

Recommended guidelines on preparing MCQ

(adopted from the workshop by Prof. Clarke Hazlett)

Criteria to meet in writing Type-A items (one best answer)

- stems asks a question & a knowledgeable student can answer question without looking at set of answer choices
- a common continuum underlies all choices of answers
- all distractors are plausible and attractive to the uninformed
- all distractors are of relatively same length as the answer
- question deals with important concept(s)

Basic rules for writing Type-A items (one best answer)

- focus on important concept, typically a common or potentially catastrophic clinical problem
- assess application of knowledge, not recall of an isolated fact
- pose a clear question, can arrived at an answer with options covered
- make all distractors homogenous in content (e.g. all are diagnoses; all are next steps in patient care)
- all distractors should be incorrect or inferior to the correct answer
- all distractors should be grammatically consistent and logically compatible with the stem
- avoid technical flaws in composition

Common mistakes in the Best of 'N' Choices type of questions

- 1) Avoid grammatical cues: e.g. one or more of the distractors may not follow grammatically from the stem
 e.g. A 60 yr. old alcoholic derelict is brought to the emergency department by police. After ascertaining that the airway is open, the first step in management should be intravenous administration of
 - A. examination of cerebrospinal fluid
 - B. glucose with B1 (thiamine)
 - C. CT scan of the head
 - D. Phenytoin
 - E. Diazepam
 As options "A" & "C" don't fit grammatically with stem, neither would be the correct answer.
- 2) Avoid irrelevant techniques for making an item more difficult
 Options are sometimes made unnecessarily complicated
 - numeric data are not stated in a consistent unit
 - options are in non logical (or non sequential) order
 Options have vague terms (e.g. 'usually', 'rarely')
 In valid tests, difficulty level depends on level of clinical & scientific reasoning but not the complexity of the question.
- 3) Avoid using these imprecise terms in the stem and/or in the choices:
 Most of the time; usually; frequently; likely to occur; probably; commonly; associated with; rarely; almost never
- 4) Avoid other common item writer mistakes:
 - logical cues (subset of options is collectively exhaustive)
 e.g. Indices of poor health status are
 - A. Equally distributed among the social classes
 - B. Over represented among the poor
 - C. Over represented among the middle class and rich
 - D. Are impossible to calculate well enough to use
 - E. Are to inaccurate for use in determining health manpower needs
 A, B, C include all possibilities so one must be the correct answer, thus D& E must be wrong and were developed to make five choices.

- absolute terms
e.g. In patients with advanced dementia, Alzheimer' type, the memory defect
 - A. can be treated adequately with phosphatidylcholine (lecithin)
 - B. could be a sequela of early parkinsonism
 - C. is never seen in patients with neurofibrillary tangles at autopsy
 - D. is never severe
 - E. possibly involves the cholinergic system
 A, B, E contain less absolute terms and thus are more likely to be correct than choices C& D which have absolute terms

- long correct answer (phrased to be qualified)
e.g. Secondary gain is
 - A. Synonymous with malingering
 - B. A frequent problem in obsessive-compulsive disorder
 - C. A complication of a variety of illnesses and tends to prolong many of them
 - D. Never is seen in organic brain damage
 C is longer and qualified; item writers often pay more attention to writing the correct answer, and thus C is likely correct (and it is)

- word repeats (in stem and the correct answer)
e.g. A 58 year-old man with a Hx of heavy alcohol use and previous psychiatric hospitalisation is confused and agitated. He speaks of experiencing the world as unreal. This symptom is called
 - A. Depersonalization
 - B. Derailment
 - C. Derealization
 - D. Focal memory deficit
 - E. Signal anxiety
 "Unreal" in the stem and derealisation (choice C): easily matched

- convergence strategy (correct answer includes most elements in common with the other options)
e.g. Local anaesthetics are most effective in the
 - A. Anionic form, acting from inside the nerve membrane
 - B. Cationic form, acting from inside the nerve membrane
 - C. Cationic form, acting from outside the nerve membrane
 - D. Uncharged form, acting from inside the nerve membrane
 - E. Uncharged form, acting from outside the nerve membrane
 Correct answer is more likely to have elements in common with the rest of options; by process of exclusion B is most likely (and it is the correct answer)

Clinical vignette

The use of clinical vignette will be more helpful if our objective is to measure the application of knowledge rather than the rest of memorised facts. One can create more than one question from one vignette.

A clinical vignette includes a patient description & a clinical scenario with some or all of the following information (in this order):

- Age, Gender (e.g. A 45-year-old man)
- Site of Care (e.g. comes to the emergency department)
- Presenting Complaint (e.g. because of annoying pain in his knee)
- Duration (e.g. that has continued for 2 days)
- Patient History (with/without family history)
- Physical findings +/- results of diagnostic workup, +/- initial treatment, subsequent findings, etc.

e.g. A 44 year old housewife is admitted to the ward with generalized bone pain especially over the spine and pelvis. She has a history of breast cancer, and had a mastectomy 3 years earlier. A plain radiograph of the spine reveals collapse of the L4 and L5 vertebrae.

Q1. Laboratory studies are most likely to show

- A. decreased serum Ca
- B. increased serum Ca*
- C. increased serum creatinine
- D. increased serum albumin
- E. decreased serum creatinine

Q2. What is the most appropriate investigation for this patient at this stage?

- A. Bone scan*
- B. DEXA study
- C. Bone biopsy
- D. MRI
- E. Serum PTHRP measurement

The best guideline for composing good question is to structure items in a clinically realistic manner.

Sample question format

(Short clinical vignette)

A 65-year-old-man has difficulty rising from a seated position and straightening his trunk, but he has no difficulty flexing his leg.

(Lead-in question)

Which of the following muscles is most likely to have been injured?

(Provide a list of optional injury sites)

- A. Gluteus maximus*
- B. Gluteus minimus
- C. Hamstrings
- D. Iliopsoas
- E. Obturator internus

Bad example – Which of the following disease is an indication for doing HLA-B27 testing in a 28-year-old male?

- A. Ankylosing spondylitis
- B. Reiter's disease
- C. Rheumatoid arthritis
- D. Psoriasis
- E. Scleroderma

This is bad because in clinical practice, doctors don't go around searching for the most appropriate patient in order to do some HLA-B27 testing. The more logical approach should be:

A 28-year-old clerk has been complaining of pain and stiffness of the spine & hip joints for a year. He has now developed a kyphosis and requires a cane for support. Radiographs show sacroilitis. Which of the following investigations is the most appropriate to undertake at this time?

- A. test for presence for Bence Jones Protein
- B. do a VDRL test
- C. do a HLA-B27 test
- D. test for presence of C-Reactive Protein
- E. test for presence of anti-nuclear antibody

- END -

1. Which of the following conditions is most frequently associated with congenital scoliosis, craniofacial abnormalities, congenital heart disease and blood dyscrasias?
 - (A) Pre-axial polydactyly
 - (B) Post-axial polydactyly
 - (C) Radial club hand
 - (D) Cleft hand
 - (E) Central syndactyly