Writing (Good) Multiple Choice Questions (MCQ's)

(Review: Basic concepts in writing good MCQs)

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I. Multiple Choice Questions (MCQs)
   A. MCQ Format
   B. Terminology Used in MCQ’s
   C. Criteria for writing “good” test items
      1. Important
      2. Clear
      3. No Tricks
      4. No Clues

II. Conclusions
   A. Checklist for writing single-best answer MCQ’s
In order to write “good” MCQ’s, we need to:

- identify the various components that make up a MCQ.
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ITEM</strong></td>
<td>The complete question with all its answers</td>
</tr>
<tr>
<td><strong>STEM</strong></td>
<td>Everything that comes before the question</td>
</tr>
<tr>
<td><strong>LEAD-IN-QUESTION</strong></td>
<td>The specific question</td>
</tr>
<tr>
<td><strong>OPTION set</strong></td>
<td>All of the answers, both correct and incorrect</td>
</tr>
<tr>
<td><strong>DISTRACTORS</strong></td>
<td>The incorrect answers</td>
</tr>
<tr>
<td><strong>KEYED ANSWER</strong></td>
<td>The single best answers indicated as correct</td>
</tr>
</tbody>
</table>

**Item**

(i.e. The presentation of a clinical case)

**Stem**

(typically 1 correct answer and 4 distractors)
4 Criteria for Good Test Items (MCQ's)

- **CRITERIA**
  - **IMPORTANT**
    - Relevant
    - Suitable
    - Non-trivial
  - **CLEAR**
    - Focused
    - Unambiguous
  - **GOOD**
  - **NO TRICKS**
  - **NO CLUES**

- **STRENGTHS**
- **FLAWS**
Provides examinee with a realistic (clinical) situation in which knowledge and/or judgment must be applied

4 Criteria for Good Test Items (MCQ's)

- Relevant
- Suitable
- Non-trivial
The three components of a single - best answer multiple choice question are:

- Stem
- Lead-in
- Option set

Write items only on important concepts
(avoid trivia - avoid superfluous information)

Consistent use of task templates promotes consistent phrasing of stems and lead-in questions
4 Criteria for Good Test Items (MCQ’s)

- **IMPORTANT**
  - Relevant
  - Suitable
  - Non-trivial

- **CLEAR**
  - Focused
  - Unambiguous

**CLEAR**

Easy to understand and interpret in the same manner by all examinees
Clear

Stem & Responses

1. The "stem" presents the stimulus and should be written in the form of a vignette that describes a specific clinical scenario.

2. The "lead-in" should be focused to ask a specific question that the examinee can answer without seeing the options.

3. Include most of the information in the stem, NOT in lengthy distractors.
   (responses should rarely exceed one line)

4. The "option set" should include homogeneous answers (correct and incorrect) that can be rank-ordered (from most to least correct) on a single dimension.

Take Home Messages
Criteria for Good Test Items (MCQ's)

IMPORTANT
Relevant
Suitable
Non-trivial

CLEAR
Focused
Unambiguous

NO TRICKS
Avoid tricks that may cause examinees to select incorrect responses

NO CLUES
Avoid responses that may help unknowledgeable, but test-wise examinees to select the correct answer
Criteria for Good Test Items (MCQ's)

There are two major types of technical flaws that are commonly introduced by question writers:

- **Flaws related to irrelevant difficulty**
  - Avoid things that may cause examinees to select an incorrect response
  - **No Tricks**

- **Flaws related to examinees' testwiseness**
  - Avoid responses that may help examinees select the correct answer
  - **No Clues**
**Take Home Messages**

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**No Tricks**

Avoid tricks that may cause examinees to select incorrect response

1. Write the **lead-in** as a complete sentence **ending with a question mark**

2. The **lead-in** should be focused to ask a specific question that the examinee can answer **without seeing the options**

3. Include most of the information in the stem, **NOT in lengthy distractors**

   *responses should rarely exceed one line*
Take Home Messages

Avoid responses that may help examinees to select the correct answer

1. Grammatical clues
   One or more distractors does not follow grammatically the structure of the “stem”

2. Logical clues
   One of the subgroups of the options is exhaustively complete

3. Absolute terms
   The finding of terms such as “always” or “never” in some options

4. Long correct answer
   The correct answer is longer, more specific and more complete than the others

5. Repetition of words
   A word or phrase is included in the “stem” and in the right answer

6. Convergence strategy
   The correct answer includes the majority of the elements which are found in the other options
**4 Criteria for Good Test Items (MCQ's)**

**IMPORTANT**
Provides examinee with a realistic (clinical) situation in which knowledge and/or judgment must be applied

**CLEAR**
Easy to understand and interpret in the same manner by all examinees

**NO TRICKS**
Avoid tricks that may cause examinees to select incorrect responses

**NO CLUES**
Avoid responses that may help unknowledgeable, but test-wise examinees to select the correct answer
Checklist for Writing Single-Best Answer MCQ's

(modified from NBME-U)

- Has a single-best answer format been used?
- Does it satisfy the "cover test" rule?
- Does it test application of knowledge rather than recall of isolated facts?
- Is it appropriately "balanced" (most of reading in stem & relatively short options)?

Item

- Is the stem structured as a vignette, describing a specific situation?
- Is it phrased positively rather than negatively?
- Does the phrasing avoid making the vignette irrelevant?
- Is it focused so that it poses a clear question to be solved?
- Is it structured as a complete sentence ending with a question mark?

Lead-in

- Are they homogeneous in content and phrasing?
- Are they similar in length and parallel in structure?
- Does each follow the lead-in both grammatically and logically?
- Can they be rank-ordered on a single dimension (from most to least correct)?

Options

- Does the correct answer avoid repeating words used in the stem ("clang" clue)?
- Are distractors phrased to avoid repetition that clues correct answer (convergence)?
- Has the option-set been constructed to avoid "none of the above" "all of the above"?
- Does each avoid the use of absolute terms (e.g. "always", "never")?
- Does each avoid the use of vague terms (e.g. "rarely", "usually")?
“Examinations are formidable even to the best prepared, for the greatest fool may ask more than the wisest man can answer”

Charles Caleb Colton (1780-1832)