

## ASSESSMENT QUESTION WRITING

Question writing is an important part of the CHEST learning process, as assessment is critical in tracking the success of CHEST education and the change in learners' knowledge.

When submitting questions for assessments, questions should relate 100% to your presentation(s) or content and should be able to be answered by reviewing your presentation or content. They should address the learning objectives of the activity. When submitting questions, it is also important that two questions covering the same material be written so that one can be included in the pretest and one can be included in the posttest. While the two questions should not be identical, they *should* relate to the same topic. For example, if you include a question about asthma diagnosis as a pretest question, your posttest question should also ask about diagnosing asthma.

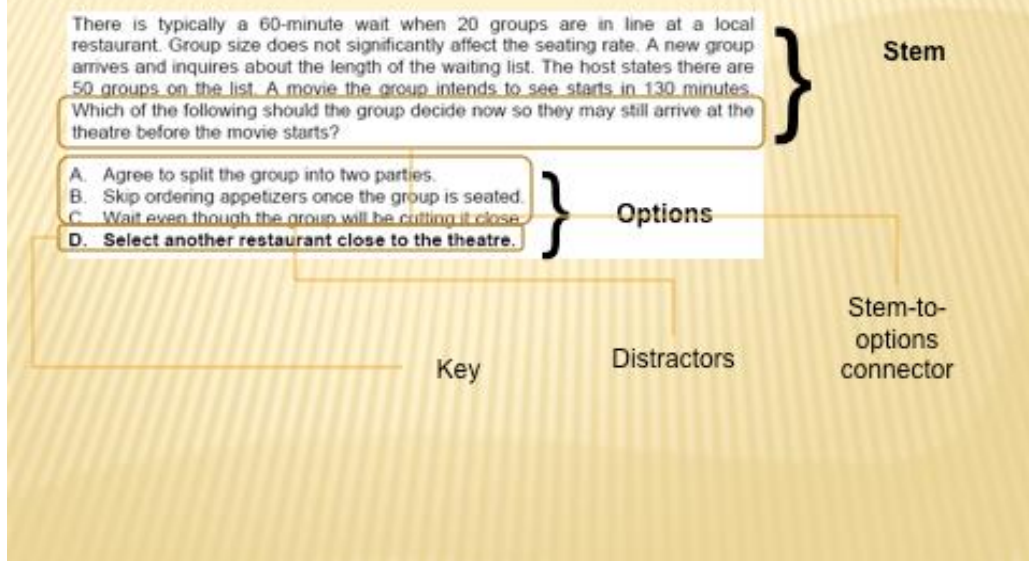
Prior to actually writing down your questions, it is a good idea to write down the general content area (such as congestive heart failure or evaluation of upper GI bleeding). Then write down the testing point (such as recognition of diastolic left ventricular failure). A clear testing point will help you write a question that is free of technical flaws.

Keep in mind the level of knowledge required to answer the question. A good question is relevant and neither too hard to too easy for a practitioner in their specialty area.

Tips:

- Write questions in standard multiple choose question (MCQ) format.
- Include only THREE or FOUR (4) options, labeled A – C/D.
- No True and False
- No "All of the following are true, except". Learners should choose the correct answer rather than the incorrect or wrong answer.

# MULTIPLE-CHOICE ITEM ANATOMY



## STEM:

- Contains the statement or question.
- Should be simple and plainly written. No trick questions.
- Should focus on one bit of behavior, task or learning objective.
- Case-based questions should include gender, age, and site of care related to patient subjects
- Avoid terms of degree such as rarely, commonly, frequently, etcetera.
- Avoid technical jargon that may not be known to by all examinees.
- Refer to all drugs by their generic names.

## KEY:

- The key is the *best or most appropriate* of the available responses.
- **Always include a rationale for the correct answer.**

## DISTRACTORS:

- Comparatively worse choice than the key, but need not be absolutely incorrect—
- Do not use "All of the above" or "none of the above".
- All distractors should be written in the same way with similar length, detail and grammatically consistent.
- Do not create obvious or nonsense distractors.

- Do not make the distractors substantially shorter or less detailed than the correct answer.
- Do not use patient scenarios as responses.

#### **RATIONALE FOR CORRECT ANSWER:**

A rationale, or discussion, is written for each question and **should be documented by at least one reference**. The rationale should focus on the correct answer of the item first and explain why it is correct in the given situation.

**References:** Each rationale must be accompanied by at least one reference citations. These references should NOT be footnoted in the rationale text but listed afterward to support your rationale. **YOU, the author, are responsible for the accuracy of your references. Please double-check them (e.g., by PubMed) to ensure they are correct.**

References should be written in AMA style. Please note the following two examples:

#### ***Journal***

Meduri GU, Stover DE, Lee M, Myskowski PL, Caravelli JF, Zaman MB. Pulmonary Kaposi's sarcoma in the acquired immune deficiency syndrome: clinical, radiographic, and pathologic manifestations. *Am J Med.* 1986;81(1):11-18.

#### ***Chapter in an edited book***

Pinnell SR. Disorders of collagen. In: Stanbury JG, ed. *The Metabolic Basis of Inherited Disease.* 4th ed. New York, NY: McGraw-Hill; 1978:157-199.

References should be as current as possible, and **journal citations are preferred**.

The following are examples of acceptable item formats:

Complete question item stem format:

Which of the following contributes most to aspiration of gastric contents in patients supported by mechanical ventilation?

- A. Supine position.
- B. Large-bore nasogastric tube.
- C. Metoclopramide.

- D. Gastric pH < 3.0.

Incomplete statement item stem format:

Endobronchial metastases very commonly occur in patients with:

- A. Hepatoma.
- B. Osteogenic sarcoma.
- C. Seminoma.
- D. Breast carcinoma.

## **IDENTIFYING COMMON ITEM-WRITING FLAWS**

The following are examples of typical flaws encountered in the item-writing process. Please familiarize yourself with these examples, so you may avoid them when writing your own questions.

### **Unfocused Stem**

A question should be completely set up and explained in the stem or item text. The learner should NOT have to read through the options to ascertain what the question really wants to know. Here is an example:

UNFOCUSED → Chicago, IL:

- A. Is located adjacent to Lake Erie.
- B. Leads the nation in the production of kitty litter, simulated wood plant stands, and surfboards.
- C. Hosts the world belly flop championships each year.
- >>D. Is home of the NFL franchise Bears.

The problem with this item is that the learner has no idea what the question is asking until all the options are read. By focusing the stem on what is really being asked, the author can make this item much easier to comprehend.

IMPROVED → Chicago, IL is the home of which of the following NFL teams?

- A. The Bulls.

- B. The Cubs.
- C. The Poor Losers.
- >>D. The Bears.

## Homogeneous Options

Often times, an unfocused stem will lead to the next most common item writing problem: homogeneous options. Each question, of course, should have one clearly correct answer. The other incorrect answers should be somewhat similar in content, grammatical structure, and length. The following item violates this principle because the options deal with completely different subject matter:

POOR: Which of the following statements about bronchogenic carcinoma is true?

- A. Small cell carcinoma is the most common type of lung cancer associated with scars.
- >>B. The chest radiograph is more sensitive than sputum cytologic examination in detecting early lung cancer in the smoker.
- C. Prolonged exposure to environmental tobacco smoke is not associated with an increased risk of lung cancer in the nonsmoker.
- D. Negative cytologic results for pleural effusion in a patient with an otherwise resectable lung cancer in the hemithorax reduces the likelihood of resectability by half.

An item such as this has many problems. The stem does not explain what is being asked—this is because the stem is not focused. As a result, the options are not focused either, and this question basically becomes a matter of ticking off the options that aren't true. What is really being asked here is "What do you know about bronchogenic carcinoma?" This stem and options are no more focused than the previous example of "Chicago, IL:"

Many items phrased as, "Which of the following statements about \_\_\_ is true?" have not been properly focused. Therefore, the answer options cover a range of topics, rather than just one. To improve

the question, decide what you really want to ask, and make the options extensions of that question.

IMPROVED: Compared with sputum cytologic examination, the chest radiograph is more sensitive in detecting early lung cancer in a patient who smokes because:

- A. ....
- B. ....

It is also important that the answer options are approximately the same length. Often, the author will try to clarify the answer more than the incorrect answers and, therefore, the answer is much longer and "sticks out" from the others. Even a learner who does not know the answer may pick the right one because "it looks more important."

### Mutual Exclusiveness of Options

Options should be mutually exclusive; that is, they should not overlap in content. Also, there should only be ONE CORRECT ANSWER. For example, in the following item, several options could be true:

". . . . The patient should be instructed to take the medication:

- A. At bedtime.
- B. Every evening.
- >>C. On an empty stomach.
- D. Before meals.

For example, A and B could be the same time, and C and D are possibly both true. If the patient drinks milk before bedtime, then A and B could both be true. Please try to make sure none of the information in an option is repeated in the other options.

### Negative Options

Item writers should NOT create questions that ask the learner to choose the option that is false or incorrect, instead of asking to choose a single correct answer. Often, this type of item reflects the writer's lack of focus in the stem, as the options in negative questions are often diverse and unrelated. Negative items can often be confusing, especially if the options also contain negative wording. We are *not* assessing the learner's ability to perform mental gymnastics to attempt to determine what the question is really asking. Consider this example:

POOR: Which of the following statements about crack cocaine ingestion is NOT TRUE?

- A. It can produce severe tachycardia.
- B. It does not produce vasoconstriction.
- C. The effect after smoking by drug abusers is not prolonged.
- D. Users may not always experience arrhythmia.

As you can see, negative questions should not be used, as they offer a host of problems for both writer and the learner.

**NOTE:** Similarly, questions structured as, "All of the following are true, EXCEPT" should not be written, as the focus of the item should be on one correct answer.

### Use of "None of the above" and "All of the above"

**DO NOT USE** the statements "None of the above" or "All of the above" in your options. Their use can lead to several problems. One problem is that they reduce the effectiveness of the options. Using "none of the above" opens the realm of possible answers to anything that is not on that page, i.e., any number of possible answers. If the learner feels that some other choice than what is listed could possibly be correct, then they will choose "none of the above," even though one of the given choices may be the correct answer. It also reduces the item to a glorified version of true/false, and the questions for this exam should challenge the learner instead of offering a process of elimination.

Likewise, the use of "all of the above" also reduces the effectiveness of an item. All the learners need to do is decide that more than one answer is correct, and they are immediately directed to "all of the above." Or, they

only need to know that one answer is incorrect to eliminate "all of the above" from contention. Again, it reduces the item to a process of elimination.