

American Chiropractic
Board of
Radiology

Question Writing
Project

Guidelines

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Note to Examination Candidates

Candidates should always refer to the Candidate Guide from the ACBR website for up-to-date information on the requirements for candidates' submission of questions. That Guide takes precedence over this document. Deadline dates and numbers of questions are contained in the Candidate Guide.

To qualify for a reduction in examination fees, candidates for the **2017 ACBR Examinations** and forward are required to submit 25-questions on three topics that they are currently studying, each year of their residency (at total of 75 questions). Only 1/2 of those questions may be in Bone and Joint. All questions should be in the problem solving format described in this guide. No more than 1/3 of the questions submitted may be knowledge based questions. **Please note that all questions must be original (created by the candidate) and must not be copyrighted. Candidates are assigning copyright to the ACBR by submitting questions. Any question that is not original or is copyrighted elsewhere will be considered as evidence of conduct unbecoming a professional and will result in a complaint being laid with the candidate's professional licensing/regulating body.**

Introduction

Thank you for participating in the question writing project of the American Chiropractic Board of Radiology (ACBR). This project is coordinated by the ACBR as a result of the professional practice analysis (2011). The question writing project will continue the changes of the written (Part I) certification examination from a test of knowledge to an assessment of radiology/clinical decision making skills.

Certification examinations need to assess a candidate's ability to apply knowledge and skills to radiology / clinical problems. For the certification of the ACBR, this means that the examination must assess the ability to apply knowledge and skills to the radiology problems for which chiropractors bring to the speciality of chiropractic radiology.

This guideline for the submission of questions to the ACBR for inclusion in the certification examination is not meant to be exhaustive, but to be a quick reference for those who are willing to participate. A lot of participants are needed to assist in this project, and the donation of your time and expertise is sincerely appreciated.

We are working on having your participation recognized through continuing education credits.

If you have any comments on this guide, or any suggestions for improvement, please contact the author at: quest.acbr@gmail.com.

8 Steps to Question Submission

1. Read the **Simple Rules** section.
2. Review the **Example** section.
3. Select a topic from the **Topic List**, or contact the Board to find out for which topics questions are needed. Examination candidates should refer to the Candidate Guide.
4. Follow the Simple Rules, and write a question (stem and 5 options). Only as an exception may a question contain only 4 options.
5. Highlight the correct answer with an asterisk at the end of the option line and indicate which content area the question is assessing.
6. Using the **Simple Rules and Question Checklist**, ensure your question is of good quality. Candidates may wish to have their Residency Director review the questions prior to submission.
7. Using the question you have written as a template, write three/four more questions, changing the stem slightly so that the correct option changes. This way you will finish with four or five questions with the same option list and each option being the correct answer for one of the questions.
8. Repeat!

Simple Rules

1. Questions may be submitted within an e-mail, as an attached text file (txt) or word processor file. Acceptable formats include Open Office/ Libre Office formats (.odt), Microsoft Office formats (.doc, docx, .rtf), or simple text files (Notepad).
2. Questions must assess the ability to apply knowledge (few to no factual questions please). Certificate examinations must focus on whether candidates can apply their knowledge to real world situations, not on how much they know.
3. The questions should be a clinical scenario with radiology findings. Use your own experience as a resource to developing questions.
4. Include relevant information, but keep identifying information to a minimum. Certainly include: height, weight, age and sex in the question, but avoid details that have no relevance to arriving at the correct answer. Candidates have a limited amount of time, and shouldn't have to filter out the irrelevant information.
5. The bulk of the question and the problem directed at the candidate must exist in the stem (the question paragraph) and not in the options. The stem should complete with a challenge to the candidate in sentence format (e.g., Which plan of action is appropriate?). Avoid the phrase "Which of the following...". Options should generally not be longer than 1 to 5 words each. Candidates should be able to read questions with the options covered and arrive at the correct answers (forward thinking).
6. All question challenges must be worded positively. For example, Which muscle is most likely involved? Negatively worded question challenges must be avoided (e.g., Which muscle is not involved?).
7. The option lists must never include the phrases "All of the above" or "None of the above".
8. The options should have some understandable order of appearance (e.g., alphabetical, numerical or anatomical).
9. The options should be grammatically correct. If completing a sentence from the stem, the options should start with a lower case word and end in a period. If a proper sentence they should start with a capital and end with a period. If they are simply a list of words, they should be in lower case and not end with a period.
10. Options should be preceded with a capital and a period: A., B., C., D., E., etc.
11. Questions should be single best answer. Questions with more than one correct answer (pick all that

apply) are to be avoided for the near future.

12. Questions should not have any personalization like: you, yours, ours, one, etc.

13. Questions should be gender neutral when possible. In the scenario the referring chiropractor should never be referred to as a he/him or she/her.

14. The options should only start with an upper case letter if they are the start of a sentence or a proper name. If the option is completing a sentence or part of a list, it should start with a lower case letter.

15. The questions must be of a difficulty level suitable for assessing the competency of chiropractic radiologists. Questions that the majority of undergraduate chiropractic students will get correct are far too easy. The ideal question will be answered correctly by 65% to 80% of candidates.

16. The submitted questions must be grouped by topic/content area (see examples), with headings for each topic.

Topic List

Content areas for the certification examination

- imaging with abdominal findings
- imaging with bone and joint findings
- imaging with thoracic findings
- neuroimaging
- radiation health and the physics of imaging

Question Checklist

- Does the stem present a definite problem?
- Is the question forward thinking?
- Is the stem stated in positive terms?
- Is the stem free of irrelevant information?
- Is there a clear statement of the task required (challenge to the candidate)?
- Are the options grammatically consistent with the stem?
- Is there only one clearly best answer?
- Are the options that are not correct brief, plausible, and homogenous?
- Have verbal associations between the stem and correct answer been avoided?
- Do the options have a similar length?
- Have “none” and “all of the above” been avoided?
- Is the question relevant to the topic list?
- Is the question difficult enough; not too easy or too hard?

Examples

Content Area: Radiation Health and Physics

1. A 32 year-old male presents for a diagnostic ultrasound evaluation of the right shoulder following an overhead throwing injury. While over the supraspinatus tendon, the sonographer visualizes the entire tendon anechoic; however, the sonographer is able to fill the tendon in upon angulation of the sound head. What does the initial anechoic nature of the tendon most likely represent?

- A. anisotropy *
- B. comet-tail artifact
- C. fluid surrounding the supraspinatus tendon
- D. halo artifact
- E. supraspinatus tendon tear

2. What type of x-rays are produced when a projectile electron is slowed by the electric field of a target atom nucleus?

- A. anode heat
- B. Bremsstrahlung radiation *
- C. characteristic radiation
- D. Compton effect
- E. voltage ripple

3. A patient presents with an L5/S1 posterior interbody fusion, utilizing pedicle screws and interbody cages. An MRI is required to evaluate for non-responsive pain. Which procedure will minimize the magnetic susceptibility artifact created by the surgical hardware?

- A. gradient echo imaging
- B. increasing the TE
- C. standard FSE imaging
- D. spin echo sequencing*

Content Area: Bone and Joint

4. A 32-year-old female presented to a clinic with elbow pain following trauma. Radiographs revealed an elbow dislocation. The most common mechanism of injury resulting in an elbow dislocation is:

- A. an A-P force on a flexed elbow.
- B. a fall on an outstretched hand.
- C. forced distraction.
- D. a hyperextension injury.*
- E. valgus stress.

5. A 36-year-old patient presented with severe paroxysmal attacks of pain in the distal phalanx of his index finger following minimal trauma. Radiographs showed a circumscribed lytic lesion with no internal calcification in the distal phalanx with a soft tissue component. Which diagnosis does this presentation suggest?

- A. cystic angiomas
- B. enchondroma
- C. glomus tumor*
- D. inclusion cyst
- E. metastasized bronchogenic carcinoma

6. An MRI was performed on a patient following an ankle injury. Which of the following ligaments is best seen on the coronal acquisition rather than the sagittal or axial acquisitions?

- A. anterior talofibular ligament
- B. deltoid ligament*
- C. posterior calcaneofibular ligament
- D. posterior tibiofibular ligament
- E. spring ligament

Content Area: Neuroimaging

7. A 23-year-old female presented with left-sided hearing loss. A MRI revealed a well-defined extra-axial mass lesion in the left cerebellopontine angle, extending into the left auditory canal with enlargement of the ipsilateral cerebellopontine angle. The lesion was heterogeneously hyperintense on T2WI and FLAIR images, and hypointense on T1WI. There was heterogeneous enhancement. Which diagnosis is most appropriate?

- A. acoustic schwannoma*
- B. ependymoma
- C. epidermoid cyst
- D. low-grade astrocytoma
- E. metastatic disease

8. A 35 year-old male presents with lumbar and gluteal pain and perineal numbness. Radiographs of the lumbar spine are unremarkable. A lumbar MRI demonstrates an intramedullary mass at the conus medullaris. What diagnosis is favored?

- A. astrocytoma
- B. ependymoma*
- C. hemangioblastoma
- D. paraganglioma
- E. transverse myelitis