

**Lamaze International Certification Council
Exam Development Committee**

Psychometrician's Instructions on Item Writing

How to Start

Starting is easy. Surprisingly little needs to be learned. Success depends mostly on *un*learning a few bad habits. So let's look at what *not* to do.

Nothing could be worse than a 1-2 word question. For example, consider the following.

An episiotomy:

- a. is a surgical procedure
- b. is caused by discomfort during labor
- c. is easily diagnosed
- d. should be treated with pitocin

This question is horrible! It doesn't ask anything. The students must read the choices in order to know what type of answer you are expecting. They shouldn't be expected to do that.

Now look at the choices. What *type* of answer is expected? Choice A refers to classification, B to causation, C to diagnosis, and D to treatment. You wouldn't know where to begin, and neither would your students.

This "mixed bag" of choices is common in questions with only a 1-2 word beginning. The instructor who wrote "An episiotomy" hadn't thought much about what specific knowledge she wanted to test. It showed. The students couldn't figure it out either!

The solution is simple. Put enough information in the question portion so that the students can determine the answer -- *before* they read the choices. Then make sure that the choices are similar in structure. Let's revise the episiotomy question.

What type of surgical procedure is an episiotomy?

- a. Removal of an organ
- b. Preparation for a Cesarean delivery
- c. An implantation
- d. An incision

It's that simple! If you follow this principle, you will succeed where most instructors fail.

Consider the next example shown on the next page. On the surface, it seems like a well-written question.

TORCH infections include:

- a. gonorrhea, AIDS, and herpes
- b. tuberculosis, syphilis, and sickle cell disease
- c. toxoplasmosis, rubella, cytomegalovirus, and herpes
- d. chlamydia, hepatitis, AIDS, and rheumatic fever

Look again! This question is a giveaway. The first letter of each word in choice C forms most of the TORCH acronym. You don't need any knowledge of prepared childbirth to answer this question; therefore, it lowers the quality of the test. Let's revise this question.

TORCH infections include:

- a. tuberculosis
- b. rubella
- c. chlamydia
- d. hepatitis

Notice -- though simpler, this question is now actually more difficult. In addition, since it cannot be answered by test-wisness, it is now fairer to all students. Thus, sometimes in writing questions, less is *more*. In other words, we don't have to cover all aspects of a concept in one question. A test consists of many questions, which gives us many opportunities to cover many concepts and their multiple components.

Let's analyze another flawed question. This question is from elementary school arithmetic, so the subject matter is not relevant to childbirth education. However, the flaw commonly appears on health professions tests, and is a very important one to avoid.

$15 \times 5 =$

- a. 74
- b. 75
- c. 76
- d. 77

Why is this question flawed? Doesn't it have only one correct answer, which is properly camouflaged by the wrong answers? Well, it does have a correct answer; the flaw lies among the wrong answers.

This instructor tried to camouflage the right answer. She embedded it among wrong answers that were numerically close. However, this strategy is *not* effective! How could students logically, though incorrectly, calculate 74, 76, or 77 as an answer? They really can't!

The fact is, this question will *not* distinguish between students who know their "times tables," from those who don't. Wrong answers should be somewhat plausible to students who lack knowledge. In this regard, "15 x 5" was a flawed question. Let's revise the choices.

$$15 \times 5 =$$

- a. 3
- b. 20
- c. 55
- d. 75

The revised choices are numerically more distant from the correct answer, but *cognitively closer*. Students who confuse multiplication with division would calculate 3 as the answer, students who instead add would calculate 20, and students who multiply but forget to carry would calculate 55. These are realistic, logical, and rational answers that are wrong.

Does this make the question "tricky?" No, it doesn't! In fact you should *never*, for Lamaze tests or your own, prepare trick questions. They are unfair to students and lower test reliability and validity. Besides, well-written questions do not need tricks to identify students with deficient knowledge.

In our revised question, the wrong answers represent misconceptions that students have, or errors they are likely to make, *even if they had no choices from which to choose*. The revised choices simply allow students to express their erroneous thought processes.

Let's visit another flawed item. If the answer was 28%, which choice would you select?

What is the mortality rate for infants who contract rubella during the first 3 months after birth?

- a. Between 20 and 30%
- b. At least 30%
- c. Less than 30%
- d. Between 50 and 60%

Did this question frustrate you? It should have -- there are two correct answers. That's because the options overlap. An improved version of the question appears below on the next page.

What is the mortality rate for infants who contract rubella during the first 3 months after birth?

- a. 21 - 30%
- b. 31 - 40%
- c. 41 - 50%
- d. 51 - 60%

Notice how easy it was to correct the question. Be sure to avoid writing items with overlapping choices; they invalidate the question.

Now let's discuss a very controversial type of question -- one with "none of the above" or "all of the above" as a choice. Most instructors love this format, while most students hate it. What should

you do? The answer is simple; *don't use it!* This type of question is inherently flawed. Lamaze no longer uses it. The following examples illustrate why.

A toxemia of pregnancy characterized by increasing hypertension, headaches, albuminuria, and edema of the lower extremities is known as:

- a. uterine overdistension
- b. nephritis
- c. phenylketonuria
- d. none of the above

Which of the following conditions results from a vitamin deficiency?

- a. Night blindness
- b. Rickets
- c. Scurvy
- d. All of the above

The answer to the first question is preeclampsia. Since this choice is not given, students should select D (none of the above). But suppose a student thought that diabetes was the answer. Wouldn't she also select D? Sure she would! That's precisely why "none of the above" should never be included. It *cannot* distinguish between students who know the *real* answer, and those who don't.

The second question presents a different flaw. "All of the above" is correct. However, students do *not* have to recognize all three choices (A,B,C) as correct; they need only recognize *any* two as correct. Therefore, this type of question rewards test-wiseness, rather than knowledge.

There are ways around this. For example, combination choices such as "a and c above," eliminate the "any two of three" flaw. However, research in testing has shown that although these alternative strategies do resolve this flaw, they create other problems that are worse. The best way to prevent this flaw is to have *one, and only one, correct answer*. Consider the revised questions shown below.

A toxemia of pregnancy characterized by increasing hypertension, headaches, albuminuria, and edema of the lower extremities is known as:

- a. uterine overdistension
- b. nephritis
- c. phenylketonuria
- d. preeclampsia

Which of the following conditions does **NOT** result from a vitamin deficiency?

- a. Night blindness
- b. Rickets
- c. Scurvy
- d. Pneumonia

We don't need "none of the above" or "all of the above" for high quality questions. For the reasons mentioned earlier, these choices are no longer used on Lamaze qualifying or certifying examinations. As a result, the tests are now more reliable, valid, and fair.

Are you ready for one last question? The question shown below is a sincere attempt to test students' ability to "think on their feet." A realistic situation is presented, and the best course of action must be selected.

The husband of a primigravida contacts you because he is afraid that he will disappoint his wife during labor. What would you tell him?

- a. He will do fine.
- b. His wife simply needs encouragement.
- c. He will feel more confident when he becomes more familiar with the process.
- d. He should see a film that shows a delivery.

This was almost a good question. Unfortunately, it asks for an opinion (what *would* you do), rather than a best action (what *should* you do). Worse still, is that *each* of the choices may be most appropriate, but at *different* portions of the encounter. Unfortunately, the question does not qualify this. Therefore, there are multiple correct answers, and the question is flawed. Let's go to the next page and repair it.

The husband of a primigravida contacts you because he is afraid that he will disappoint his wife during labor. What should you tell him **FIRST**?

- a. He will do fine.
- b. His wife simply needs encouragement.
- c. He will feel more confident when he becomes more familiar with the process.
- d. He should see a film that shows a delivery.

In its revised form, the question asks what *should* you do, *first*. Now there is only *one* correct answer, and there question is both realistic and valid.

We have spent a lot of time considering what *not* to do. *Unlearning* bad practices is the hardest part. Now let's review some final suggestions.

Final Suggestions

The *Guidelines* have intentionally been kept brief. The emphasis has been to highlight (in plain English) the most important considerations. Many others could have been included. However, Lamaze's objective was to quickly guide you past the common pitfalls, and then turning you loose to create.

The Board hopes that you will be a prolific supporter of the examination program. Submitting high quality test questions is the *best* way to demonstrate your support.

Listed below are some reminders. Thanks again for your involvement and contributions.

1. Be sure that the question tests an important aspect of the subject matter. Avoid esoterica, minutiae, or provincial "schools of thought."
2. Be sure that the question covers a single issue. No question must be "too ambitious." Lamaze needs several thousand questions in its question pool. When you feel a question is becoming too complicated, consider dividing into two questions.
3. Be sure that the student can answer the question without having to read all of the choices first.
4. Be sure that the choices have some plausibility to students with deficient or superficial knowledge. However, do not try to trick any student, or write a question punitively, to "catch" students who have not kept up.
5. Be sure that the question has sufficient qualification regarding courses of action (e.g., initial).
6. Your questions need only contain four choices. If five choices readily come to mind, you may include all five. However, do not feel compelled to do so. It is preferable to use the additional choices to write another form of the question. The more questions in the question pool, the better.
7. Use one Lamaze submission per question. Be sure to complete all information requested, including a reference to document the correct answer.
8. For each question, indicate the examination for which you recommend its use: qualifying or certifying. Since the qualifying examination precedes the seminar phase, questions at this level will generally be easier and test more *recall* of factual knowledge. Questions written at the certifying level will typically be more advanced, and test *application* of knowledge. Application skills tested can be based on situations requiring, for example, the childbirth educator to counsel or give advice, solve problems, recognize client concerns, and interpret clinical data. Many more of these types of questions are given for certification than qualification.

Writing high quality test questions is very challenging. It is also very worthwhile professionally. Again we thank you for your support.