Navigating the board certification process
Part III: The oral exam

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Conflicts of Interest

- None applicable to this talk.
Outline

Why certification?
The oral exam
Study tips
Resources
Why become certified?

- About more than money
  - But the raise is nice
- Only non physician profession certified by a physician certification body. Provides professional credibility.
- Our work carries great responsibility and we owe it to our patients to ensure that we are up to the task.
We are professionals

Six components of a profession
1) A commitment to the interest of clients in particular, and the welfare of society in general.
2) A body of theory of special knowledge.
3) A specialized set of professional skills, practices, and performances unique to the profession.
4) The developed capacity to render judgements with integrity under conditions of ethical uncertainty.
5) An organized approach to learning from experience, both individually and collectively, and thus of growing new knowledge from the context of practice.
6) The development of a professional community responsible for the oversight and monitoring of quality in both practice and professional educators.
The Content

• Dan and I do not know content, in fact, it is unethical to disclose the content so don’t trust anyone who claims they know the content of the exam.

• Five examiners will each ask you one question from each of five categories (examples on theabr.org)
  • Radiation protection and patient safety
  • Patient-related measurements
  • Image acquisition processing and display
  • Calibration, quality control, and quality assurance
  • Equipment
Oral Exam

- Unlike parts I and II, part III is an oral exam administered in person
- Pro’s
  - Can further explain reasoning
  - Mention references
  - Talk through problems
- Con’s
  - Cannot BS your way through
  - Cannot rote memorize
  - No multiple choice (25% chance with a guess)
How do I improve my odds?

2012 Oral Exam Results (CAMPEP)

<table>
<thead>
<tr>
<th></th>
<th>All Takers</th>
<th>First Time Takers</th>
<th>CAMPEP Residency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>390</td>
<td>287</td>
<td>47</td>
</tr>
<tr>
<td>Pass</td>
<td>218 (56%)</td>
<td>171 (60%)</td>
<td>41 (87%)</td>
</tr>
<tr>
<td>Condition</td>
<td>59 (15%)</td>
<td>42 (15%)</td>
<td>4 (9%)</td>
</tr>
<tr>
<td>Fail</td>
<td>113 (29%)</td>
<td>74 (15%)</td>
<td>2 (4%)</td>
</tr>
</tbody>
</table>

Medical Physics 2013 Oral Exam Results (CAMPEP)

<table>
<thead>
<tr>
<th></th>
<th>All Takers</th>
<th>First-Time Takers</th>
<th>In CAMPEP Residency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>414</td>
<td>285</td>
<td>42</td>
</tr>
<tr>
<td>Pass</td>
<td>207 (50%)</td>
<td>167 (59%)</td>
<td>32 (76%)</td>
</tr>
<tr>
<td>Condition</td>
<td>66 (16%)</td>
<td>47 (16%)</td>
<td>6 (14%)</td>
</tr>
<tr>
<td>Fail</td>
<td>141 (34%)</td>
<td>71 (25%)</td>
<td>4 (10%)</td>
</tr>
</tbody>
</table>

Not good!

Better!
Part 3: How much time should I dedicate to studying?

Part 3: Passed
- < 20 hours: Green
- 20-50 hours: Orange
- 50-80 hours: Yellow
- > 80 hours: Purple

Part 3: Failed
- < 20 hours: Blue
- 20-50 hours: Orange
- 50-80 hours: Yellow
- > 80 hours: Purple

- Inconclusive
Part 3: Should I study with others?

- Recommendation: Unlike the written tests, there appears to be an advantage to group study for Part 3.
Most effective study materials

- The Physics of Radiation Therapy (Khan)
- WePassed.com
- Radiobiology for the Radiologist (Hall, Giaccia)
- The Essential Physics of Medical Imaging (Bushberg, Seibert,...)
- Introduction to Radiological Physics and Radiation Dosimetry (Attix)
- Radiation Detectors and Measurements (Knoll)
- General Anatomy & Physiology textbook
- Radiation Therapy Physics (Hendee, Ibbott, Hendee)
- Khan's Lectures (Khan)
- Quizlet.com
- General Physics textbook
- Physics in Nuclear Medicine (Cherry, Sorenson, Phelps)
- Introduction to Biomedical Imaging (Webb)
- Review of Radiological Physics (Huda, Slone)
Other Resources to Consider

- Classic texts
- AAPM TG and MPPG reports
- ADCL calibration sheets
  - The “extra” paper you get with your calibrations is a good source of how things are calibrated and related uncertainties.
Comments from exam takers

• Practice
  • “It’s invaluable to practice answering questions out loud whether studying with another physicist or going through a mock oral exam”
  • “If you can find a group, work mock oral exams with a partner/partners”
  • “I had a study group that would meet weekly via video teleconferencing (Google Hangouts) and practice mock orals with electronic slides, one questioner, one examiner, with group providing feedback after the elapsed time.”
  • “If you can find a group, work mock oral exams with a partner/partners”
  • “Start studying early and practice verbalizing answers with others so that you can simulate the situation. I also did a mock oral exam hosted by a local chapter that was very helpful for practicing and gaining confidence.”

• Early preparation
  • “Start early, take thorough notes (I liked using Microsoft OneNote so I could access and add to my notes from work and home), and review as you go. I ended up leaving review for near the end of my studying and had definitely forgotten some of the stuff I hadn't looked at in months. Practicing talking through questions was also very helpful - even a <10 min commute in the morning gives enough time to talk through a question or two.”
  • “Prepare as soon as possible setting goals and time frames. Really probe the topics. It will help tremendously to get you prepared and you will become a more knowledgeable physicist. Don't brush it off as easy. It's not. Pay attention to the study guide on the ABR website. Ask others about their experience. A review mock exam is helpful but it won't replace the actual experience. I felt it was helpful but I also felt it misguided my perception of what I was really prepared for.”
Tips for Preparation

• Start by reading the ABR website (theabr.org) to best understand the process.
• Organize a schedule – list of knowledge areas and timelines of when to complete
• Work through your answers out loud, preferably with someone else
• Mock exams are very helpful but won’t save you
  • Many AAPM chapters hold events each year
  • There are other organizations that host ABR prep events. These are typically more expensive but chapter events are put together by volunteers
• Learn the content AND the references
  • We cannot know everything but you should at least know where to look
Things to avoid during the exam

- Do not “just wing it” on an answer
- Avoid blurting out everything you think you know about a topic. Simply answer the question.
- Do not rush through memorized answers
  - In an oral exam it is easy to tell what is memorized and what is understood
- Lastly, do not panic
Example of memorized answer

What is the difference in the two images above? What modality are they? How would each be used clinically?
Tips to help during the exam

- Be slow and deliberate
- Ok to refer to a reference
- Be ready for no reply from the examiner
- Be ready for wacky follow up questions
- Reference “your clinic” or “your experience” in a positive
  - Good: “In my clinic we achieve that tolerance by calibrating the system prior to each patient case.”
  - Bad: “In my clinic we don’t do that so I have no idea what you are talking about.”
What does this diagram represent? What are the functions on the left used for? What is the difference in the radiation at various points in the diagram?

\[ B_{pri} = \frac{P d_{pri}^2}{WUT} \]

\[ B_L = \frac{P d_L^2}{10^{-3} W T} \]

\[ B_{ps} = \frac{P}{aWT} d_{sca}^2 d_{sec}^2 \frac{400}{F} \]
Best of Luck

• Questions?

• Please take a minute to network with those around you. This is a good time to find study partners.