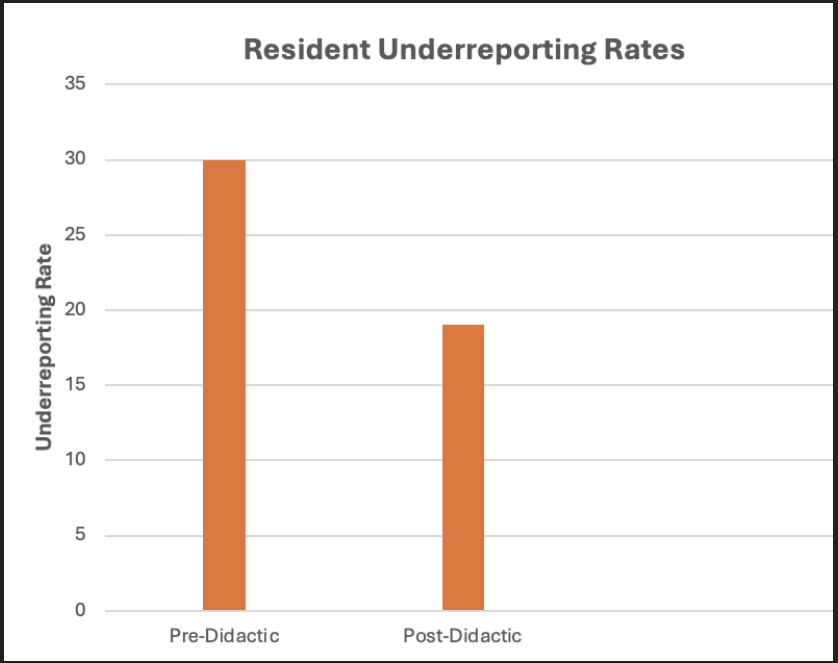
Root Cause Analysis



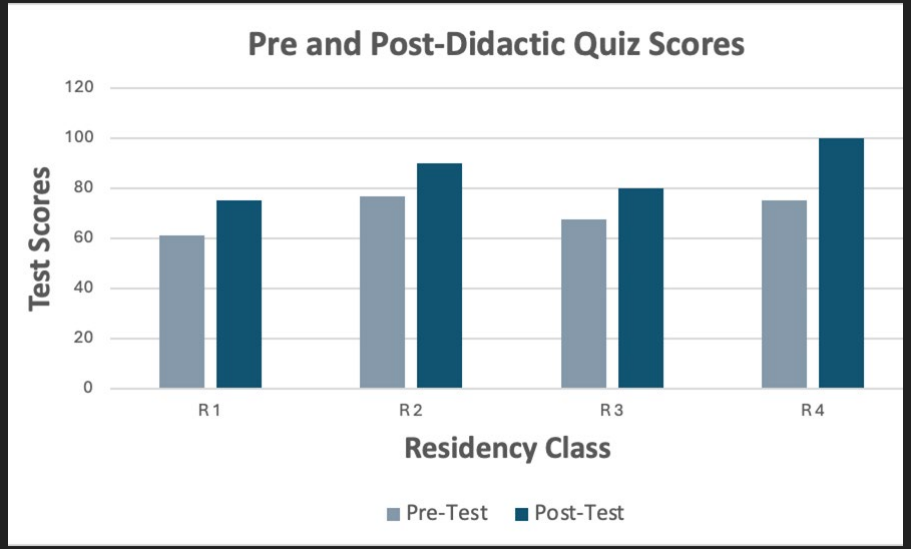
Intervention



Results



After the teaching session, resident underreporting rates declined from 30% to 19%, demonstrating that residents are now more likely to report QA issues.



Based on the Student's t-test, the average resident score increased significantly between the pre-test and post-test ($p = 0.05$).

18-Month Report

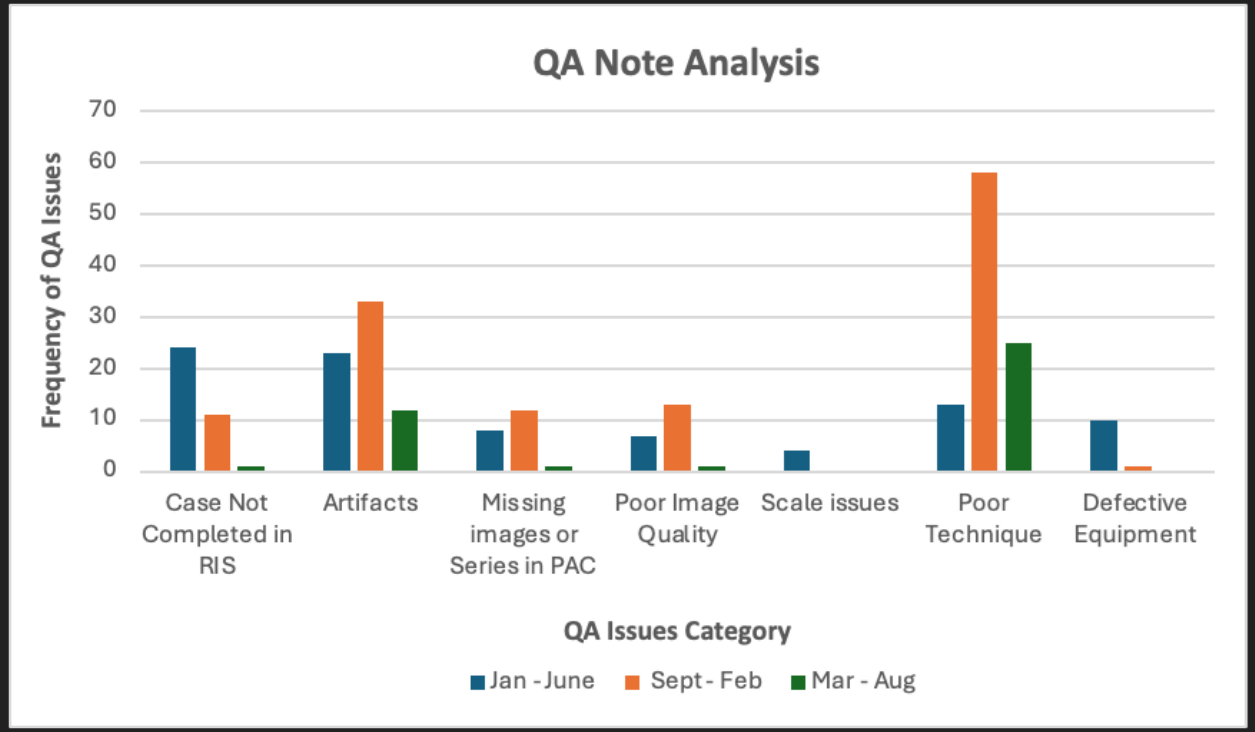
Resident Teaching Implemented

New Equipment Installed

Technician Teaching Implemented

QA Issue Category	Jan - June	Sept - Feb	Mar - Aug
Case Not Completed in RIS	24	11	1
Artifacts	23	33	12
Missing Images or Series in PAC	8	12	1
Poor Image Quality	7	13	1
Scale Issues	4	0	0
Poor Technique	13	58	25
Defective Equipment	10	1	0
Total QA Notes (X-Ray Only)	89	128	40
Total QA Notes (All Modalities)	131	201	410

Results Continued



Although the total number of QA notes rose considerably following resident education, the reduction in errors occurred significantly only after technologist education was implemented.

Conclusion

- Training radiologists aided in mitigating resident underreporting and improving overall utilization of the QA system
- Implementation of technologist training, timely feedback, inclusion of data regarding image quality on performance assessments, and reminder checklists significantly reduced radiographic errors
- This study underscores the necessity to establish a similar formal initiative for cross-sectional imaging