Developing a Technologist-Focused Quality Improvement Program

Justin Glavis-Bloom, MD; Ruth Rizzoa; Amit Sura MD, MBA

Background

- Decreased interaction between XR technologists and radiologists regarding image quality in digital age

- Prior attempts to improve quality interrupt work flow and lack systems for continuous improvement

- Our institution
  - Standalone children’s hospital, level I trauma center
  - 80K ED visits/year
  - 7K radiographs/month
  - 30 technologists
  - 10 radiologists
Initial quality intervention

- Standardized template to capture quality errors during report creation incorporated into dictation software

- Three month pilot, then reviewed data and created checklist to address most common technologist errors

Continuous improvement

- Each month captured prior month’s errors, reported
  - Total error rate
  - Per-technologist error rate
  - Ascension numbers for all images with errors
    - Reviewed by capturing technologist and technologist supervisor

- Rewards for technologists with error rates < 3%
Results: Error Rate

Decrease in Total Error Rate

During the initial 3-month pilot period, the total error rate averaged 2.7% vs. 0.9% in the final 6 months of 2016.

Staff Improvement

Proportion of technologists with error >3% decreased from 28% during the initial 3-month pilot to 5% during the final 6 months of 2016.

Results: Image Retake Rate

- Ranged from 6.2% to 8.9%
- Upward trend but poor regression fit
- Averaged 7.0% before intervention, 8.0% during intervention

Opportunity for improvement during next QI cycle
Limitations

• Identifying error requires radiologist participation

• Of 10 radiologists who remained at our institution throughout the intervention, only 6 participated consistently, representing 55% of radiographs.
  – Sensitivity analysis limited to these 6 radiologists: image quality error rates decreased during the intervention, with a regression coefficient of \(-0.07\%\) (95% confidence interval, \(-0.14\%\) to \(0.00\%\); \(P = .04\)) but poor regression fit, with an \(R^2\) value of 0.25.

Lessons learned

• Develop a quality checklist to address most common sources of error

• Track error at the individual level, with ongoing feedback tied to specific images, rewards for highest performers, and competition to improve

• Minimize disruption to workflow and audit participation

• Ensure no unexpected consequences (i.e. retakes)