Guide to Post-Test Writing

This document is designed to assist faculty in writing tests. Every activity must be evaluated for effectiveness; tests are one mean of assessing physician competence and developing additional learning opportunities.

Multiple-choice Tests:
The goal of multiple-choice tests is to allow the learner to demonstrate competence in applying concepts described by the learning objectives from the associated CME activity. Following are tips, along with examples, for writing quality multiple-choice tests:

Tests should:
- Relate directly to instructional learning objectives
- Consist of one question/answer/explanation per learning
- Contain a case study, when appropriate, with multiple questions related to the case.
- Avoid testing knowledge that is controversial, especially when it is incomplete or debated
- Avoid testing knowledge of medical trivia
- Contain questions/answer choices/explanations that are the same for both the pre-test and post-test; re-arrange the order for the post-test

Questions should:
- Include only relevant information
- Contain as much of the question information as possible such that phrasing is not repeated in each answer choice (See example #3)
- Ask for the correct, not the "wrong", answer – i.e. "*Which of the following is <u>NOT…</u>*"
- Avoid absolute terms, such as *always, never, all, or none*
- Avoid imprecise terms, such as *seldom, rarely, occasionally, sometimes, few, or many*; instead, use absolute numbers (e.g. 15%, rather than *few*)
- Avoid cues, such as *may, could, or can*
- Spell out words for which you use an acronym, or abbreviation; follow with the acronym

Answer choices should:
- Contain incorrect answer choices (distractors) that are accurate but do not fully meet the requirements of the question; options should never be implausible, trivial, or nonsensical
- Follow grammatically from the question, and not stand out as a result of phrasing
- Relate to each other in kind (e.g., all diagnoses, all tests, all treatments)
- Be similar in grammar, length, and complexity, with incorrect answers (distractors) being plausible but clearly incorrect
- Not include *none of the above* and *all the above*
- Be listed in order (e.g. numeric, chronologic)
- Be independent of each other and should not overlap
- Be varied in the positioning of the correct answer; i.e., not all correct answers should be 'A'
- Four to five options is optimal

Explanations should:
- Concisely but thoroughly explain why the specific answer option is correct. The explanation does not need to explain why the incorrect answer options are not correct.

Tests – Example 1

Avoid testing knowledge of medical trivia. Instead, create tests that measure the application of knowledge.	
Instead of:	**Use:**
Cauda equina syndrome is a condition of which one of the following systems? A. Cardiovascular B. Neurologic C. Gastrointestinal D. Nephrologic	A patient has low back pain that has persisted for more than six months. Which one of the following red flags is consistent with a diagnosis of cauda equina syndrome? A. History of significant trauma B. Unexplained weight loss C. Saddle anesthesia D. Chronic oral steroid use

Questions – Example 2

Avoid imprecise terms, such as seldom, rarely, occasional, sometimes, few, or many. Instead, use absolute numbers (e.g., 15% rather than few).	
Instead of:	**Use:**
Roughly Usually Normally Frequently	In less than 35% of the population.

Questions – Example 3

Avoid repeat phrasing in each answer section. Instead, contain as much of the test item as possible in the question.	
Instead of:	**Use:**
Which one of the following changes is considered to be a normal part of aging in healthy individuals? A. Decreased cough and airway mucous clearance B. Decreased gastrointestinal absorption C. Decreased red blood cell count D. Decreased thyroid function	A decrease in which one of the following changes is considered to be a normal part of aging in healthy individuals? A. Cough and airway mucous clearance B. Gastrointestinal absorption C. Red blood cell count D. Thyroid function

Answer Choices – Example 4

Avoid answer choices that are implausible or unrelated. Instead, use incorrect answers that are accurate, but do not fully meet the requirements of the problem.	
Instead of:	**Use:**
A. Acute renal failure B. Prednisone, 2-3 mg/kg daily C. Non-Hodgkin's lymphoma D. Urinalysis	A. Acute glomerulonephritis B. Acute renal failure C. Nephrotic syndrome D. Orthostatic proteinuria