Part I
What do the Content Specifications say about the “MRI Boards” &
What are the Clinical Requirements?
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What is on the content specifications?
- Post primary examination
- Primary examination

What are the clinical requirements?
- Post primary examination
- Primary examination

How do I prepare for the boards?

Objectives

Upon completion of this course, the attendee should…
1. Know what is on the content specifications?
   - Post primary examination
   - Primary examination
2. Understand how to complete the clinical requirements for the boards?
   - Post primary examination
   - Primary examination
3. Learn how to prepare for the boards?

Primary Pathway: Clinical & Didactic Requirements

MRI Boards - Pathways

• Primary Pathway
  - Not yet registered
  - Completed an approved course
  - Met the clinical and didactic requirements

• Post Primary Pathway
  - Already Registered in...
  - X-ray or Radiography (R), Radiation Therapy (RT), Nuclear Medicine (N) or Nuclear Medicine (CNMT)
  - Met the clinical experience requirements
  - Be able to pass the written portion of the examination
Where did the board questions & the books come from?

- Who wrote them?
  - Radiologists
  - MRI Techs
  - Experts
  - ARRT
  - Committees
    - Of techs
    - Of other experts
    - ?

Let’s dissect the Categories

Patient Care Category (30 questions)

- Only 18 questions of 180 total questions on the test
- Only questions pertaining to MRI safety and patient care
- Categories
  - Screening
  - Assessment & Monitoring
  - Safety precautions
  - Biological considerations
MRI Safety... What could they ask?

- Safety Questions
- What could they ask?
  - Only 30 total questions
  - Review content specs
- Study FDA regulations
  - \( Bo = 8.0 T \) & 4.0 T
  - \( B1 = 4.0 \) watts/kg
  - Gradients - discomfort
- Review Patient Care
- Review MRI Safety
- Study guides
  - Review books
  - www.mrisafety.com
  - Look at package inserts

Where could the questions have come from?

- Safety Questions
- Look to the experts
  - Questions came from the experts in MRI Safety
- Publications & lectures
  - by Shellock & Kanal
    - Look for their books
    - Or look for their web pages
      - www.mrisafety.com
      - www.imrser.org
      - www.drkanal.com

Imaging Procedures... Then

- Only 54 questions of 180 total questions on the test
- Categories
  - Head & neck
  - Spine
  - Thorax
  - Abdomen
  - Pelvis
  - Musculoskeletal
- Questions pertaining to
  - Clinical protocols
  - Anatomy
  - Contrast
  - Patient positioning

Imaging Procedures... Now

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**Imaging Procedures & Anatomy**

- Imaging Procedures Questions
- What could they ask?
  - Only 62 total questions
  - Review content specs
- Study
  - Anatomy
  - General protocols
  - Planes for pathology
  - Image contrast (T1, T2)
  - Contrast media
- Study guides
  - Review books
  - [www.protocols.com](http://www.protocols.com)

**Where did the board questions appear to come from? Anatomy**

- Anatomy Questions
- Look to the experts
- Questions probably came from the experts in Anatomy
- Applegate / Peterson
- Look for their books

**Data Acquisition and Processing**

- Data Acquisition & Processing Questions
- What could they ask?
  - Only 65 total questions
  - Review content specs
- Study
  - Pulse sequences
  - Data manipulation
  - Special procedures
  - Imaging parameters
  - Imaging options
  - Artifacts
  - QC
- Study guides
  - Review books

**Parameters That Influence Image Quality (SNR & CNR)**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Voxel</th>
<th>Sampling</th>
<th>Contrast</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static field</td>
<td>Thickness</td>
<td>NSA</td>
<td>TR</td>
<td>SAT</td>
</tr>
<tr>
<td>RF coil</td>
<td>FOV</td>
<td>Bandwidth</td>
<td>TE</td>
<td>GMN</td>
</tr>
<tr>
<td>Matrix</td>
<td>#PE's</td>
<td>Ti</td>
<td>Gating</td>
<td></td>
</tr>
<tr>
<td># Slices (3D)</td>
<td>Flip</td>
<td>Resp comp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectangular FOV</td>
<td></td>
<td>MT</td>
<td>anti-aliasing</td>
<td></td>
</tr>
</tbody>
</table>

**Pixel / Voxel**

- Pixel Size = FOV/Matrix \times FOV/Matrix
- Voxel Volume = FOV/Matrix \times FOV/Matrix \times Slice Thickness
- Isotropic Voxel = FOV/Matrix \times FOV/Matrix = Slice Thickness

**Physical Principles of Image Formation**

- Physical Principles of Image Formation Questions
- What could they ask?
  - Only 43 total questions
  - Review content specs
- Study
  - Instrumentation
  - Fundamentals
  - Artifacts
  - QC
- Study guides
  - Review books
  - Videos (on-line courses)
  - Live Courses
Where did the board questions appear to come from?

MRI Physics

- Physics Questions
- Look to the experts
- Questions probably came from those who teach MRI Physics
- Faulkner, Kaut, Roth, Westbrook, Friemarck
- Look for their books
- Or look for their web pages
- www.imaginged.com

Outline

- What is on the content specifications?
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  - Post primary examination
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What are the Prerequisites? (post primary exam)
Clinical Experience Requirements

- 5 Categories
- 4 Sub-categories
- 3 Repetitions

What are the Categories, Sub-categories?

Documenting Clinical

- Documentation for clinical comps
- Documentation for who knows

Clinical Experience Documentation

Their Way

Our Way
**Primary Programs**

The ARRT Magnetic Resonance Imaging (MRI) primary pathway to certification requires candidates to complete an educational program that is accredited by a mechanism acceptable to the ARRT. The current acceptable accreditation mechanisms for MRI are:

- The Joint Review Committee on Education in Radiologic Technology (JRCERT)
- Regional Institutional Accrediting Agency for post-secondary degree-granting institutions.

To verify the accreditation status of other programs or institutions, please consult the appropriate accrediting agency.

**Magnetic Resonance Imaging Schools**

**Primary Program Clinical Requirements**

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**What’s the best Study Material?**

- Books
  - Text Books
  - Study guides
  - Flash cards
  - Q & A
- Video Tapes
- CD’s
- Mock Tests
- Lectures

**Are there any Short-Cuts?**

Yes, this was my Office!

Yes

NO
What About Videos?

- Principles
- Pulse Sequences
- Parameters
- Safety
- etc…

What About Courses?

- Face time
- Ask questions
- See where you are weak
- Good for auditory learners
- Get from the lecture what you didn’t get from reading
- Learn the tricks
- Bond with other techs
- Learn from their mistakes

Tips for taking the exam…D-Day

- Don’t tell anyone!
- Get rest
- Carefully read question
  - ONLY the question
  - Don’t add anything
  - It’s not about YOU, or your site
- Carefully read all of the answers (distractors)
- Don’t change your answers
  - Always go with your 1st guess
  - Your 1st answer is generally right
- Upon completion count your guesses
- Find a Happy Place!

Do it today! The longer you wait…

- The more they stuff put on it
- The more information you forget
- The more it costs
- The more pressure
  - It will become mandatory
  - They will make you do it
  - This will add stress
- The more the requirements
  - Now clinical (documented cases)
  - Maybe classes (JRCERT approved)

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12.1 MRI Registry Review

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What are the Clinical Requirements?

Thank you for your attention!

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