How to Write a Good Multiple Choice Question

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Getting Started

- Every multiple choice question (MCQ) or item consists of a stem (i.e. the scenario and lead-in question) as well as a list of alternatives. One alternative is the best or correct answer while the other choices are distractors.
- Designing a robust MCQ requires the author to begin with a well-defined learning gap or a teaching point they wish to address. It is often useful to start with keywords lists or a recent publication for inspiration.
- Think of the audience and the level of expertise required to answer the question (e.g. trainee, fellowship-trained pediatric anesthesiologist, general anesthesiologist, etc.).
- The stem and alternatives should generally not contain abbreviations, medical slang, or medical jargon.
- As a stem and lead-in question grow in length, the cognitive load to read, comprehend, and remember the scenario increases and this challenge becomes greater than the question itself.

Designing the Stem and Lead-In Question

- A MCQ stem should be meaningful in and of itself. This means a stem should contain a clinically relevant scenario and ask a direct question at the end. The question should generally be answerable without looking at the distractor options.
- The lead-in question should depend on the scenario that precedes it. If the question can be answered without the clinical scenario then it is likely that the question either is rote memorization, the question does not require clinical application, the stem could be shortened, or the stem is not meaningful.
- The lead-in question should not be fill-in-the-blank or a true/false type question.
- The lead-in question should generally be positively worded (e.g. best, most, correct) rather than negatively worded (e.g. avoid, not, except, worst, least, incorrect) but there are exceptions where a question is impossible to ask in a positively-worded way.

Designing a List of Alternatives

- The alternatives should all be plausible, concise, and homogenous.
- The alternatives should not contain clues as to the correct answer. Alternatives that are too wordy, contain "all of the above", and "none of the above" generally give clues about the answer. Alternatives that utilize the same phrasing, are similar in length, and homogenous usually avoid clues that savvy test-takers pick up on.
- Avoid complex answer combinations (e.g. A&C, C&D, etc.)

Bad Example

A 13-year-old boy presents for laparoscopic appy under MAC. He has central core disease, which requires MH precautions. Which of the choices is not contraindicated to use?

A. Succinylcholine
B. Sevoflurane
C. Isoflurane
D. Dextrose-containing IV fluids

The above example contains medical jargon, teaches in the stem, contains a double negative in the lead-in question, the choices are heterogeneous, the distractor order isn't uniform, and is clinically implausible.

Better Example

A 13-year-old boy presents for laparoscopic appendectomy. He has a history of central core disease. Which of the following medications is most associated with a life-threatening reaction during a general anesthetic for this patient?

A. Fentanyl
B. Nitrous oxide
C. Rocuronium
D. Succinylcholine

References and Further Reading:

- Brame, C. Writing good multiple choice test questions. Vanderbilt University Center for Teaching. 2013. Accessed October 18, 2020.
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- Paniagua, M & Swygert, K, eds. Constructing Written Test Questions for the Basic and Clinical Sciences. The National Board of Medical Examiners. 2020. Accessed October 18, 2020.
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