American Board of Radiology Mission

“To serve patients, the public, and the medical profession...”

“By certifying that its diplomates have acquired, demonstrated, and maintained a requisite standard of knowledge, skill, and understanding...”

Development of Part 1, Part 2 & CC Exams
Length of The Exam

Psychometric analysis
• Enough questions to get a valid result
• Not too many to fatigue the candidate

A good exam is a careful statistical sample of all subject areas

Development of a Question

Content Expert Drafts Question
• Research
• Appropriate Reference

Technical Editor Reviews Question
• Appropriate Form
• Grammar
• Standard Abbreviations
Development of a Question

Cost for Question Development

ABR Office cost = $171 per question
Volunteer Time = **Priceless**

How do we know two exams are the same?

Exam 1

Exam 2
How do we know two exams are the same?

1. Have content experts evaluate both exams.

2. Include content from Exam 1 in Exam 2.

3. Do a statistical analysis of both exams to establish reliability.
Exam Development and Assembly

Every exam has a blueprint which describes the content of the examination.

Key Factors in Creating the Blueprint

- Practice profile surveys
- Published practice documents
  - AAPM Task Group Reports
  - NCRP Reports
  - .....  
- Content expert input

Forms of the Blueprint

Exam Development Blueprint

This blueprint is designed to provide a study guide for candidates.
A guide for what content should be included in question writing.
This blueprint is published.

Test Assembly Blueprint

Uses the ED Blueprint but has specific information on content details, i.e., approximately 7 questions on brachytherapy.
This blueprint is not published.
Small Section of Exam Development Blueprint

Q02 Radiation Biology
Physics and chemistry of radiation interactions with matter
Sources of ionizing radiation
Types of ionizing radiation
Particulate radiations
Linear energy transfer
Radiation dose and units
Principles of radiation dosimetry

Exams Sample the Overall Content Domain

Enough items to produce similar results at each administration

Cannot sample every point in the blueprint

The Test Assembly Blueprint is a general guide for assembling the test and is not published.

Test Assembly

A committee of content experts using the TA blueprint assembles a draft examination

A group of physicists drawn as broadly as possible reviews the content

Unsuitable questions are replaced

The exam is reviewed by an editor and is prepared for administration

The final exam is reviewed by a final expert

The exam is administered
How are the passing scores determined?

Set by psychometric analysis

Two Major Types

**Norm Referenced**
- Designed to RANK candidates

**Criterion Referenced**
- Designed to determine MINIMUM COMPETENCE

ABR Exams are CRITERION REFERENCED

Norm Referenced

- Used for ranking candidates
- Set a passing score
- Examples:
  - College courses,
  - Scholastic Aptitude Test,
  - Graduate Record Exam

Increasing Competence
Establishing the Passing Score

- Poor Performing Questions Are Reviewed:
  - Too many candidates get the incorrect answer
  - Deficient questions are removed from exam

Statistical Procedures (Angoff) Are Used to Set Passing Score

Thank you for your attention!