Peer Review of Technologists: Quality Improvement of Performance

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Background

- The JCAHO, state regulations and credentialing policies expect that ongoing performance-based evaluations of all medical staff takes place
- All imaging departments are expected to establish and maintain effective quality, safety, and performance improvement programs
- Technologist performance is a key component for assuring the quality of interpreted x-rays

From the Editor's Notebook

To Peer Review or Not to Peer Review: That Seems to be the Question

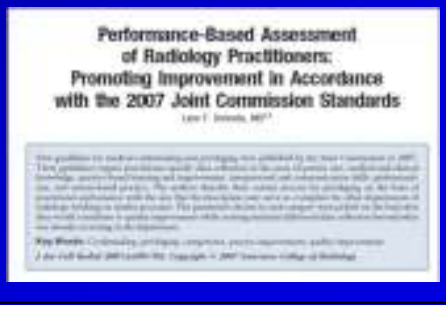
Robert Stanley, Editor, *AJR* 2005; 185:1101

•Actually, it is no longer a question!
•Regulatory groups, including the ACR, JCAHO, the ACGME and many State Medical Boards and hospitals now require participation in a performance evaluation process, including peer review, for purposes of accreditation, licensing and credentialing.

Ipso facto…..“by that very fact”

- Every Radiology Department should establish a performance evaluation and peer review process, and require all staff to participate in this process.
- The challenge is to make participation enthusiastic and flawless, and for radiologists and technologists to see their efforts translated into improved performance and patient care.

Readers are referred to the following excellent review by Lane Donnely, MD.


Performance-Based Assessment of Radiology Practitioners: Promoting Improvement in Accordance with the 2007 Joint Commission Standards

What is Peer Review?

- Peer review is a process for fairly evaluating the performance of one's peers.
- Peer review should not be seen as a bureaucratic burden, but as an opportunity to measure your own performance and to identify opportunities for self improvement.
- When data is collected on a regional or national basis, peer review allow one's performance to be benchmarked against groups of peers.

The Peer Review Process

- Peer review is only one of several means for evaluating performance of technologists and radiologists.
- Unlike technical and regulatory performance metrics, clinical peer review measures the performance of technologists and compares these with their colleagues.
- The peer review process is a means to identify opportunities for additional education, for reducing errors and for improving the quality of patient care.

The Peer Review Process

- The evaluation process should be fair and transparent system for analyzing cases.
- Participating in peer review should have minimal effect on workflow, it must be easy to participate in, and should be non-punitive.
- Peer review processes should be integrated into a department's Quality Assurance program.

What are the key requirements of a peer review process?

- **Consistency:**
  - Peer review should be conducted according to defined procedures and rules.
  - All clinical staff should participate and should be aware of the rules.
- **Timeliness:**
  - Reasonable time frames for participation and evaluation of cases must be adhered to.

- Defensible:
  - Conclusions reached through the evaluation process should be evidence-based, and supported by literature and guidelines.
  - The process for selecting cases for review must be defined and adhered to.
- Balanced:
  - A fair system of evaluation must be established.
  - Random selection of cases should occur.
  - Minority opinions and views of the person being reviewed are considered and recorded.

- Useful:
  - Results from the peer review process are used for privileging and credentialing decisions.
  - Data resulting from analysis of reviews should be used for educational and training purposes.
- Ongoing:
  - Data is tracked over time.
  - Data is analyzed to identify trends.

Purpose

- We aimed to use peer review for the assessment of technologist performance and evaluate means for improving quality as part of an ongoing educational process

Materials and Methods

- In our academic institution, 40 technologists perform 96,000 conventional x-rays annually
- We sampled 3% of x-rays and analyzed them in 4 quarters during 2010 and 2011
- Two senior technologists evaluated each x-ray in consensus for technical quality and administrative quality

Materials and Methods

- Technical quality score included the following parameters:
  - » radiographic position
  - » exposure parameters
  - » side marking
  - » field of view

Materials and Methods

- Administrative quality score included the following parameters:
  - » pregnancy recording
  - » metal object removal
  - » comments added

Each component was scored separately on a 1-100 scale, where 100 was a perfect score.

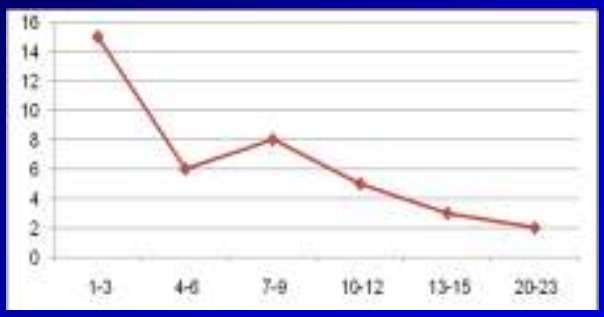
Materials and Methods

- After reviewing the first quarter sample, educational modules and one-on-one training that focused on specific problems were implemented
- Scores in subsequent samples were compared with baseline performance.

Results

Number of X-rays per technologist

number of technologists



number of X-rays per technologist

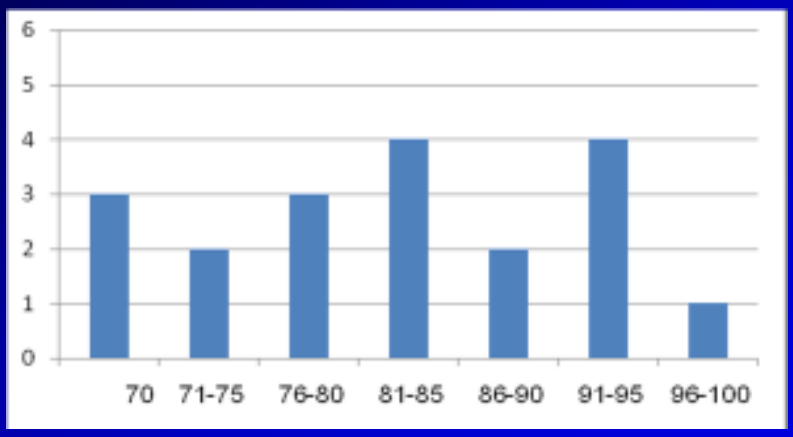
For more than 90% of technologists, at least 5 x-rays were sampled per quarter (mean 14.8, range 1-45)

Results

- In Q1, the average technical score was 80 (range 65-100) with 55% of technologists having scores less than 80
- The initial average administrative score was 94

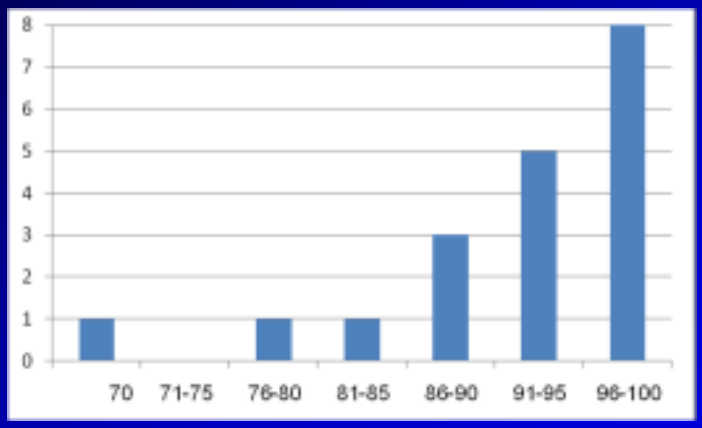
Professional Score –Q1

number of technologists



Administrative Score –Q1

number of technologists



Results

- The lowest average scores were obtained for:
  - » trauma x-rays (72)
  - » pelvic studies (74)
  - » upper extremity radiographs (81)
- Study complexity and time of day were not related to technical or professional scores ($p>0.05$).

Low scored components and percentage from studies evaluated

Technical Component	Percentage from sampled studies
Exposure parameters	4%
Side marking	1%
Suboptimal position of patient	25%
Exposure FOV	14%

Low scored components and percentage from studies evaluated

Administrative Component	Percentage from sampled studies
Pregnancy recording*	8%
Metal object removal	3%
Addition of comments	1%

* Out of total studies- should be higher if only female of reproductive age included

Action Items

- After Q1 results the steering committee decided to build educational modules focusing on trauma, pelvic, and upper extremity x-ray studies that were offered to all technologists
- Technologists with low scores were personally mentored.

Change in Following Quarters

- In the first 2 following quarters (Q2 and Q3) higher scores were obtained for the parameters evaluated based on intensive educational efforts
- Q4 showed an opposite trend with decreasing scores

Follow-up scores

Score	Q1	Q2	Q3	Q4
Professional	80	84	87	84
Administrative	94	97	96	95

In Q4 the trend for higher scores has changed

Professional Components
Trend over time

Technical Component	Q1	Q2	Q3	Q4
Exposure parameters	4%	4%	3%	4%
Side marking	1%	2%	1%	2%
Suboptimal position of patient	25%	21%	15%	23%
Exposure FOV	14%	6%	5%	7%

Percentage from evaluated studies

Administrative Components
Trend over time

Administrative Component	Q1	Q2	Q3	Q4
Pregnancy recording	6%	3%	6%	7%
Metal object Removal	3%	2%	2%	4%
Addition of comments	1%	1%	1%	0%

Percentage from evaluated studies

X-rays scores

	Q1	Q2	Q3	Q4
Trauma	72	82	85	85
Pelvis	74	88	93	87
Upper extremity	81	87	91	80

In Q4 the trend for higher scores has changed

Reasons for change in trend

- New technologists evaluated
- Need for repetitive tutorials
- Annual increase in number of performed x-rays with higher demands per technologist

Future Plans

- Continuation of the peer review process
- Evaluation of other modalities
  - » MR
  - » CT
  - » IR
- Adding parameters on the need to repeat suboptimal x-rays

Conclusion

- Peer review is an effective tool to assess technologist performance and identify areas for improvement
- Targeted educational process can then improve x-ray quality
- Trends in quality can be found and analyzed