TH6- Medical CME Item-Writing Workshop: Focus on Medical Direction and Attending Physicians' Skills, Knowledge, and Abilities in PA/LTC

Thursday, March 22
8:00 AM- 11:30 AM

Session Description
The workshop will cover principles for writing CME exam questions ("items"), suggestions for writing realistic and practical items at the appropriate cognitive level, and item writing exercises. Experts will have the chance to not only develop items, but receive instant feedback on how well their items match industry standards, allowing them to edit their items and have them accepted at the workshop. Subject matter experts will be provided the opportunity to learn cross-field item-writing principles which will allow them to write valid questions in a variety of professional and educational settings.

This workshop requires pre-registration to participate. If you are interested in attending or would like more information about this opportunity, please contact Suzanne Harris, Director of American Board of Post-Acute and Long-Term Care Medicine (ABPLM), at cmd@paltc.org by March 21, 2018. Participants will need to bring a laptop to participate in the workshop.

Learning Objectives
Construct multiple-choice items to measure knowledge, skills, and abilities.
Use strategies to avoid technical flaws in item-writing and common item-writing pitfalls.
Apply item-writing principles to add to PA/LTC CME question bank.

Presenter(s): Scott Frohn, PhD

Presenter(s) Disclosures: All speakers have reported they have no relevant financial relationships to disclose.
Medical CME Item-Writing Workshop
Focus on Medical Direction and Attending Physicians' Skills, Knowledge, and Abilities in PA/LTC

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Speaker Disclosures
Dr. Frohn has no financial relationship(s).

PSI Services provides psychometric services to ABPLM for the Certified Medical Director (CMD) examination.

Learning Objectives
1. Receive training on writing effective multiple-choice items for credentialing examinations
2. Discuss guidelines, best practices, and PSI's requirements for examination items
3. Practice writing items and receive feedback

Agenda
• Overview of Measurement
• The Exam
• Items
• Test Wiseness
• General Rules for Item Writing
• Exercises
• Item Writing and Feedback

Measurement
OR: WHERE DO EXAMS COME FROM?

Overview of Measurement
Practice Analysis
Test Specifications
Item Writing
Examination Development
Standard Setting
Administration & Scoring
Overview of Measurement

Practice Analysis
Test Specifications
Item Writing
Examination Development
Standard Setting
Administration & Scoring

• aka: Job Analysis, Role Delineation Study
• Conducted by Advisory Committee
• Purpose is to identify current practice
• Survey distributed to sample
• Results show importance of tasks
• Upholds the standards of testing

Content Domains

CMD Examination
A. Leadership
B. Oversight
C. Patient Care
D. Education

AP Examination
A. Foundation (Ethics, Professionalism, and Communication)
B. Medical Care
C. Systems
D. Medical Knowledge
E. Personal Professional Development in Post-Acute and Long-Term Care

Overview of Measurement

Practice Analysis
Test Specifications
Item Writing
Examination Development
Standard Setting
Administration & Scoring

• Workshops
• All items linked to specifications
• Consistent style and format
• Submitted items must be original, and they become property of ABPLM

Overview of Measurement

Practice Analysis
Test Specifications
Item Writing
Examination Development
Standard Setting
Administration & Scoring

• Extensive review process
• Unanimous agreement of experts
• Parallel examination forms
• Scored & pretest items
Overview of Measurement

Practice Analysis
Test Specifications
Item Writing
Examination Development
Standard Setting
Administration & Scoring

- aka: Cut Score, Passing Point
- Criterion-referenced
- Define borderline candidate
- Judgments of standard setting committee
- Consistency through equating

A note on statistics

- Item Analysis
- Classical Test Theory vs. IRT
- CTT Statistics:
  - p-value
  - discrimination index (rpb)

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<th>Item 3</th>
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Overview of Measurement

Practice Analysis
Test Specifications
Item Writing
Examination Development
Standard Setting
Administration & Scoring

- Quality control procedures
- Item analysis for pretest items
- Review of candidate comments

Overview of Measurement

Practice Analysis
Test Specifications
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Overview of Measurement

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Item Anatomy & Item Types

- Why 'items' and not 'questions'?
- Four-option, positively-worded multiple choice items will be used

Item Components

- Stem - the statement or question to which candidates respond.
- The stem can also include a chart, table or graph.
- The stem should clearly present the central problem or idea.

What are the names of Scott's dogs?

a. Napoleon and Peaches
b. Bonnie and Nemo
c. Luna and Ginny
d. Bill and Ted

Items
...THE BUILDING BLOCKS OF AN EXAM
Item Components

- One key
  - The key is the best or most appropriate of the available options
- Three plausible distractors
  - plausible, yet incorrect responses

Example Stems

- When in doubt, use a direct question item type to be sure the stem is clear and complete. (No undirected stems)

  - Direct question:
    1. Which of the following policies best ensures patient comfort and dignity?
       a. first distractor
       b. This distractor is a sentence.

  - Incomplete statement:
    2. The policy that best ensures patient comfort and dignity is
       a. this policy
       b. this other policy.

Formats to avoid

NEGATIVELY WORDED

1. Which of the following policies are effective at ensuring patient dignity and comfort?
   a. First policy
   b. Second policy
   c. Third policy
   d. Fourth policy

COMPLEX MULTIPLE CHOICE

1. Which of the following policies are effective at ensuring patient dignity and comfort?
   a. First policy
   b. Second policy
   c. Third policy
   d. Fourth policy

ALL / NONE OF THE ABOVE

1. Which of the following policies are effective at ensuring patient dignity and comfort?
   a. First policy
   b. Second policy
   c. Third policy
   d. None of the above

Cognitive Level

Different job tasks require different levels of cognitive processing.

- Recall
  - recognize or understand definitions, terms, and concepts
  - an effort of rote memorization, never situationally dependent
- Application
  - interpretation, classification, translation, recognition of elements and relationships
- Analysis
  - synthesize information, solve problems, evaluate the best response
  - analyze information and make a decision about an issue

Responding to an item requires an examinee to perform some mental activity to arrive at the correct response.

Thus, job task and item complexity should somewhat align – purpose of DCO.
Overlap of Cognitive Levels

Recall

Application

Analysis

Which description is characteristic of a third-degree burn?
A. Skin and muscle tissue has been severely injured
B. Skin has been injured to a considerable depth
C. Skin has been destroyed or charred
D. Skin has been blistered

Which is appropriate for initial treatment of superficial burns from particles of white phosphorous?
A. Apply a dressing of sodium bicarbonate
B. Apply a bandage from a first aid kit
C. Paint the burned area with iodine
D. Flush the burn with water

Which material poses the most significant risk of burns when working with construction equipment?
A. Acetone
B. Butane
C. Diesel
D. Gasoline

How to write items to test higher cognitive levels

• Think about job-related situations
• Expand on opportunities (problems) that have occurred
• Identify the desired competency

Test-Wiseness

COMMA HOW TO REDUCE THE EFFECTS OF

1. Trassign normally occurs under which of the following conditions?
A. when the viskal flans, if the viskal is zortil
B. when lusp trasses the vom
C. when the belgo lisks easily
D. when dissles frull

2. The fribbled breg will ninter best with an
A. mors.
B. ignu.
C. derst.
D. sortar.

3. Why does the sigla frequently overfesk the trelsum?
A. All siglas are mellious.
B. Siglas are always votial.
C. The trelsum is usually tarious.
D. No trelsa are directly feskable.

4. What probable causes are indicated when doss occurs in a compots?
A. The polats were thenced in the sluth
B. The kredges roted with the rots
C. The kogs were accepted in the sluth
D. The sabs foped and the doths tinzed

5. What is the primary purpose of the cluss in frumpaling?
A. To remove cluss-prangs.
B. To patch tremalls.
C. To loosen cloughs.
D. To repair plumots.

6. The nintering function of the ignu is most effectively performed with the
A. arazma tol.
B. fribbled breg.
C. groshing stantol.
D. frallied stantels.

7. Robert E. Lee
B. Stephen Douglas
C. Abraham Lincoln
D. James Monroe

8. A. Joan and Sue
B. Sue and Margie
C. Margie and Pat
D. Sue and Mary

9. A. $2,500
B. $10,000
C. $20,000
D. $25,000

10. A. 5/8
B. 5/7
C. 5/4
D. 1/8

11. A. Alice scored the run
B. Tom made the play
C. John stole second
D. Tom went home early

12. A. milk
B. soda
C. soap
D. water

13. A. 260
B. 17
C. 19
D. 37
Well-written items
• reduce systematic measurement error.
• conform to a specific category of the Exam Content Outline.
• assess something that is relevant and important to the job role.
• include the most current information available.
• use working language of the job that is universally understood.
• describe realistic and practical situations.
• are written in professional, third-person language.
• do not use language verbatim from a reference.
• but should usually have a reference (title, author, year/edition, page #).

A well-written stem
• solicits a single response.
• contains all necessary information to answer the question.
• is concise.
• allows respondents to determine what is being asked without seeing the options.
• is not negatively-worded.
• does not include a clue word that makes the key obvious.
• e.g. The stem asks for a specific type of assessment and the key is the only option that include the word "assessment".
• does not teach information.

Well-written options
• answer what is asked in the stem.
• conform grammatically to the stem.
• are realistic and genuine concepts or terms.
• do not contain "all of the above" or "none of the above."
• exclude qualifying words or extraneous details.
• e.g. Implement the training procedure, but only if consent is given first.
• do not contain content that overlaps with other options.
• are consistent with other options in terms of length and detail.

A well-written key
• is the only correct answer.
• is not subject to opinion.
• is supported by an authoritative reference source.
• represents what is correct in actual practice.

Well-written distractors
• largely dictate item difficulty.
• The finer distinctions candidates must make, the more difficult the item.
• are defensibly incorrect.
• Not partially correct or technically correct but not the best answer.
• are plausible to those who lack knowledge about the concept.
• exploit common misconceptions or typical errors in calculations, thinking, etc.
• scientific & stereotyped phrases; verbal associations.
• are not throw-away options or incredibly obvious.
• use the candidate’s language, and impressive-sounding, technical words.
• should be written with a ruthless attitude (seriously).
Demographic Sensitivity

- Be sensitive to words or phrases that may cause negative impressions or perpetuate stereotypes.
- Describe individuals when necessary and state things in an objective manner.
- Strive for gender neutrality and avoid gender stereotypes.
  - Try to avoid pronouns (e.g., she, her, they) and instead use a title or description (e.g., patient, practitioner).
- Use words and phrases that have consistent meaning across region, setting, and for persons of different demographic characteristics.
  - Be sure that all groups have access to the concepts being tested.

Item Structure

- Grammar
  - Options that are complete sentences begin in upper case, end with a period.
  - Incomplete thoughts for direct questions begin with lower case (no period).
- Response options
  - Write options in similar lengths if possible.
  - Keep options parallel in form.
- Options should be a homogeneous set.
  - Avoid writing keys that are longer; more detailed, or more specific than the distractors.

Item Structure

- Put as many words as possible into the stem.

  1. The psychometrician should recommend
     a. that the committee write right, more difficult to read stems.
     b. that the committee write distractors of length similar to the key.
  2. The psychometrician should recommend that the committee write
     a. longer, more difficult to read stems.
     b. distractors of length similar to the key.

Avoid Introducing Error

- Language
  - Use a few short sentences rather than long complex sentences.
  - Use smaller words rather than polysyllabic words to reduce reading level.
  - Keep computations simple.
  - Items should be simply written. Now is not the time to show off your verbosity.
- Novice writers tend to provide irrelevant clues by writing
  - Options having the same meaning. Therefore, both must be incorrect.
  - Options that are mutually exclusive (e.g., dose is correct, dose is incorrect).
  - Probability of guessing increases to 50%; measurement error inflates.

Item Review Exercise - 1 of 6

Example A

Unfocused stem

- A. can result in flooding.
- B. can lift root systems of plants.
- C. is associated with heavy rainfall.
- D. results from water flow over terrain. [KEY]

Multiple correct options

Example B

Which method is used for erosion control on steep slopes?

- A. Retaining walls (KEY)
- B. Tree trimming
- C. Mulch
- D. Zero tillage
Example A
Which mathematical operation uses the term multiplier?
A. Multiplication (KEY)
B. Division
C. Donuts
D. Calculus

Example B
Which of the following methods is the most direct for calculating the average contribution to a total?
A. Multiplication (KEY)
B. Division
C. Addition
D. Subtraction

Example B
Why are scrolled strips used to produce circular ends?
A. Their shape results in minimal waste after the ends are punched from the strip (KEY)
B. Faster
C. Inexpensive
D. Easy to cut

Example A
Why are scrolled strips used to produce circular ends?
A. They can be easily fed into the punching press (KEY)
B. They are less expensive than rectangular strips
C. They are lighter and more resilient than rectangular strips
D. They are shaped to result in minimal waste

Example A
A nurse needs to collect information for a patient record. What data must the nurse collect as part of a patient record?
A. Vital signs and weight (KEY)
B. Vital signs and activity level
C. Vital signs and radiographs
D. Vital signs and appetite level

Example A
One way to determine a patient’s heart rate is to listen with a stethoscope. What is another method that you could use?
A. Computerized tomography
B. Air displacement plethysmography
C. Positron emission tomography
D. Sonography (KEY)

Example A
What is the acceptable amount of distance between two exercise machines?
A. Under 5 feet
B. Between 2 and 4 feet (KEY)
C. Between 3 and 5 feet
D. Over 1 foot

Example A
What is the minimum amount of distance required by XYZ between two exercise machines?
A. 1 foot
B. 2 feet (KEY)
C. 4 feet
D. 5 feet

Final Notes
Item-Writing Process

1. Select a content area for which you are going to write
2. Think up the concept for which you are testing
3. Find the appropriate reference and page number
4. Write stem
5. Write key
6. Write distractors
7. Review item

Evaluating your own items

- Relevant for the intended candidate group?
- Item linked to the content outline?
- Cognitive level correct?
- Key the best answer?
- Distractors plausible, but wrong?
- Free from bias?
- Reading level appropriate?
- Computations simple?
- Reference? Conform to standards?

Let’s practice for real

A. Leadership
4. Advise the staff and healthcare practitioners in implementation of strategies to adapt to the changing healthcare environment
5. Facilitate communication between staff and healthcare practitioners (e.g., reconciliation, conflict resolution)
6. Assist the facility/program in the management of urgent medical situations (e.g., outbreaks, disasters)
18. Evaluate and provide input into proposed Quality Assurance and Performance Improvement (QAPI) projects, including goals, methods, and criteria
19. Collaborate in the identification and implementation of strategies to reduce potential risk factors for injury and illness
22. Promote care in the facility/program that is consistent with public policy and expectations (e.g., medical, social, regulatory, political)
23. Establish topics and criteria for reviewing quality of care (e.g., monitoring medications, laboratory monitoring)
27. Assist in identification of roles and responsibilities for healthcare practitioners

B. Oversight
2. Participate in monitoring and comparison of facility/program practices to performance benchmarks and current standards of practice
3. Advise the facility/program about infection control, prevention, and antibiotic stewardship issues
4. Investigate and act upon concerns related to practice, performance, and conduct of medical and other licensed independent practitioners (e.g., corrective action, due process)
5. Promote the alignment of patient/resident care practices with medical care standards and regulations

C. Patient Care
2. Promote the attainment of goals of care for patients
4. Advise the facility/program regarding utilization review issues (e.g., discharge decisions, denial of payment decisions, bundle payment program, formularies)
6. Advise and guide the facility/program in addressing bioethics issues (e.g., scope of desired treatments, advance directives)
8. Assist the facility/program in the implementation and use of a system for identifying and reporting suspected or known abuse among patient/residents or staff

Next Steps

- Want to be a CMD or AP item writer? Contact:

  Suzanne Harris
  Director, ABPLM
  410-992-3117
  cmd@paltc.org

Questions?
Thank you!