

PQI: Example Projects for Nuclear Medicine Physics

Sharon L. White PhD

University of Alabama at Birmingham

August 6, 2013



UAB MEDICINE

Knowledge that will change your world

Categories

- Patient, employee, public safety
- Accuracy of interpretations and calculations
- Report turnaround times
- Practice guidelines and standards
- Surveys

General Comments

- The following ideas are just suggestions, that I or others have thought of as reasonable projects
- The project should involve something that you can measure or quantify, so that you can track whether improvement occurs. Examples:
 - ◆ actual measurements, such as a radiation badge readings,
 - ◆ tallying and summarizing responses to a survey,
 - ◆ recording how many times something happens in a specific time period, such as repeating a scan on a patient due to image quality problems
 - ◆ Whether something happens or not – yes or no

Example Project 1 – Safety: employee radiation exposure

- Monitor badge readings of technologists in nuclear medicine and/or PET (an example on ABR website)
- Review badge readings over a period of a few months, analyze data. Determine if any employee's readings are unusually high compared to other technologists.
- Attempt to determine reasons for unusually high readings, by interviewing technologist, understanding their duties, observing them at work.

Example Project 1 – Safety: employee radiation exposure

- Additional monitoring could be helpful, such as a personal dosimeter that can be read more frequently than a badge, or area monitoring could provide more information.
- Implement changes if needed, such as changes in work habits, or more equitable distribution of workload. (Example: If technologist must escort PET patient to restroom, they could increase distance from patient)

Example Project 1 – Safety: employee radiation exposure

- Monitor badge readings for a few months after changes and determine if exposures are reduced.
- Even if badge readings have been monitored in the past, it can be useful to do it again after changes such as new employees, new/additional equipment , a change in department layout or a new facility.

Example 2 Surveys: I-131 Therapy Instructions

- Patient receives written instructions for reducing exposure to others after I-131 therapy
- This project could help determine if the patient instructions are sufficiently clear and how well the patient understands how to follow them.
- A survey could be given to the patients before their therapy, mailing the survey with the instructions, to ask if they understand how to comply with the instructions, and whether it answered their questions, etc.

Example 2 Surveys: I-131 Therapy Instructions

- A second survey a week after therapy could determine how well they were able to comply with the instructions, and whether they had additional questions that were not answered by the written or verbal instructions
- If surveys indicate the instructions are lacking in clarity or information, the instructions could be re-written, and another survey would determine if there was an improvement in understanding and compliance with instructions.

Example 2 Surveys: I-131 Therapy Instructions

- If surveys indicate the instructions are good as they are, this should be documented, and the project can be completed, with the conclusion that no improvement is necessary.
- Be sure to understand and comply with your institution's policies on surveying patients for quality control.

Example 3: Accuracy of Interpretation: New SPECT camera software

- Your department buys a new SPECT camera with iterative reconstruction software, which may allow reduction of administered activity to patients
- Follow manufacturer's recommendations for software use, and work with physician to determine if image quality acceptable.
- Determine if administered activity can be lowered and maintain image quality

Example 3: Accuracy of Interpretation: New SPECT camera software

- Implement new imaging protocol
- Monitor studies for some period of time and consult with physician to ensure that the images are satisfactory and software use is optimized.
- Could be a group project for physicians and physicist

Example 4: Accuracy of Interpretation: Image Quality Review

- Physicians reading nuclear medicine studies may have occasional complaints about image quality. If so, review examples with the physicians and determine what percentage of studies over a recent time frame had a problem (such as the past month or quarter).
- This may be narrowed down to one or two types of studies, such as bone scans and cardiac scans. Document statistics on frequency of occurrence.

Example 4: Accuracy of Interpretation: Image Quality Review

- Determine possible cause or causes of problems (patient positioning, camera heads not close enough to patient, camera problems, patient motion, etc.)
- Implement changes for improvement – such as refresher training for technologists, fixing camera problems, protocol changes, etc.

Example 4: Accuracy of Interpretation: Image Quality Review

- Review images again after changes implemented to see if improvement has occurred
- Monitor over sufficiently long time frame to determine if improvement is maintained.

Example 5 Surveys: Teaching

- You may be involved in teaching radiation safety to various groups (students, technologists, nurses, residents, etc.) or other nuclear medicine physics topics.
- Not just for academic physicists or for lengthy courses – consulting physicists may give in-service lectures on radiation safety or other topics

Example 5 Surveys: Teaching

- A teaching evaluation survey could be developed, as well as a quiz given to the class, to determine the effectiveness of the teaching and their understanding of the material.
- If surveys indicate improvement could be made, implement improvements, and re-survey the next times the lectures are given.

Summary

- Projects can be practical things you do as part of your job
- Be sure to keep documentation of your project in case you are randomly audited