AMERICAN BOARD OF RADIOLOGY
Maintenance of Certification
Medical Physics

Update - Parts 3 & 4

Richard L. Morin, PhD
Diagnostic Physics Trustee
Secretary – Treasurer

ABMS: Four Components of MOC

Component 1: Professional Standing
- Physicians; Unrestricted license
- Physicists; Unrestricted license or practice involvement documentation

Component 2: Lifelong Learning and Self-Assessment
- The requirement to keep current in the field. Renewing & expanding knowledge, skills, competence, and performance for the purpose of improving the quality of patient care.

Component 3: Cognitive Expertise

Component 4: Evaluation of Performance in Practice
- Assessment regarding support of patient care.

3. Cognitive Expertise

- Expected to
  – maintain the essentials of core knowledge fundamental to the practice of Radiologic Physics, and
  – to remain up-to-date on evolving technologies, protocols, procedures and techniques involving applications of physics in medicine.

- Fulfillment of these expectations will occur by evaluation of cognitive expertise utilizing a multiple-choice examination in a secure testing center.

3. Cognitive Expertise

- The examination format will be 100 un-weighted multiple-choice questions with content based on
  1) core knowledge (approximately 30%),
  2) current evolving technologies (approximately 70%).

- Necessary reference material will be imbedded in the questions.

- New cognitive exam will be available on a yearly basis.

- A diplomate who fails an exam will have the opportunity to retake the examination, offered in the next year.

- The exam should be taken during the eighth, ninth or tenth year.

- First exam offered in 2010.
4. Evaluation of PQI

- Diplomates must provide information regarding their active participation in the profession of Radiologic Physics over the 10-year period.

- The PQI program will be focused on the radiological physicist as a medical professional who contributes to and supports patient care, patient safety, and education.

- The PQI evaluation will be directed toward the diplomate’s activities in fulfilling obligations in specific programs that have prescribed evidence-based standards and criteria.

Principles for PQI Evaluation

- Programs/projects must establish criteria, standards and outcomes
- Normative review process will be used
- At least one practice performance project in 10 year period
- Data collected via peer review at years 4 and 7
- Candidate will choose the reviewer
- First data collection point is 2008
- Alternative process available for those no longer practicing in certification area.

Categories of PQI Programs/Projects

- Type 1 – Individual Based
- Type 2 – Society Based
- Professional and Regulatory Guidelines
- Safety for Patients, Employees and the Public
- Educational Activities

The final configuration of and components for practice performance evaluation as applied to Radiologic Physics are illustrated in the RP white paper.

The program will be responsive to the guidelines for practice quality improvement (PQI) that have been established by the ABMS.
<table>
<thead>
<tr>
<th>Year of Cycle</th>
<th>A guideline of what might be done each year of the ten-year MOC cycle</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Quality improvement education (first cycle)</td>
</tr>
<tr>
<td>2</td>
<td>Select project and metrics</td>
</tr>
<tr>
<td>3</td>
<td>Collect baseline data</td>
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<td>4</td>
<td>Implement improvement plan</td>
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<td></td>
<td>Might include data collection</td>
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<tr>
<td>5</td>
<td>Collect data</td>
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<tr>
<td></td>
<td>Compare to initial/baseline</td>
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<tr>
<td>6</td>
<td>Select new project and matrix or modify improvement plan for.previous project</td>
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<tr>
<td></td>
<td>Collect baseline data</td>
</tr>
<tr>
<td>7</td>
<td>Analyze data</td>
</tr>
<tr>
<td>8</td>
<td>Create improvement plan (if new project)</td>
</tr>
<tr>
<td>9</td>
<td>Collect data</td>
</tr>
<tr>
<td></td>
<td>Compare to initial baseline</td>
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<tr>
<td></td>
<td>Summarize, draw conclusions</td>
</tr>
<tr>
<td>10</td>
<td>Cycle concludes</td>
</tr>
</tbody>
</table>

### Table 2. Categories of PQI Projects

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Safety for patients, employees, and the public</td>
</tr>
<tr>
<td>2</td>
<td>Accuracy of analyses and calculations</td>
</tr>
<tr>
<td>3</td>
<td>Report turnaround times and communication issues</td>
</tr>
<tr>
<td>4</td>
<td>Practice guidelines and standards</td>
</tr>
<tr>
<td>5</td>
<td>Surveys</td>
</tr>
</tbody>
</table>

### Examples of Practice Quality Improvement (PQI) Projects for Radiologic Physicists

**Note:** The examples in this appendix address some of the many possibilities for individual PQI projects. Other PQI options are available including participation in a peer review of a self-assessment report or activity within a qualified national project sponsored by a society.

1. **Category: Safety for Patients, Employees and the Public**

   **Practice Quality Improvement Project:** Monitoring of Dose Indices for Lumbar Spine Radiography

   **Background:** With Computed Radiography (CR) it is quite likely that patient exposures will increase since there are little imaging consequences of overexposure. In addition, the monitoring of this process is more difficult as there are no "waste films".

   **Objective:** To establish a program to monitor exposure indicators and assure that they are as low as reasonably achievable.

   **Program:** The Dose Index parameters will be monitored for all Lumbar Spine Radiographs. These will be tracked and reviewed with the Supervisor and overseesing Radiologist.
Procedures:

1. Develop software to extract Dose Indications from DICOM Headers
2. Measure archived examination, establish the mean and standard deviation for these indices over the last two years

Improvement Plan:
1. Contact other leading institutions to determine "Prayce Standards"
2. Review ACR Practice Guidelines for Reference Levels
3. Institute program to extract data for all Lumbar Spine Examinations

Remeasurement:
1. Review performance on a monthly basis for six months, then quarterly.
2. Meet with Supervisor and Radiologist to assess trends and outcomes.

Evaluation:
The Diplomate will annually oversee the program to ensure Lumbar Spine Radiography produces quality images using as low as reasonably achievable radiation levels.

2. Category: Safety for Patients, Employees and the Public

Practice Quality Improvement Project: Women’s CT Doses

Background: The increased use of CT as a diagnostic imaging modality and the associated rise in radiation dose to patients has been the topic of active discussion in recent years. This PQI project will raise awareness of CT radiation dose to female patients in specific and establish the practice patterns which lead to decreasing radiation exposure.

Objective: To determine the dose indices for chest, abdomen, and pelvic CT examinations for women.

Program: Technologists will record the CTDIvol. and DLP for all chest, abdomen, and pelvic examinations for all women above 12 years of age. The data will be reviewed by age stratification to determine trends and the status of the practice. These will be compared to reference levels and, where possible, will be decreased without compromising image quality.

Procedures:

1. Develop recording system for CT Technologists
2. Accumulate data for 3 months

Improvement Plan:
1. Review ACR Reference Level data
2. Review the acquired data
3. Meet with Supervisor/Lead Body CT Radiologist

Remeasurement:
1. Review protocols to ascertain dose reduction techniques
2. Oversee program on a quarterly basis

Evaluation:
The Diplomate will use Medical Physics knowledge to establish the program and maintain continuing quality improvement for CT examinations of women using radiation levels as low as reasonably achievable.

3. Category: Report Turnaround Times and Communication Issues

Practice Quality Improvement Project: Report Turnaround Times and Quality of Consultation

Background: It is important to provide timely and meaningful reports to practices following Medical Physics consultation.

Objective: To determine the report turnaround time and quality of consultation following a Physics equipment evaluation.

Program: Review past report times and establishes procedures for a Continuous Quality Improvement program. Determine how often serious issues were discussed with administration and Chief Radiologist.
Paradigm Shift

Deming – “You don’t have to (change), survival is not compulsory.”

Darwin – “It’s not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change.”

Hendee – Or, as a pioneering 20th Century physicist once remarked, “Scientific progress moves forward, one funeral at a time.”