Implementation of a Radiologist Feedback System on Clinical Computed Tomography Examinations for Quality Improvement

Z Long, LL Jorgenson, CL Siegle, JL Loewen, TL Troutman, MJ Jensen, CW Koo

Department of Radiology, Mayo Clinic, Rochester, MN
Background

• Technologists play a vital role in patient care [1]

• Radiologist input and feedback on clinical examination acquisition and reconstruction are invaluable [2-3]
  • Aid in technologist education, image quality optimization and ultimately patient care

• This project aimed to establish a convenient and closed-loop radiologist feedback system as a quality improvement tool in our CT practice

Methods

• A function integrated in the EHR was identified which allows easy workflow for radiologists to provide feedback on exam technical quality
  • Selection buttons for eight categories including complimentary feedback and specific quality issues such as artifact, technique and positioning
  • Free text option to provide details

• Its drawbacks also identified and solved accordingly
  • Feedback needs validation and feedback loop needs to be closed
Methods

Technologists survey on radiologist feedback

Radiologists provide feedback in EHR feedback function

Data exportation and validation weekly with exam images and tech initials in DICOM header for a year

Guidance on communication approaches

Before end of project

Constructive criticism

Email individual within two days upon weekly analysis

Share in monthly meetings anonymously

Complimentary feedback

Recognize on message boards in clinical areas and in monthly tech meetings
Methods

• Opportunities for further tech education identified
  • In-service session on common quality issues and CT artifacts

• Data were analyzed in terms of percentage of each category in the total number of feedback inputs before and after in-service education

• Final technologist survey conducted to evaluate their responses on receiving feedback at the end of the project
Results

• 387 feedback inputs were received in the one-year duration from 67 radiologists

• Top three constructive criticism categories: technique (such as reconstruction error), other (such as issues with following radiologist protocol or instruction), and motion

Overall Feedback Category and Frequency
Results

• The percentage of complimentary feedback increased from 49.7% to 67.6% after in-service education.

• All constructive criticisms decreased significantly after education shown by a Wilcoxon Signed Ranks test (p<0.05).
Results – Technologist surveys

• Survey prior to the project assessed the existing status of radiologist feedback, technologist opinions on feedback and how they would like to receive feedback

• Survey at the end of the project demonstrated
  • 72% indicated radiologist feedback were valuable sometimes or more often
  • 80% would like to keep receiving feedback in the future
Conclusion and Discussion

• An easy, EHR-integrated and closed-loop system for radiologist feedback on CT examinations was established

• Feedback data and technologist survey results demonstrated improvement of exam technical quality and positive experience from technologists

• Text data from this project could aid in development of natural language processing algorithms to automate some of the communication steps
Thank you for your attention!

Contact info: long.zaiyang@mayo.edu