How do you maintain competency?

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Learning Objective

- To provide a clear understanding of how to develop a competency program
Competence is a standardized requirement for an individual to properly perform a specific job. It encompasses a combination of knowledge, skills and behavior utilized to improve performance. More generally, competence is the state or quality of being adequately or well qualified, having the ability to perform a specific role.
From AAPM

- **Medical Physicists**
- In the United States, medical physicists demonstrate competence in their discipline by obtaining *board certification*. Certification is a rigorous, multi-year process that requires considerable clinical experience under supervision and passage of written and oral examinations. Medical physicists follow *detailed quality assurance and safety protocols* established to insure that cancer treatments with radiation are conducted according to the prescription prepared by the physician for every treatment of every patient. Medical physicists follow *guidance from national standards* documents developed by the AAPM and in cooperation with other professional societies. The AAPM has numerous committees dedicated to quality assurance and safety in radiation therapy.
Is the Person Exposing You to Radiation Qualified?

(February 26, 2010) — Every day in the United States, tens of thousands of patients are exposed to ionizing radiation through radiation therapy, CT scans, x rays, mammograms, and other medical imaging and therapeutic procedures. Patients need to have confidence that the technologists caring for them have the credentials and qualifications to safely administer radiation, and that the equipment they are using is properly calibrated and maintained to deliver radiation safely and within the proper dose parameters.
From ASTRO

- **GOAL 3:** Shape the framework for delivery of quality patient care.
- ASTRO will support and help shape comprehensive health reform. ASTRO will build a successful radiation oncology practice accreditation program in conjunction with the American College of Radiology.
- ASTRO will work to promote and represent the practice of radiation oncology with respect to the American Medical Association, the Centers for Medicare and Medicaid Services and other payer communities, with governmental and regulatory entities, and within health care reform, in general.
- ASTRO will continue to develop its comprehensive Maintenance of Certification program to document clinical competency.
- ASTRO will promote research funding for the field.
- ASTRO will continue to advance its advocacy agenda.
- ASTRO will develop an evidence-based mechanism for improving the patient care experience.
- ASTRO will take the lead in developing radiation oncology clinical practice guidelines.
**Human Resources Management**

**Competency assessment**

Q. What is required to complete a competency assessment?

A. The competency assessment can be accomplished through a variety of methods including the assessment of information from current and previous employers, collecting peer feedback, verifying certification and licensure, reviewing test results with a written or oral competency, and observation of skills. The assessment must be thorough and focus on the particular competency needs for the clinical staff's assignment. Use of a self-assessment, such as a skills checklist, as the sole assessment method does not constitute a competency assessment.
The elements of establishing competency

- Accreditation, certification, and MOC
- Follow detailed QA and safety protocols
- Follow national standards
- Peer review
- Collect info from current and previous employment
- Observation, written and/or oral tests
The Steps to Maintaining Competency

1) Establish the culture of safety.
2) Make sure your P&P’s are current and contain adequate detail.
   - Well documented P&P change process.
   - Make sure you have detailed and documented P&P review and that they adhere to applicable standards.
3) New staff evaluation
   - Document previous experience of new staff.
   - Make sure you have a detailed program to train new staff.
4) Existing staff evaluation
   - Establish minimum procedure levels.
   - Observation, audits, written and/or oral tests
5) Budget for outside reviews.
   - Program (ACR Accreditation) and procedures (RPC/RDS phantoms)
6) Establish proper training program
   - Budget for staff training.
   - Document all education and training.
7) Make sure that you have adequate staffing.
   - Budget staff time for competencies
Safety Culture

- Adhering to a culture of safety is a competency
- Top down enforcement of safety first
- Zero tolerance for short cuts
- All staff empowered to stop a procedure
- Second checks and timeouts
- Make sure staff do not operate outside their scope of practice
- Well documented change of P&P process
- Expectations for staff
Sample Expectations

Medical Physicist Expectations

Philosophy

1. Double check your work. Assume everything you do is wrong until you prove to yourself that it is correct.
2. Question the work of others (physicists, dosimetrists, doctors, therapists, etc.) in a respectful manner.

Administrative

1. Cover all clinical hours in coordination with dosimetrists. This means someone on site for every patient treatment if possible. There may be staffing situations that prevent this at times, but every effort should be made to cover the clinical hours.
2. Dress professionally.
3. Notify all involved of planned vacations and meeting attendance. Document in appropriate calendars. Insure coverage when off.

Specific tasks

1. Ongoing QA of all equipment (monthly, annual).
2. Patient specific QA.
4. Treatment planning (3D.
5. Double checks.
6. Chart check.

What you should expect from Administration (Chief Physicist, VP, etc.)

1. Provide you with the necessary tools (computers, equipment, etc.) to perform your job. Provide adequate office space (room size, location, privacy, cleanliness, etc.)
2. Provide you with adequate educational opportunities and support. One meeting per year, payment of AAPM dues, and payment of licensing fees.
3. Provide adequate staffing to insure the safe delivery of radiation therapy.
Policies and Procedures

- How can you determine competency if it is not clear what is required?
- “Able to perform IMRT QA” is not sufficient.
- “Able to perform IMRT QA on a TomoTherapy unit with version 3.4 software using PTW 729 with version 4.03b software using 2%/2mm criteria, etc…” is the level of detail needed. Each staff member should not be making it up as they go.
- Annual review of P&P’s by all staff documented.
- Review of P&P’s by new staff documented before allowing staff to work independently.
How important are good P&P’s?

From B.G. Clark et al, Radiotherapy and Oncology 95 (3): 344-349

<table>
<thead>
<tr>
<th>Basic cause classification</th>
<th>2007</th>
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<td>2 Materials/tools/equipment</td>
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<td>1.5</td>
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<td>3 Design</td>
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<td>4 Work planning</td>
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<td>3.0</td>
<td>8.0</td>
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<tr>
<td>5 Communication</td>
<td>7.6</td>
<td>9.6</td>
<td>6.9</td>
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<tr>
<td>6 Knowledge/skill</td>
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<td>3.6</td>
<td>3.3</td>
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<td>8 Personal judgment</td>
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<td>1.9</td>
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<td>9 Natural factors</td>
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Sample new staff competency check list

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<thead>
<tr>
<th>Task</th>
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<td></td>
<td>HDR Breast</td>
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<td>HDR Calibration</td>
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<tr>
<td>Tomo operation</td>
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<td>Eclipse transfer to Impac</td>
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<td>Wipe tests</td>
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<td>IMRT QA - FROC</td>
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<td>Seed inventory</td>
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<td>Project tracking</td>
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Minimum Procedure Levels

- If you have not done something in the last 12 months, are you still competent?
- Establish minimum procedure levels for staff. If they do not perform the required number per year, they must re-credential.
  - Should be at least 1.
- Track through dept info system
  - i.e. use QCL’s in Mosaiq
- Establish a detailed portfolio of the number of procedures done by each staff member.
  - They can use this to document their experience if they change jobs. Important for licensing.
Audits

- Provide feedback on how well P&P’s are understood and implemented.
- Benchmark staff.
Outside Peer Review

Feedback on how well your P&P’s reflect best practice or how well your system is performing.

- ACR accreditation
- RPC reviews
- ASTRO PAAROT program (Performance Assessment for the Advancement of Radiation Oncology Treatment)
- ACR R-O PEER™
- Physicist Peer Review (see AAPM TG 103, 2005)
Outside peer review, what to expect. AAPM TG 103 as an example.

- Independent check of machine output
- Chart audits
- Review of QC and QA
- Assessment of adequate documentation
- Compliance with state and federal law
- Review of professional development, licenses, etc.
- Review of adequate staffing and coverage
- Assessment of adequate resources
11. What can my practice begin doing to prepare for an ACR accreditation survey?

A: Review the ACR Practice Guidelines and Technical Standards for Radiation Oncology on the ACR Web site at www.acr.org and the AAPM Task Group Reports (in particular TG-21, TG-51, TG-40, and TG-53) and incorporate these into your facility’s operational policies and procedures.

From ACR FAQ
What can an outside audit do for you?

G. S. Ibbott et al.

Table 1. Institution passing rates with the Radiological Physics Center phantoms

<table>
<thead>
<tr>
<th>Phantom</th>
<th>Head and neck</th>
<th>Prostate</th>
<th>Thorax</th>
<th>Liver</th>
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<td>Irradiations</td>
<td>250</td>
<td>64</td>
<td>24</td>
<td>4</td>
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<tr>
<td>Pass</td>
<td>179</td>
<td>55</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Fail</td>
<td>71</td>
<td>9</td>
<td>7</td>
<td>1</td>
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<tr>
<td>Year introduced</td>
<td>2001</td>
<td>2004</td>
<td>2004</td>
<td>2005</td>
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28% 14% 29% 25%

How many of you were in 14-29% Fail group?

From Ibbott et al, IJROBP, 71(1)
Still not convinced?

As Technology Surges, Radiation Safeguards Lag

Published: January 26, 2010

Checks and Errors

When inspectors from the Radiological Physics Center, a federally financed testing service, arrived at the Moffitt Cancer Center in Tampa, Fla., in 2005, they uncovered something alarming: a miscalibrated machine that overradiated 77 brain cancer patients by 50 percent in 2004 and 2005.
Lesson Learned

- Have an outside audit done before implementing new technology
- Will help spot hidden errors in your process
Education and Training

- Conferences
  - Require staff to communicate what was learned

- Vendor training
  - Require someone on your staff receive training directly from vendor
  - Send your staff or document training of a staff member at previous job
Adequate Staffing

- ACR data
- Lots of data related to nursing error rates and staffing levels
- No reason to think any different for others
Solo Practitioners, the need for special attention

- Is a specific concern for Physicians, Physicists, Dosimetrists, and Nurses
- Who evaluates performance?
- Who provides peer review?
- Guidelines (see AAPM report 80, 2003)
**Guidelines for the Solo Practice Physicist**

1. Adequate amount of physicist time on-site
2. Annual review by a qualified medical physicist
3. Physicist coverage during absences
4. Standardization and documentation
5. Continuing professional development and maintenance of competency
6. Practice accreditation or comprehensive review
7. Periodic assessment of resource needs
8. Introduction of new procedures
Medical Physics Solo Practitioners, Data from 2008 AAPM salary survey

<table>
<thead>
<tr>
<th>Degree and certification</th>
<th>Number</th>
<th>% of total (for that degree/cert combination)</th>
<th>Median years experience</th>
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<tbody>
<tr>
<td>MS, none</td>
<td>204</td>
<td>52%</td>
<td>3</td>
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<tr>
<td>MS, certified</td>
<td>495</td>
<td>56%</td>
<td>16</td>
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<tr>
<td>PhD, none</td>
<td>80</td>
<td>21%</td>
<td>4</td>
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<tr>
<td>PhD, certified</td>
<td>295</td>
<td>36%</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>1074</td>
<td>55% (of all RO physicists)</td>
<td>10</td>
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</table>

That means there are at least (not all physicists are AAPM members and returned the survey) 142 facilities (~6%) with solo physicists that are not certified and have less than 5 years experience!
Time Burden

- P&P update and review
- Documentation
- Performing the competencies
Cost Burden

- ACR Accreditation, ~$20,000 initial then ~$10,000 every 3 years
- Physics peer review, $1000-$3000?
- TLD output verification, ~$600/linac
- Phantom verification for IMRT, SRS, etc., ~$550/check
- Education and training, ~$1000-$3000/year/professional
Conclusions

- Establish clear, detailed policy and procedures.
- Follow established standards (ACR, AAPM, ASTRO, etc.).
- Have internal and external audits.
- Make sure your staff members are competent, your patients depend on it.
Links

- RDS Services

- ACR Guide to Medical Physics Professional Practice

- ACR FAQ
Thank You