

Preparing for Parts 2 and 3 of the ABR Therapeutic Medical Physics Exam

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Overview

- Exam information
- Timing
- Part 2
 - Tools
 - Mindset/Testing tips
- Part 3
 - Tools
 - Mindset/Testing tips

Where are you in the board certification process?

- A- Haven't started yet
- B- Done with Part 1, taking Part 2
- C- Done with Part 2, taking Part 3

Exam structure

- ABR initial certification
 - 3 Parts:
 - Part 1 – common to all disciplines, computer-based
 - General: 80 questions, 4hrs
 - Clinical: 75 questions, 1.5hrs
 - Part 2 – discipline-specific, computer-based
 - Clinical: 80 questions, 4hrs
 - Part 3 – discipline-specific, oral exam
 - 5 sections, 2.5hrs

Exam information

- Part 2:
 - To be eligible, pass part 1 and complete a CAMPEP-accredited residency (<http://www.theabr.org/ic-rp-req>)
 - 3-6 weeks to get the results
 - Pass/fail
 - Multiple choice questions
 - Quick conceptual questions
 - Short problems

ABR Study Guide

PART 2: Therapeutic Medical Physics
 Radiation sources and units
 Measurements of radiation quantity and quality
 Physical principles of radiation therapy, treatment planning and setup
 Clinical radiation therapy
 Treatment planning for external beam therapy, brachytherapy, and stereotactic radiosurgery
 Treatment simulation
 Applications of imaging to radiation therapy
 Radiobiological principles of therapy
 Dose calculations
 Quality assurance
 Calibration
 Informatics
 Digital techniques and image processing
 Picture archiving and communication systems (PACS)
 Radiation protection (including survey techniques and installation design)
 Radiation safety

<http://www.theabr.org/ic-mp-study-guide>

Exam information

- Part 3:
 - To be eligible, pass part 2
 - ~1 week to get the results
 - Pass/Conditional Pass (only 1 section failed)/Fail
 - Structure
 - 5 examiners – 30 minutes each
 - Each examiner asks 5 questions

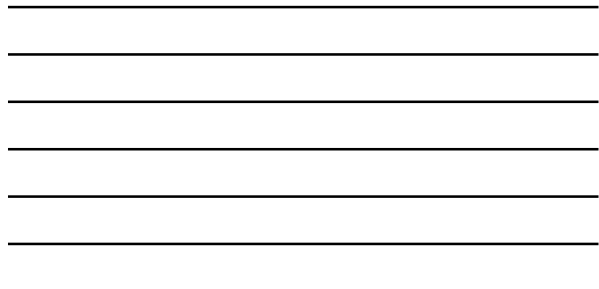


ABR Study Guide

TMP	Category Description
Radiation protection and patient safety	External beam shielding, shielding design and regulations, shielding calculations, protection barriers, and ALARA for shielding. Brachytherapy shielding, shielding design, regulations, shielding calculations, protection barriers, and ALARA for shielding. ALARA and radiation therapy. Radiation, reporting, accidents, and safety. Annotating patient charts, time protection, operations, and recording. Shield faults, shield checks, safety environment, procedural changes, emergency spill response, and indicators of new technologies. Clinical radiation biology: competence among professionals. Local, use of field doses, long doses, and treatment doses, risk of second malignancies, chest checks, peer review (short rounds, tumor boards), and error reporting.
Patient medical measurements	External beam planning and simulation: representative clinical treatment plans, plan quality and improvement, use of end-points and other modifiers, identification of target, volume and organs at risk, commissioning of CT for RT planning, use of CTs and other imaging, and treatment dose. Patient beam algorithms and final calculations, proton beam characteristics and modeling, calculation algorithms, independently constructed treatment and contemporary methods for separating primary and scatter and MLC calculations. Electron beam treatment, electron beam characteristics, dose modeling, simulation algorithms, beam quality correction, analysis of air contamination, and air MRI capabilities, and air contamination. Brachytherapy treatments, representative clinical plans, source characteristics, treatment prescriptions, calculation methods, historical and contemporary, and tolerance doses, special procedures.

<http://www.theabr.org/ic-mp-study-guide>

Image acquisition, processing and display	Advances in image (DRR) use. A combination of modalities, understanding of physics of all imaging parameters, and understanding of DRRs, PET/CT, etc. Image fusion, image registration and fusion, view, details, and errors. Organizational organization: Advancements of CT, CT, PET, PET/CT, etc. Advancements of ultrasound and methods of registration. Virtual other and to various imaging. Characterization of images, influence of imaging parameters, equipment for imaging, and purposes of different image types. Basic imaging and physics: function of imaging systems, use of nuclear, and physics of imaging for different systems.
Calibration, quality control, and quality assurance	Advocate calibration protocols, external beam and details of TLD's in radiation physics. Quality assurance: QA procedures for mechanics of and radiologic of alignment, beam QA, equipment for QA, recommendations, and requirements. Acceptance testing and commissioning performance specifications, competency requirements, commissioning: Advancements: RBE, field, weight, etc. Brachytherapy calibration and QA, LDR and HDR: commissioning, calibration, QA procedures, and equipment needed. Photon beam characteristics: machine distribution, surface dose, beam parameters, beam quality, dose rate, electronic equipment and dose buildup. Dose rate of beams and geometry, radioisotopes, activity depth dose, beam size, DRG, etc.
Equipment	Linear treatment head components and function: monitor chamber, dosimetry, magnet, magnet, collimator, wedge, and independent jaws, target, flattening filter, and leakage characteristics. Ion chamber range characteristics, and function: temperature and pressure effects, stem effect, effect of volume, recombination, density effect, and comparison with other instruments. Color dosimetry, i.e., CR, CR, D, films, radiographic, and radiochromic film, linear acceleration systems - components and power components, design and operation of X-ray, ionization electron gun, energy levels, acceleration grids, and electron acceleration. Miscellaneous equipment: ancillaries, multi-leaf collimator, substitute materials and appropriate use, photonics, beam, support systems, CT and MR simulation, imaging, equipment for imaging systems, equipment for DRG QA, and equipment for DRG CT.



Passing Rates - Part 2

Part 2			
First Time Takers			
Exam	% Fail	% Pass	Total
2010	17.30%	82.61%	200
2011	18.67%	81.33%	316
2012	14.42%	85.58%	312
2013	25.53%	74.47%	282
2014	32.32%	67.68%	263
CABRPF - First Time Takers			
Exam	% Fail	% Pass	Total
2010	0.00%	100.00%	1
2011	9.52%	90.48%	21
2012	16.67%	83.33%	18
2013	22.45%	77.55%	49
2014	25.49%	74.50%	63
2015	19.80%	80.40%	183

Source: <http://www.theabr.org/ic-mp-scoringresults>



Passing Rates - Part 3

First Time Takers				
Exam	% Conditioned	% Fail	% Pass	Total
2010	15.10%	26.12%	58.78%	245
2011	15.71%	22.99%	61.30%	281
2012	14.64%	25.71%	59.64%	280
2013	15.66%	24.91%	59.43%	281
2014	12.40%	22.31%	65.29%	242
2015	13.00%	12.00%	74.00%	195
2016	12.00%	27.00%	60.00%	254

CAMPEP Graduate - First Time Takers				
Exam	% Conditioned	% Fail	% Pass	Total
2014	17.99%	5.13%	76.90%	39
CAMPEP Residency - First Time Takers				
Exam	% Conditioned	% Fail	% Pass	Total
2014	0.00%	19.35%	80.65%	31
CAMPEP Graduate and Residency - First Time Takers				
Exam	% Conditioned	% Fail	% Pass	Total
2014	6.90%	13.79%	79.31%	29

Source: <http://www.theabr.org/ic-mp-scoringresults>

Timing

- Part 2: August (usually right after residency)
- Part 3: May of following year

When should you start studying?

Part 2 - Clinical, Multiple choice

Tools

- Textbooks, TG reports, ...
- Websites:
 - www.wepassed.com
 - www.abrphysicshelp.com
 - www.arcphysics.net,...
- Medphys/MedphysUSA listserv
- AAPM virtual library
- Residency



Mindset/testing tips - Part 2

- Calculator
 - <http://www.pearsonvue.com/ABR/>
- Answer everything
 - Don't get stuck - skip and go back
 - Make educated guesses
- Expect the unexpected
- Do as many practice problems as possible
- Know what the reports say – your institution might have different procedures/tolerances



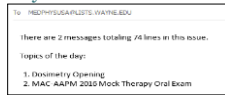
Part 3 - Clinical, Oral

Tools - Concepts

- Residency
- Textbooks, TG reports, ...
 - Use TG Reports to guide your studying - when you come across something you don't understand, look it up!
- Websites: www.wepassed.com , www.abrphysicshelp.com , www.arcphysics.net,...
- Medphys and MedphysUSA listserv
- AAPM virtual library (<https://www.aapm.org/education/VL/>)

Tools - Spoken answers

- **Mock oral exams**
 - End of rotation exams in Residency
 - AAPM local chapters
- **Practice out loud**
 - Talk to yourself, it's fine.
 - Pinpoint the areas that you need to review
 - Remember there are months between the end of residency and part 3 – keep practicing!!



Mindset/testing tips - Part 3

- **Part 3**
 - Be professional
 - Be confident
 - DO NOT ARGUE
 - Be concise
 - DO NOT MAKE UP ANSWERS
 - DO NOT VOLUNTEER INFORMATION
 - **Do not expect feedback from examiners**
- Accept you will not know everything
- Do not let one question affect your whole exam

