A Review of the Maintenance of Certification (MOC) Process

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What is MOC?

- A process that enables each diplomate to provide evidence to peers and the public that quality of care is maintained throughout their career.
- Achieved through documentation of lifelong learning and self-assessment.
- Intended to ensure each diplomate continuously improves the quality of their practice and continues their professional development.

S.R. Thomas, W.R. Hendee, and B.R. Paliwal, Med Phys 32 (1), 263 – 67 (2005)

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What is MOC?

- The MOC process is designed to facilitate and document this process by accumulating evidence of professional development over the course of the ten-year certification cycle.
- However, MOC is ***NOT*** a guarantee of competence.
  - It is considered an indication of the diplomates commitment to maintaining competency.

S.R. Thomas, W.R. Hendee, and B.R. Paliwal, Med Phys 32 (1), 263 – 67 (2005)

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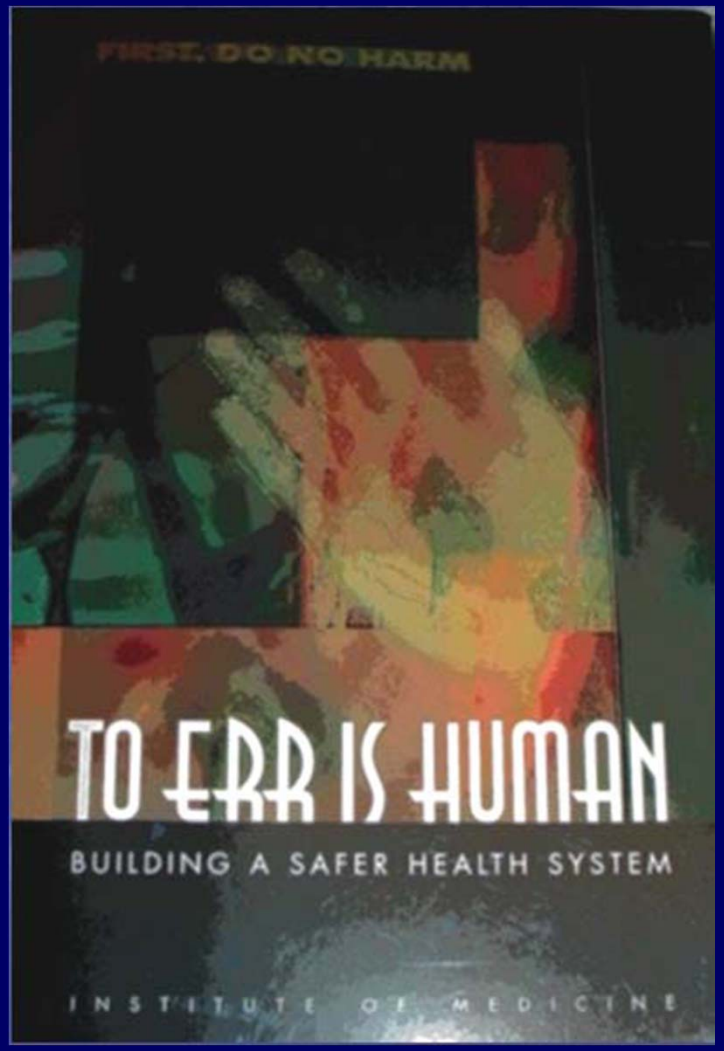
Road to MOC

- A major driving force for MOC was the 1999 Institute of Medicine report, "To Err is Human."
  - Report detailed medical errors occurring in a variety of health care settings.
  - Concluded that ~ 98,000 patients die each year as a result of medical errors.



http://www.nap.edu/openbook.php?isbn=0309068371

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Institute of Medicine's Recommendations

- "Health Professional licensing bodies should:
  - Implement periodic reexaminations and relicensing of key providers, based on both competence and knowledge of safety practices
  - Work with certifying and credentialing organizations to develop more effective methods to identify unsafe providers and take action."

http://www.nap.edu/openbook.php?isbn=0309068371

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Road to MOC

- In response to public and professional interest in enhancing the quality of patient care, MOC was developed as an initiative of the American Board of Medical Specialties (ABMS), of which the ABR is a member.
- In 1998, the ABR responded by creating a physics recertification committee.
- The first time-limited medical physics certificates were issued by ABR in 2002.

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Goal of the ABR-MOC

- There are six core competencies that are evaluated through the MOC process:
  1. Medical Knowledge
  2. Patient Care
  3. Interpersonal and Communication Skills
  4. Professionalism
  5. Practice-Based Learning and Improvement
  6. Systems-Based Practice

S.R. Thomas, W.R. Hendee, and B.R. Paliwal, Med Phys 32 (1), 263 – 67 (2005)

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Components to the ABR-MOC

These competencies are evaluated through the following components of MOC:

1. **Professional Standing**
2. **Lifelong Learning & Self Assessment**
3. **Cognitive Expertise**
4. **Practice Quality Improvement (PQI)**

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1. Professional Standing

- Demonstrated by:
  - Documentation of state licensure, or
  - Letter of attestation from an ABR-certified radiologic physicist and radiologist or radiation oncologist.
    - Should be submitted during the 6th year of diplomate's 10-year certificate cycle.
    - Should attest to the diplomate's active involvement in the discipline of radiologic physics.
    - The letters should focus on the six areas of competency.

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2. Lifelong Learning & Self Assessment

- Over the course of ten years, each diplomate must:
  - Earn a minimum of 250 continuing education credits, an average of 25 per year.
    - Requirement can be fulfilled by:
      - Earning 25 category 1 credits
      - Combination of category 1 credits and a self directed educational project (SDEPs)
        - » No more than 15 credits can be allotted to an SDEP and only one SDEP may be completed annually.
    - Cannot exceed more than 50 CE credits per year
  - Complete 20 qualified self-assessment modules (SAMs), an average of 2 per year (maximum of 4 per year).

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Multiple Certificate Holders

- Same lifelong learning and self-assessment requirements, but for each certificate:
  - Of the 250 total category 1 credits earned over 10 years, a minimum of 50 credits must be relevant to each area of certification.
  - Of the total 20 SAMs required over 10 years, four SAMs must be relevant to each area of certification.

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Category 1 Credit

- Category 1 CE credits are granted for educational functions approved by the Commission on Accreditation of Medical Physics Education Programs (CAMPEP) or other accrediting organizations authorized by Accrediting Council for Continuing Medical Education (ACCME).
- Examples:
  - Professional and educational meetings, symposia and courses, both live and recorded formats.
  - Participation in examination procedures by the ABR.
  - Departmental conferences and journal clubs.
  - Reviewing articles for scientific journals.

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Category 1 Credit (Cont.)

- Keep in mind, Category 1 credit is only granted for accredited activities. If organizers have not applied for accreditation, participating in a given activity cannot be considered toward Category 1 credit.

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Self-Directed Education Project

- SDEPs may be utilized as an optional means for fulfilling some of a diplomates CE credit requirements. To obtain CE credit for SDEPs, the diplomate must identify areas in which professional improvement and/or education is needed.
- The objectives of the project must be defined prospectively.

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SDEP (Cont.)

- SDEP must include the following:
  - Significance: A statement of the educational need
  - Approaches/Resources to be utilized: A list of activities designated to address the need
  - Evaluation: Documentation of achievement
  - Impact on Practice: Outcome statement
- A maximum of 15 credits are awarded per project.
  - Diplomates asked to attest to completing project.
  - Keep a record of write-up and project summary.
  - No more than one SDEP annually.

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SDEP (Cont.)

- A variety of activities may be considered as SDEPs, such as:
  - research projects
  - publication of original research
  - new lecture development
  - regulatory issue review
  - educational topics
  - technology updates
  - new protocol implementation
- Examples are provided on the ABR website.

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Self-Assessment Modules

- The purpose of SAMs are to assist with individual self-assessment and directing further lifelong learning activities.
- SAMs must include instructional content relevant to practice in one of four areas of radiologic physics.
- You may take a SAM outside your discipline as long as you can prove its “relevance.”
- Following or during a presentation, multiple choice questions are presented to the audience.

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In-person SAMs

- To receive credit for SAMs, diplomates are required to answer a minimum of 5 multiple choice questions.
- Time limits will be imposed, but diplomates are not graded.
- SAMs are offered at a number of annual meetings, such as AAPM Annual and Spring Clinical meeting.

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On-line SAMs

- At present:
  - To receive credit for SAMs, diplomates are required to answer a minimum of 6 questions.
  - Time limits are imposed, and diplomates must answer all questions correctly to pass and receive credit.
  - Diplomates can retest if necessary, by they are only permitted to take a given SAMs quiz once a day.

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On-line SAMs (Cont.)

- **Why the discrepancy?**
  - **For a SAM to be approved, it must have CEUs granted by an approved organization.**
  - **CAMPEP has separate requirements for on-line submissions, which is at odds with the ABR requirements.**

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CATEGORY	VENUE	SAM TITLE	SOCIETY	START DATE	END DATE
		Bolus Electron Conformal Therapy	FLAAPM	04/06/09	03/06/12
		Accuboost HDR Breast Brachytherapy	FLAAPM	05/24/10	03/03/13
		Particle Therapy: Issues and Considerations	AAPM	12/09/10	09/16/13
		ACR MRI Accreditation Program Update	AAPM	01/12/11	09/16/13
Nuclear		Radionuclide Imaging II: PET/CT, SPET/CT: Technology Updates, Quality Assurance and Applications	AAPM	2/10/12	6/2/13
		Clinical Implementation of ARC Therapy	ACMP	01/12/11	04/19/13
		Imaging for Radiation Therapy	ACMP	01/12/11	04/19/13
		Brachytherapy	ACMP	01/12/11	04/19/13
		Ensuring Patient Safety and Image Quality	AAPM	04/29/11	04/29/13
		Image-Guided BECT	FLAAPM	10/14/10	03/01/13
Diagnostic		Medical Prevention in Interventional Radiology	FLAAPM	07/26/11	03/03/14
Therapeutic		Radiation Treatment Errors	AAPM	09/22/11	04/28/13
Therapeutic		RT6: Lessons Learned	AAPM	09/22/11	04/28/13
Diagnostic		CT Workshop	ACMP	09/30/11	03/13/14
Therapeutic		Imaging and Radiotherapy for SBRT Liver & Lung	ACMP	09/30/11	03/13/14
Diagnostic		Stereotactic Breast Biopsy and Breast Specimen Radiography	ACMP	09/30/11	03/13/14
Therapeutic		Imaging and Image Guidance	ACMP	09/30/11	03/13/14

www.theabr.org

Reporting Lifelong Learning and SAMs Credit

- Credits may be manually entered on the ABR website, but proof must be retained.
- CMEgateway.org
  - Tool that allows participating organizations to download CME data to the profile of registered members.

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3. Cognitive Expertise

- Over the course of your career, a diplomate is expected:
  - To maintain a core knowledge of the fundamentals in the practice of radiologic physics.
  - To remain up to date on evolving technologies, protocols, procedures, techniques and on the applications of physics in medicine.
- To evaluate whether a diplomate has fulfilled these expectations, a proctored, timed, closed-book examination is required once for each diplomate during the ten-year period. The exam may be taken in years 8, 9 or 10 of the current MOC cycle.
  - If you fail an exam, you will have the opportunity to take the examination offered in the next year.

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Cognitive Expertise (Cont.)

- The exam consists of ~ 100 multiple choice questions and is administered in nationally-recognized computer testing centers.
- Exam content will be based on:
  - Core knowledge of the fundamentals to the practice of radiologic physics (30%).
  - Current evolving technologies, protocols, and applications of physics in medicine (70%).
- The first exam was given in 2010.
- A VERY brief study guide is available on the ABR website.

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Therapeutic Physics Study Guide

The following items may be used to generate content for the exam:

Reports from the American Association of Physicists in Medicine (AAPM) and the National Council on Radiation Protection and Measurements (NCRP)

- NCRP Report 116
- NCRP Report 151
- NCRP Report 160
- BEIR VII
- AAPM Task Group 36 report
- AAPM Task Group 40 report
- AAPM Task Group 42 report
- AAPM Task Group 43 report and updates
- AAPM Task Group 51 report
- AAPM Task Group 66 report
- AAPM Task Group 75 report
- AAPM Task Group 76 report
- AAPM Task Group 105 report
- AAPM Task Group 106 report
- AAPM Task Group 119 report

Journal articles, such as Ezzell et al. Guidance document on delivery, treatment planning, and clinical implementation of IMRT: Report of the IMRT subcommittee of the AAPM radiation therapy committee. *Med. Phys.* 2003;30:2089-2115.

Sample Questions

A linear accelerator is calibrated to deliver 1 cGy/MU at 100 cm source-to-surface distance (SSD). What is the approximate dose per monitor unit at an SSD of 400 cm used for total-body photon irradiation?

A. 16 cGy/MU
B. 4 cGy/MU
C. 1 cGy/MU
D. 1/16 cGy/MU

Key = D

Which of the following statements regarding wedge orientation is true?

A. For breast tangents with supine setup, the heels are typically posterior.
B. For a 90° pair treating the parotid, the toes are directed toward each other.
C. When used on an anteroposterior (AP) field to compensate for the slope of the superior chest, the heel is superior.
D. For a three-field treatment to the rectum, the heels are typically anterior.

Key = C

According to the American Association of Physicists in Medicine (AAPM), multileaf collimator (MLC) leaf position accuracy should be maintained at no more than:

A. 1 cm.
B. 2 mm.
C. 1 mm.
D. 0.5 mm.

Key = C

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4. Practice Quality Improvement

- All diplomates must demonstrate a commitment to practice quality improvement and progress in continuing individual competence in practice.
- Project should be relevant to patient care and the diplomate's practice.

- The PQI program will require action and assessment over the 10-year MOC cycle.
  - Within the first three years, diplomates must have documented training in the Quality Improvement process and techniques.
  - In addition, diplomates must initiate a PQI program. The diplomate will engage in one PQI project over the 10-year cycle.

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PQI Requirements

1. Select a project
2. Take baseline measurements
3. Perform root cause analysis
4. Develop an action plan
5. Institute plan
6. Take measurements
7. Gauge Improvements
8. Report participation to ABR
9. Complete PQI project

PQI Process

- Basic idea is a continuous process of improvement
- If first project ends sooner, start another
- In actuality, physicists are performing PQI related duties continuously.
- Main difference is formalization of project and quantification with a metric

AAPM 2009, M. Yester

Areas for Projects

- Five General Areas for Projects have been established

1. Safety for patients, employees, and the public
2. Accuracy of analyses and calculations
3. Report Turnaround times and communication issues
4. Practice Guidelines and Standards
5. Surveys

AAPM 2009, M. Yester

PQI Process

- What if no Improvement is Demonstrated?
- Perhaps the Project demonstrates that the aspect of the practice investigated is good.
- No penalty for this, assuming that the project is meaningful, main idea is documentation with metrics

  Most important is to be involved in a PQI program
- Then start another project as noted

  PQI is a continuous program

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Type I Projects

- **"Individual Project"**
  - **May be an individual or group effort, but must demonstrate contribution of diplomate.**
- **Does not require qualification by the ABR.**
- **Must be documented and attested by diplomate on the ABR-wesite on diplomates Personal Data Base.**
- **Subject to audit.**

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Individual PQI

- An individual PQI can be thought of as an extended SDEP. Consider a project that you will be investing a great deal of time in, and write it up.
- Templates are available on-line,

http://www.theabr.org/sites/all/themes/abr-media/pdf/PQI_Recording_Template_Individual.pdf

MOC Part 4

Individual Participant PDS

BA

(In Cycle #1, a topic is selected, a improvement plan data in Cycle #

☐ **Step 1: PLAN. Identify a**
- Topic (area of inte would like to impr _____
- Define a measure
- Establish a desire measurement to b and/or patient car
- Predicted baseline *will* be? _____

☐ **Step 2: DO. Baseline Me**
- Number of data p
- Baseline measure

☐ **Step 3: STUDY. Data An**
- How did the basel measurement res
- How did the resul
  - If baseline factors and
    1. ___
    2. ___
    3. ___
    4. ___
    5. ___
  - Proceed to Step 4. If the b exceed the desired goal, return to Step 1 to select

☐ **Step 4: ACT. Improvement Plan**
- Devise actions to address contrib
  1. _____
  2. _____
  3. _____
  4. _____
  5. _____
- Based on these findings, construc to implement the plan. Determin implementation to allow for the with re-measurement to assess i

POST-IMPROVEMENT PL

(In Cycle #2, re-measurement is performed after developed in Cycle #1.)

☐ **Step 5: PLAN**
- Determine that the improvemen successfully implemented.
- Reaffirm the measurement to be
- Reaffirm the desired measureme measurement to be? _____
- Estimate predicted measuremen Improvement Plan. What do you _____

☐ **Step 6: DO. Repeat Measurement Sum**
- Number of data points collected:
- Re-measurement value obtained

☐ **Step 7: STUDY. Re-measurement Data**
- How did the measurement result _____
- How did the measurement results compare to the desired target goal? _____
- If results did not meet the target:
  1. Re-evaluate the improvement plan by determining any problems with the plan's design or its implementation, including issues preventing root causes from being addressed effectively:
     1. _____
     2. _____
     3. _____
     4. _____
     5. _____
  2. Has the target/goal been set too high? Is an adjustment in order?
  3. Is the measure the correct one?
  4. Are modifications to the improvement plan warranted?
  5. Proceed to Step 8.
- If results did meet or exceed the target, proceed to Step 8.

☐ **Step 8: ACT. PROJECT DECISION POINT**
- Determine whether the project has met its performance goal.
  1. If "yes," adopt the improved practice process as a standard and proceed to a new PQI project.
  2. If "no," proceed with additional PDSA cycle(s) as needed to adjust the improvement plan or the measurement target/goal. Continue the existing project either until the goal is met or an end-point is otherwise determined. *(Any improvement identified through this process is an indication of success, and in some cases, the magnitude of improvement in the project measure achieved may be all that can be reasonably expected.)*

☐ **Step 9: Participant's Narrative Self-Reflection Statement:**
This brief narrative completes the quality improvement process. The PQI participant records his or her reflections on the project, improvements in quality and/or safety as a result of the project, and its overall value to the practice or patient care.

☐ **Step 10: <u>You Must Attest to Project Completion</u> on Your ABR Personal Database (PDB).****

*This optional form contains the structural elements for Individual PQI project process record keeping. Separate recording of the data elements of a project should be attached to this form. DO NOT SEND this form to the ABR unless requested to do so during an audit. This form is appropriate for INDIVIDUAL PQI efforts.

**www.abronline.org

http://www.theabr.org/sites/all/themes/abr/media/pdf/PQI_Recording_Template_Individual.pdf

Projects

- Type II
  - Generated by Societies
- Formal reassessment to document improvement
- Assessment of adherence for an individual participating
- Includes development of central data-bases for future benchmarking
- Advanced qualification of such projects by The ABR
- Completion attested by the Society to The ABR.

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Society-based PQI's, 2012

Available PQI Projects and Templates

Key: = Type 2 Project =Type 1 project (template)

Type	Title	Org	Date Qualified	Abstract
	* Quality Research in Radiation Oncology (QRRO)	ACR	2/21/2008	N/A
	Performance Assessment for the Advancement of Radiation Oncology Treatment (PAAROT)	ASTRO	10/10/2007	N/A
	Conservative Treatment of Early Stage Invasive Breast Cancer	ARS	12/20/2007	N/A
	Treatment of Rectal Cancer	ABR	N/A	download
	RO PEER	ACR	2/23/2007	N/A
	Patient Safety Improvement Program (PSIP)	ABMS	9/22/2008	N/A
	Practice Accreditation Program	ACRO	5/13/2009	N/A
	PQI/Peer Review	ACRO	5/13/2009	N/A
	Chartrounds: Linking the Community Oncologists to the Experts	Chartrounds.com	11/22/2011	N/A

*Project is available only to QRRO-recognized institutions.

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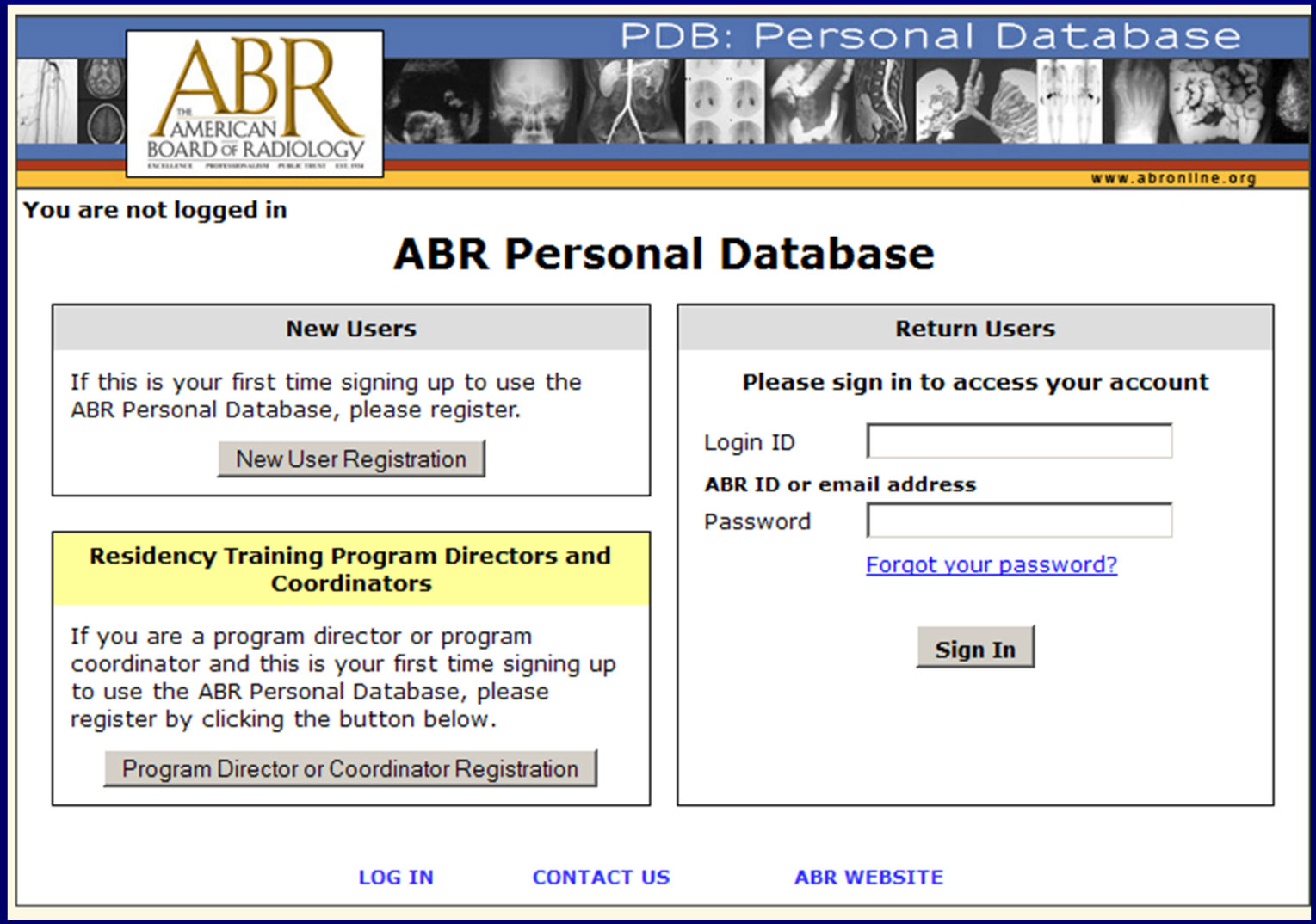
How do you start?

The onus of responsibility is on *you*!
- *You* are responsible for monitoring and recording* your credit hours!

Log onto your personal data base (PDB) on the ABR website.



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Keep track of your credit hours and MOC updates → log them on your PDB.

Example: Evaluation and Attendance Card for Category 1 Credit

DEPARTMENT OF MEDICAL EDUCATION
PROGRAM ATTENDANCE/EVALUATION CARD FOR AMA PRA CATEGORY 1 CREDIT

For CME credit to be added to your annual credit report, this completed card must be returned to the **Department of Medical Education** (address is printed on the reverse side).

DEPT. OF RADIATION ONCOLOGY
Radiotherapy Treatment
Planning Conference
AMA PRA Cat. 1 Credit: 1.00
18002

UMID # | | | | | | | | |

PRINT NAME _____ Date: _____

Quality of Presentation (Circle the appropriate numbers below): Presenter: _____

Presentation of Material	Organization of Material	Met Educational Objectives	Improvement of Understanding	Practical Value of Material	Avoided Commercial Bias
1. Poor	1. Poor	1. Strongly Disagree	1. None	1. None	1. Strongly Disagree
2. Fair	2. Fair	2. Disagree	2. Some	2. Some	2. Disagree
3. Good	3. Good	3. Agree	3. Considerable	3. Considerable	3. Agree
4. Excellent	4. Excellent	4. Strongly Agree	4. Exceptional	4. Exceptional	4. Strongly Agree

- **Be sure to submit your evaluation/attendance cards when attending category 1 lectures. The ABMS demands random audits.**

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Keep a hardcopy record of category 1 CME credit reports.

CAMPEP
Commission on Accreditation of Medical Physics Education Programs, Inc.
Certificate of Medical Physics Continuing Education Credits
----Unofficial Transcript----

Joann Prisciandaro
University of Michigan, Dept of Radiation Oncology
1500 E. Medical Center Dr., UH B2 C438, SPC 5010
Ann Arbor, MI 48109
U.S.

Participated in the following CAMPEP accredited educational program(s) and is awarded Medical Physics Continuing Education Credits (MPCECs) as designated

Program Title	Date Credits Earned	Category/SubCategory	EA Title	Credits
2012 AAPM Spring Clinical Meeting	03/20/2012	Radiotherapy:Imaging	4D Imaging for Motion Characterization and Management	2
2012 AAPM Spring Clinical Meeting	03/20/2012	Radiotherapy:Brachytherapy	Advances in Brachytherapy - A Transition to Volume Based Planning	2
2012 AAPM Spring Clinical Meeting	03/20/2012	Radiotherapy:External Beam	Beam Data Collection, Commission and Modeling in Treatment Planning System	2
2012 AAPM Spring Clinical Meeting	03/20/2012	Radiotherapy:External Beam	Clinical Physics Implementation of Proton Therapy	2
2012 AAPM Spring Clinical Meeting	03/20/2012	General Medical Physics:Professional	Clinical Project Management and Leadership	2
2012 AAPM Spring Clinical Meeting	03/20/2012	Diagnostic Radiology:Radiobiology	Clinical Radiation Biology and Radiation Risks	2
2012 AAPM Spring Clinical Meeting	03/20/2012	Radiotherapy:Cardiovascular	Late Effects of Radiation Therapy	2
2012 AAPM Spring Clinical Meeting	03/20/2012	General Medical Physics:Patient Safety	Patient Safety Medical Error Prevention	2
2012 AAPM Spring Clinical Meeting	03/20/2012	General Medical Physics:Education	PQI Training, Workforce and Project Management	2
2012 AAPM Spring Clinical Meeting	03/20/2012	General Medical Physics:Regulatory/Accreditation	Regulatory and Legislative	2
2012 AAPM Spring Clinical Meeting	03/20/2012	Radiotherapy:Dosimetry	VMAT for Dummies: Concepts, Clinical Implementation and Treatment Planning	2
2012 AAPM Spring Clinical Meeting	03/20/2012	General Medical Physics:None	Young Investigator Clinical Symposium	2
			Total Released Credits:	24

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Keep a hardcopy record of category 1 CME credit reports.

2006 CME Credit Report

Attached is your **CME credit report** for AMA PRA category 1 credit earned from 1/1/06 through12/31/06 at UMHS.

KEEP THE ATTACHED REPORT FOR YOUR RECORDS.

Questions or problems regarding the attached report should be directed to Tana DeClercq in the Department of Medical Education (936-1664 or tdeclerc@umich.edu).

Please review the personal information listed below. If corrections/additions are needed, note them below and return this page only via fax or mail:

Fax: (734) 936-1641

Mail: Campus Mail
Department of Medical Education
G1212 Towsley Center, Box 0201

U.S. Mail
Department of Medical Education
G1212 Towsley Center
Ann Arbor, MI 48109-0201

Current Information Corrections

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CME Report for Continuing Medical Education Programs Attended During 2006

This report documents AMA PRA Category 1 credit earned for programs that took place at the University of Michigan Health System for which an orange attendance/evaluation card was submitted before 12/31/2006. THIS COPY IS FOR YOUR RECORDS. Documentation of this credit is also on file in the Department of Medical Education. Questions should be directed to Tana DeClercq, CME Credit Coordinator, at (734) 936-1664 or tdeclerc@umich.edu.

Participant Name: **Joann Prisciandaro, PhD**

Department - Program Name	Program Date	Credit
Radiation Oncology-Journal Club	07/17/2006	2.00 ✓
Radiation Oncology-Radiotherapy Treatment Planning Conference	08/09/2006	1.00 ✓
Radiation Oncology-Radiotherapy Treatment Planning Conference	08/23/2006	1.00
Radiation Oncology-Radiotherapy Treatment Planning Conference	09/13/2006	1.00
Radiation Oncology-Radiotherapy Treatment Planning Conference	11/15/2006	1.00 ✓
Radiation Oncology-Radiotherapy Treatment Planning Conference	12/06/2006	1.00 ✓
Total Credit Hours for Joann Prisciandaro, PhD		**7.00**

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Summary

- MOC is a requirement for time-limited ABR diplomates.
- The process is intended to ensure and provide evidence to peers and the public that quality of care is maintained throughout the career of diplomates.
- There are key components of this process that must be fulfilled with the 10 year cycle of MOC.
- Diplomates must be familiar with the process and routinely document their participation.

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References

- ABR website – http://www.theabr.org
- CAMPEP website – http://www.CAMPEP.org
- G.D. Frey, AAPM 2010 Presentation
- M. Yester, AAPM 2009/2010 Presentation
- M. Taylor, AAPM 2009 Presentation
- MOC subcommittee minutes and discussions
- S.R. Thomas, W.R. Hendee, and B.R. Paliwal, Med Phys 32 (1), 263 – 67 (2005)
- G.D. Frey *et al.*, "The American Board of Radiology perspective on maintenance of certification: Part IV: Practice quality improvement in radiologic physics," Med. Phys. 34 (11) 4158 – 4163 (2007)