

**General Competency Radiology
In-Training Test Questions
for Diagnostic Radiology Residents**



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Sponsored by:

Commission on Education

Committee on Residency Training in Diagnostic Radiology

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1. Nephrogenic Systemic Fibrosis or Nephrogenic Fibrosing Dermopathy (NSF/NFD), which may occur in patients with moderate to end-stage kidney disease after they have had a Magnetic Resonance Imaging (MRI or MRA) scan with a gadolinium-based contrast agent. Which of the following answers are FALSE?
 - A. The window of time if symptoms develop is within up to 18 months.
 - B. May be associated with scarring of their internal organs and weakness in the extremities.
 - C. Symptoms include red or dark patches on the skin or yellow spots on the whites of the eyes.
 - D. **It is recommended that this select patient population should be observed within the first 6 hours to start the appropriate treatment if necessary.**

Rationale:

- A. Incorrect
- B. Incorrect
- C. Incorrect
- D. Correct. The question tests the residents understanding of what symptoms are to be considered if use of Gadolinium is utilized in this patient population. How to counsel these patients after use and when an MD needs to be called when this rare but serious complication occurs. Other symptoms were removed from the list given their immediate dermatological rationale and name of this new disease state. These other conditions include: areas of tight, rigid skin, and scarring of their body organs. The signs of NSF/NFD also include: burning, itching, swelling, hardening and tightening of the skin; red or dark patches on the skin; yellow spots on the whites of the eyes; stiffness in joints with trouble moving or straightening the arms, hands, legs, or feet; pain deep in the hip bones or ribs; and muscle weakness.

2. Medical malpractice is a constant and for radiology perceptual errors is an area of concern. Which of the following are causes for perceptual errors and which one is FALSE?
- A. Poor technique or positioning.
 - B. **Lack of knowledge.**
 - C. Poor conspicuity.
 - D. Satisfaction of search.

Rationale:

- A. Incorrect
- B. Correct. Lack of Knowledge is a an issue of misinterpretation but not of perception, as in answers a, c and d. Understanding the definitions and weaknesses in perception is key to minimizing poor over all interpretation.
- C. Incorrect
- D. Incorrect

Reference:

Potchen, JACR 2006, 3:423

3. A clinic patient comes to your department for a percutaneous biopsy to be performed under conscious sedation. During the consent process the patient requests that the attending radiologist perform the procedure. Your attending says to you, "You have performed several of these procedures in the past. Why don't you do this patient? I will be right outside if you need me." □ Which one of the following is the MOST appropriate response?
- A. You are confident of your ability and undertake the procedure independently.
 - B. You insist the attending be present in the room before you start.
 - C. **You assist your attending in performing the procedure.**
 - D. You are obligated to stay out of the procedure room.

Rationale:

- A. Incorrect.
- B. Incorrect
- C. Correct. It is inappropriate for a radiologist to allow a substitute to perform a procedure on his or her patient without the patient's knowledge and consent. It is not unethical for the radiologist to delegate performance of certain aspects of the procedure to the assistant, but only with the consent of the patient. This does not, however, preclude residents from assisting.
- D. Incorrect.

Reference:

None

4. Following the American College of Radiology Guidelines for informed consent, ALL of the following should be explained to the patient before the procedure is performed EXCEPT:
- A. The patient's right to refuse consent
 - B. **The physician's success rate of the procedure**
 - C. The expected benefits of the procedure
 - D. The patient's risk of accepting the procedure

Rationale:

- A. Incorrect
- B. Correct. Informed consent and appropriate documentation shall be obtained prior to the initiation of any procedure that is likely to expose the patient to any significant risks and potential complications. Before the proposed procedure is performed, the following should be explained to the patient: a) the purpose/nature of the procedure or treatment b) the method by which the procedure or treatment will be performed c) the risks, complications, and expected benefits or effects of such procedure/treatment d) the risk of not accepting the procedure e) any alternatives and their risks and benefits f) the right to refuse to consent Although the patient may ask about the physician's training, experience, and success rate in performing the procedure, discussing this with the patient is not a required component of obtaining informed consent.
- C. Incorrect
- D. Incorrect

Reference:

None

5. In which section of a published research article are you MOST likely to find the information necessary to evaluate for the presence of selection bias?
- A. Introduction
 - B. **Materials and Methods**
 - C. Results
 - D. Conclusion

Rationale:

- A. Incorrect
- B. Correct. The Materials and Methods section is the portion of a research report that outlines the patients, the evaluation method and plan, and the selection criteria for the study subjects. It is the most likely section to assess selection bias.
- C. Incorrect
- D. Incorrect

Reference:

None

6. Which of the following is the most frequent reason that physicians are involved in malpractice litigation?
- A. Incorrect prescribing
 - B. Incorrect diagnosis
 - C. Failure to follow up on a result
 - D. **Communication failure**

Rationale:

- A. Incorrect
- B. Incorrect
- C. Incorrect
- D. Correct. Despite the fact that many medical errors occur, by far the most frequent problem that leads to malpractice litigation is failure of communication between physicians and patients and between physicians. This fact suggests that no matter what the situation, communication with the patient and assurance that they have understood the communication is at the heart of good medical care.

Reference:

None

7. An attorney representing a patient in a malpractice action asks you to review a mammogram with the understanding that if you agree the examination was misinterpreted, you will provide expert testimony to that effect. Which one of the following is MOST appropriate?
- A. You refuse because it is unethical to provide expert testimony for the plaintiff.
 - B. **You refuse because you are not yet certified by the American Board of Radiology.**
 - C. You accept with the understanding that your fee will be contingent on the outcome of the litigation.
 - D. You accept because it will be a useful learning experience.

Rationale:

- A. Incorrect. It is the position of the American College of Radiology that it is in the public interest that medical testimony by radiologists be readily made available. Similarly, it is the position of the American Medical Association that physicians, professionals with special training and experience, have an ethical obligation to assist in the administration of justice.
- B. Correct. The American College of Radiology guidelines indicate that the radiology expert witness should be certified by the American Board of Radiology.
- C. Incorrect. The medical witness must be a dispassionate expert, not an advocate or partisan for one side or the other. It is unethical for a physician to accept compensation contingent on the outcome of the litigation.
- D. Incorrect. Surely it will be a great learning experience, but this is trumped by the rationale for B.

Reference:

None

8. Concerning the "Privacy Rule" under the federal Health Insurance Portability and Accountability Act (HIPAA), ALL of the following are true EXCEPT:

- A. It sets minimum standard for protection of private health information.
- B. **It requires researchers to apply for access to medical records.**

Rationale:

- C. It gives patients the right to amend certain health information.
- D. It allows patients to know when their health information is shared.

Rationale:

- A. Incorrect
- B. Correct. The "Privacy Rule" confers certain rights on individuals, including rights to access and amend their health information and to obtain a record of when and why their information is shared for certain purposes. Only researchers working in covered entities must comply. The rule is not intended to impede research but only to protect individuals and their information. It does not require researchers to apply for access but sets minimum standards for information protection.
- C. Incorrect
- D. Incorrect

Reference:

None

9. ALL of the following conform to the American College of Radiology Guidelines for Communication EXCEPT:
- A. A final written report is to be provided for all radiologic studies.
 - B. Unless the report is brief, it should contain an "impression" section.
 - C. Rubber-stamp signature devices are acceptable in lieu of a written signature.
 - D. **Need for immediate action should be given directly to the referring physician and not a representative.**

Rationale:

- A. Incorrect. An official interpretation shall be generated following any examination, procedure, or officially requested consultation. If requested to render an interpretation of an imaging study obtained at another facility, radiologists are encouraged to document their interpretations either by means of a formal report or other written documentation.
- B. Incorrect
- C. Incorrect. Electronic or rubber-stamp signature devices, instead of a written signature, are acceptable if access to them is secure.
- D. Correct. In those situations in which the interpreting physician feels that immediate patient treatment is indicated (eg, tension pneumothorax), the interpreting physician should communicate directly with the referring physician, other health care provider, or an appropriate representative. If that individual cannot be reached, the interpreting physician should directly communicate the need for emergent care to the patient or responsible guardian, if possible.

Reference:

None

10. Federal policies and regulations regard which one of the following as patient-based (human subject) research?
- A. Study comparing the methods and effectiveness of a non-ionic contrast medium in nine separate clinical trials, as reported in peer-reviewed journals
 - B. Tests from the effectiveness of a new compound for labeling human organs removed cadavers for use in radiological anatomy classes
 - C. Study of the routine practices of a given radiology group in order to improve that group's radiopharmacy operations
 - D. **Review of medical charts of patients who required emergency pulmonary angiography to see if medical outcome correlated with age**

Rationale:

- A. Incorrect. The research uses aggregated and publicly available data, so this is not patient-based research.
- B. Incorrect. The organs are from non-living individuals and while permission to use is required, the research to test the labeling agent is not human subject research.
- C. Incorrect. The study methods may be systematic but the conclusions are intended to apply only to the improvement of the organization's radiopharmacy service and are not generalizable to other settings and so this is not patient-based research.
- D. Correct. Systematic review of medical charts with the intent to produce generalizable conclusions is human subjects research.

Reference:

Comments:FDA regulations Relating to Good Clinical Practice and Clinical Trials
<http://www.fda.gov/oc/gcp/regulations.html>