



Diagnostic Medical Physics ABR-part 3

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Preface

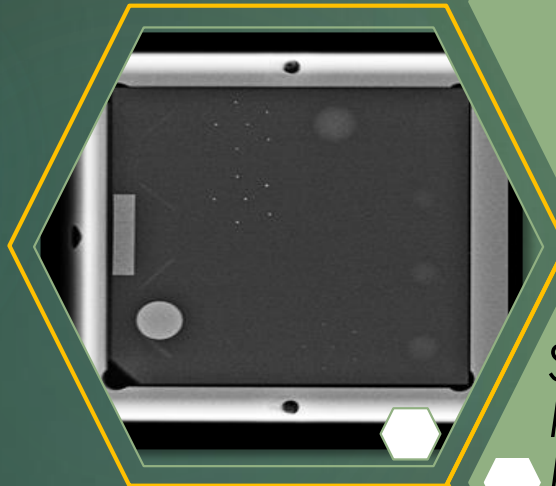
- ▶ Content was derived largely from the ABR website:
 - ▶ <https://www.theabr.org/medical-physics/initial-certification>
 - ▶ Check this website to remain up to date.
- ▶ Advice is based on my own opinions and personal studying experiences

Contents and Objective

MOC

After the Test

- Results and MOC



Study Materials and Methods

- Study habits and resources

What to Expect/Tips

- Test logistics
- Oral exam tips

Categories

• Radiography, Mammography, Microscopy & IR

• Computed Tomography

• MRI & Ultrasound

• Informatics, Image Display, Image Fundamentals &

• Professionalism/Ethics

• Bio, Dosimetry, Protections &

So, you've passed part 2...

- ▶ Congratulations, you get to keep studying!
- ▶ Maintain your part 2 brain, continue reviewing your study materials at least monthly. (Full disclosure I did not do this but I wish that I had)
- ▶ Consult the ABR website to stay informed
- ▶ <https://www.theabr.org/medical-physics/initial-certification>

Content Categories

Radiography, Mammography, Fluoroscopy & IR

Computed Tomography

MRI & Ultrasound

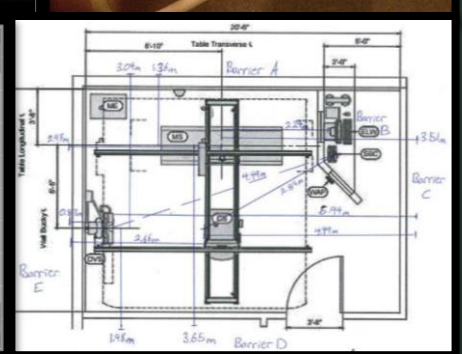
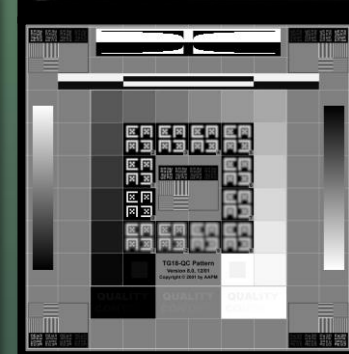
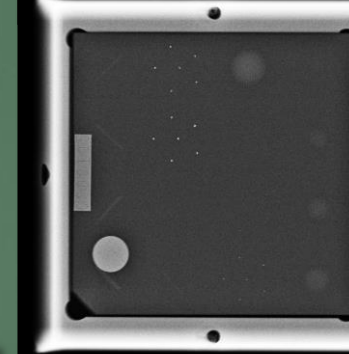
Informatics, Image Display, Image Fundamentals & Professionalism/Ethics

Rad Bio, Dosimetry, Protections & Safety

Study Materials/Methods

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- ▶ Content tests “fitness to practice applied medical physics”
- ▶ Make sure you have medical physics and some clinical experience in each category
- ▶ Identify areas you may be lacking and plan hands-on experiences in those areas as feasible.



Radiography, mammography, fluoroscopy, and interventional imaging

- X-ray production, beam characteristics, interactions, and image-formation principles;
- Types and characteristics of image detectors;
- Clinical protocols for common imaging exams;
- Fluoroscopy and interventional procedures, including acquisition parameters and dose-reduction strategies;
- Image noise assessment and dose metrics for all projection imaging modalities;
- Common artifacts, quality assurance, quality control, mammography accreditation, and MQSA standards

Study Materials/Methods

- ▶ Task Groups, NCRP, and ICRP Reports:
 - ▶ There are many of these but cross-referencing them with the content guide online should help narrow and focus your studies.
- ▶ The Essential Physics of Medical Imaging, Bushberg, Seibert, Leidholt and Boone.
 - ▶ Consider reviewing figures as a good quick refresher after part 2
- ▶ Review of Radiological Physics, Huda
 - ▶ Practice questions in back of book are a good sanity check

Study Materials/Methods

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- ▶ DICOM Header
 - ▶ Go through each field in DICOM Headers of each modality.
- ▶ Review Artifacts
 - ▶ What: Physical Principles at work
 - ▶ How: Technique Factors/Prevention
- ▶ Hands-on Experience
 - ▶ It is not enough to “go through the motions”
 - ▶ Actively question why tests are conducted and trace their origin to clinical significance and/or regulatory compliance

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0008,1010 Station Name: VASAP_CT
0008,1030 Study Description: XROUT
0008,103E Series Description: CTDIPEDEHEAD
0008,1040 Institutional Department Name: RADIOLOGY
0008,1070 Operator's Name:
0008,1090 Manufacturer's Model Name: Brilliance 6
0008,1120 Referenced Patient Sequence:
0008,1150 Referenced SOP Class UID: 1.2.840.10008.3.1.2.1.1
0008,1155 Referenced SOP Instance UID: 1.2.124.113532.80.22016.3.20130214.122817.154598415
0008,2112 Source Image Sequence:
0008,1150 Referenced SOP Class UID: 1.2.840.10008.5.1.4.1.1.2
0008,1155 Referenced SOP Instance UID: 1.2.840.113704.1.111.2516.1455307171.1708
0010,0010 Patient's Name: COMPUTED TOMOGRAPHY^ASAP^
0010,0020 Patient ID: 88888432
0010,0030 Patient's Birth Date: 20061205
0010,0040 Patient's Sex: O
0010,1010 Patient's Age: 009Y
0010,1080 ---: VU
0010,2180 Additional Patient History: -- CN 432, CT UNIT - 2016 STATE INSPECTION & ACR SURVEY
0018,0022 Scan Options: AXIAL
0018,0050 Slice Thickness: 4.5
0018,0060 kVp: 120
0018,0090 Data Collection Diameter: 500
0018,1020 Software Versions(s): 2.3.0
0018,1030 Protocol Name: ROUTINE BRAIN/Head
0018,1100 Reconstruction Diameter: 250
0018,1120 Gantry/Detector Tilt: 0
0018,1130 Table Height: 11
0018,1140 Rotation Direction: CW
0018,1143 Scan Arc: 420
0018,1150 Exposure Time: 1167
0018,1151 X-ray Tube Current: 92
0018,1152 Exposure: 107
0018,1160 Filter Type: UB
0018,1210 Convolution Kernel: UB
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Study Materials/Methods



Photo from Pexels

- ▶ *Do not study in a vacuum!*
- ▶ Talk through procedures and instrumentation with colleagues/fellow students to fill understanding gaps and discover areas you have neglected
- ▶ Added bonus of gaining experience verbally expressing your knowledge base.
- ▶ You can also practice with non-medical physics friends. Can help you explain concepts completely and simply.

Contents and Objective

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After the Test

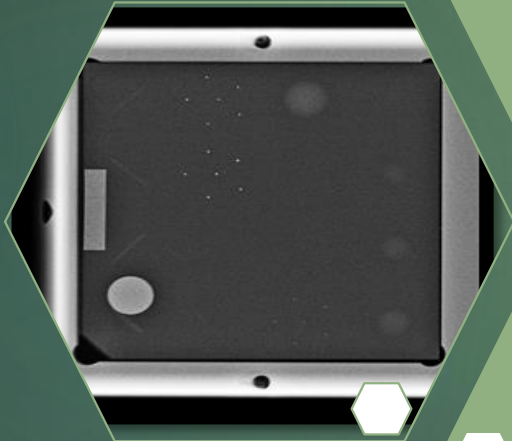
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What to Expect/Tips

- Test logistics
- Oral exam tips

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- Study habits and resources



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- Bio, Dosimetry, Protections &

What to Expect

Before the Test

- ▶ ~ 5 Months before test (Dec/Jan) you should be contacted with an invite.
- ▶ When you respond you will have to pay \$\$
- ▶ Then you anxiously wait for communication about your test date...

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Apr 28	29 1:00pm Busy	30 2:30pm Busy	May 1	2 11:00am Busy	3 4:00pm Busy	4
5	6 1:00pm Busy	7 2:30pm Busy	8	9 11:00am Busy	10 4:00pm Busy	11
12	13 1:00pm Busy	14 2:30pm Busy	15	16 11:00am Busy	17 4:00pm Busy	18
19	20 1:00pm Busy	21 8:00am Busy 2:30pm Busy	22	23 11:00am Busy	24 4:00pm Busy	25
26	27 7:00am Busy 1:00pm Busy	28 2:30pm Busy	29	30 7:00am Tentative 11:00am Busy	31 4:00pm Busy	Jun 1

What to Expect

The Test

- ▶ 5 Reviewers
- ▶ Each topic covered by each reviewer
- ▶ The composite score from all reviewers will determine your pass/fail status
- ▶ So if you bomb with one reviewer you can make up for it by doing well with the others

Content Categories

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Radiography, Mammography,
Fluoroscopy & IR

Computed Tomography

MRI & Ultrasound

Informatics, Image Display, Image
Fundamentals &
Professionalism/Ethics

Rad Bio, Dosimetry, Protections &
Safety

“The Part 3 oral exam includes the same material as the Part 2 computer-based exam, but with a strong emphasis on practicing clinical medical physics, clinical judgment, and communication.”

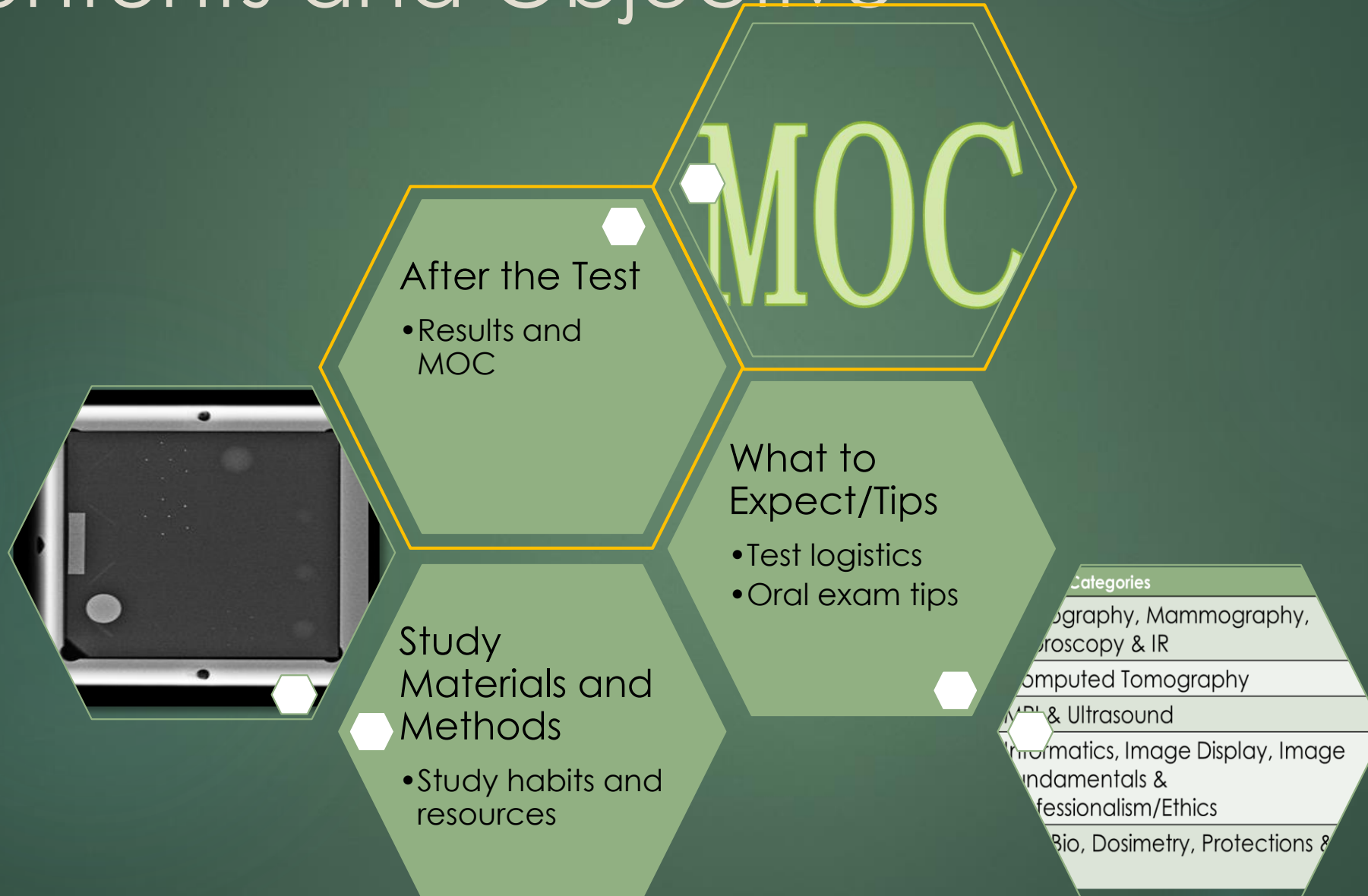
How to Respond

- ▶ While in the test take your time and give thoughtful focused answers.
- ▶ If you feel like you have the answer rolling around in your head, ask for a moment and get your thoughts straight.
 - ▶ Remember decision making and communication are a focus of the exam.
- ▶ If you don't know the answer, do you perhaps know where you could find the answer? (Task Group reports, NCRP reports, etc.)

How to Respond

- ▶ If you're completely stuck you might try asking some questions.
- ▶ Guessing is in general not a good idea, but offering a logical progression to a solution seems more reasonable.
 - ▶ Example from Review of Radiological Physics by Walter Huda:
 - ▶ What tissue has the highest acoustic impedance in U/S?
 - ▶ Incorrect: "I'm gonna guess, Air?"
 - ▶ Better: "I'm not exactly sure, but I know that the difference in acoustic impedance creates reflections and bone/air interfaces create the largest reflections. So, I'm thinking either bone or air, but I'd have to look it up in Bushberg"

Contents and Objective



After the test...

- ▶ You can finally relax...
 - ▶ YEAH RIGHT!!! More like relive the test for the next two weeks until they post results
- ▶ Pass (2014-2016 pass rate was 67%)
 - ▶ All categories satisfactory-Welcome to MOC!
- ▶ Condition (13%)
 - ▶ One category unsatisfactory
- ▶ Fail (20%)
 - ▶ More than one category unsatisfactory
- ▶ You can request feedback within 60 days (for a fee).

After the test...

- ▶ If you condition, ABR will send you a “Next Steps” letter outlining where and when your conditioned exam will take place
 - ▶ Two reviewers, 30 minutes each, over only the conditioned category.
- ▶ If you fail...
 - ▶ “Board eligibility for medical physicists begins once a candidate has been approved for the Part 2 Exam, or has completed a CAMPEP-accredited residency, whichever occurs first. Once board eligible, medical physics candidates have six calendar years to attain certification, that is, fully pass the Part 1 and Part 2 (computerized) and Part 3 (oral) certifying exams.”

After the Test...

If you pass you get to begin your MAINTAINENCE OF CERTIFICATION (MOC)

- Part 1: Professionalism and Professional Standing
- Part 2: Lifelong Learning and Self-Assessment
- Part 3: Assessment of Knowledge, Judgment, and Skills
- Part 4: Improvement in Medical Practice

- ▶ Part 1
 - ▶ State Licensure or Professional Attestation
- ▶ Part 2
 - ▶ 75 CE credits (25 of them are Self Assessment)
 - ▶ Every 3 yrs
- ▶ Part 3
 - ▶ Assessment mode is shifting to Online Longitudinal Assessment (OLA).
 - ▶ May also do traditional exam
 - ▶ Pay attention going forward to understand requirements
- ▶ Part 4
 - ▶ Complete/document a Practice Quality Improvement project
 - ▶ OR Participatory Quality Improvement Activity
 - ▶ Every 3 yrs

- ▶ **The ABR MOC Brochure**
 - ▶ [https://www.theabr.org/wp-content/uploads/2018/06/MOC Brochure MP 2018.pdf](https://www.theabr.org/wp-content/uploads/2018/06/MOC_Brochure_MP_2018.pdf)

Useful MOC Links

- ▶ **The American Board of Radiology**
 - ▶ www.theabr.org
- ▶ **myABR**
 - ▶ <https://myabr.theabr.org>
- ▶ **CME Gateway**
 - ▶ www.cmegateway.org
- ▶ **ABMS Public Site**
 - ▶ www.certificationmatters.org