Focus on Medical Physics

Preparation for the Maintenance of Certification Exam
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Background

The ABR Maintenance of Certification (MOC) cognitive exam has the following important purposes:

- To encourage medical physics diplomates to stay current with new developments in medical physics
- To encourage medical physics diplomates to review key medical physics concepts
- To provide data for regulators and policy experts to show that the profession self-regulates in an effective way

Many studies have shown that without regular review, knowledge slowly erodes over time. Further, without constant effort, important new knowledge is not assimilated. The purpose of the cognitive exam is to help physicists avoid these two problems.

The MOC exam is designed to foster continuous preparation, rather than intense study during the few months prior to the examination. Best results are obtained if the diplomate spends a small amount of time studying on a regular basis. Preparation begins with understanding the exam, which consists of 150 questions, most in standard multiple-choice format. Approximately 30 percent of the questions cover traditional medical physics information, and 70 percent cover more recent material. The traditional information is commonly called “walking around” material, which clinical physicists should know at all times. The newer material is taken from a study guide that is frequently updated and is available on the ABR website at http://www.theabr.org/moc-rp-comp3.
Each question is referenced to an item in the study guide. The exam focuses on material that is important to the clinical physicist and has become relevant in approximately the last decade. This material is selected by a committee of working clinical physicists in each specialty. The committees are organized to include both MS and PhD physicists, as well as physicists working as consultants, in private hospitals, and in academic practices. Each year the committees review the specialty as a whole and determine which documents to add and remove from the list of documents used to develop the exam. It is important to note that for each specialty, the entire domain of the specialty is sampled. If you work in an institution that does not cover the entire domain, you should pay special attention to keeping your knowledge current in areas not addressed in your clinical environment.

The questions selected for the exam are designed to be clinical in nature; this has been validated by independent review of the exam. These reviews have suggested that less than 1 percent of the questions would be classified as not clinically relevant. The exam is also criterion based, meaning that a passing standard is derived from a panel of experts. Like the committees mentioned above, this panel also includes individuals selected to include both MS and PhD physicists, as well as physicists working as consultants, in private hospitals, and in academic practices. Anyone whose score is above the standard passes, and there is no curve. While the passing rates for first-time takers have been slightly below 90 percent, the failure rate after multiple attempts is less than 4 percent. We would like the failure rate to be even lower and hope that a better approach to preparation will improve the performance of diplomates.

The exam must have been passed in the last 10 years for the diplomate to remain in the “meeting MOC requirements” category. If the exam has not been passed within 11 years, the diplomate will lose his or her certification. The exam may be taken in any year, and most diplomates choose to take it prior to year 10. There may be multiple reasons for this choice, but certainly it gives the diplomate an opportunity to repeat the exam if all does not go well.

The exam is administered in the fall at Pearson VUE centers throughout the U.S. and Canada, at one center in Europe, and at one in Asia. The Pearson VUE centers are widely available, but they give exams for many groups and tend to fill up quickly. Once you decide to take the exam, you should register as soon as possible. The ABR office can help you with this.

**A Long-Term Plan to Improve Your Performance**

Since the purpose of the exam is to continuously improve your performance, preparation for the exam also should be continuous rather than episodic. While each diplomat will have his or her own approach to this, there are some general hints that can be helpful.
At least once a year, you should review your study guide and select new or unfamiliar items. Adult learning research suggests that active techniques are the best way to learn material. For example, it might be helpful to highlight material in the document that has clinical relevance. Thus, highlighted material could be used to generate questions for your self-study. Testing yourself also has been shown to be an effective way to retain material. If you can find a study partner, you could quiz each other. Working on this an hour or two a week can be very effective. As your question bank increases, you can review much of the material in the study guide on a regular basis. You should also use the study guide to plan your annual continuing education activities, using attendance at meetings or using the AAPM online resources.

Finally, Self-Directed Educational Projects (SDEPs) provide an excellent resource and are powerful tools for improving your knowledge of medical physics. When you find documents in the study guide that are especially pertinent to your practice, you should consider turning them into an SDEP. In addition, SDEPs may be counted for either Continuing Education (CE) or Self-Assessment CE (SA-CE) credit. For more information on SDEPs, see www.theabr.org/moc-rp-comp2.

There are, of course, many ways adult learners study and retain material. You should design your own program to meet your individual needs. The cognitive exam is an important part of the MOC process, and its purpose is to encourage diplomates to continuously improve their knowledge of medical physics. The best performance on the exam is achieved by regularly learning and reviewing the material.