Assessment Techniques

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This module will help you:

✓ Understand the two purposes of assessments
  o Monitoring learning (i.e., are learning objectives being met?)
  o Assigning grades (i.e., has the student demonstrated competency?)
✓ Understand the two types of assessments
  o Formative (i.e., is the learner progressing appropriately?)
  o Summative (i.e., is the learner ready to be promoted?)
✓ Create high-quality examinations and multiple choice questions (MCQ)
  o Understand why a test blueprint should be created for every examination
  o Design test items that provide valuable feedback for students and faculty

Assessments collect evidence of student performance

Evaluations are judgments made about performance

Measurements are scores that represent the degree of a characteristic demonstrated

Examinations should help instructors make accurate decisions

Formative assessments monitor student progression during a learning session

✓ Instructors need to be flexible while interacting with students
  o Have a second (or more) PowerPoint files on stand-by for further explanation
  o Have a case-based example on stand-by for practice or further discussion

Summative assessments document student achievement at the end of a learning session

✓ Audience Response System (such as iClickers) should not be used to award points that contribute to a student's final grade in a course as these points do not assess student achievement of course learning objectives.

Before the first MCQ is created a test blueprint should be produced

✓ Test Blueprint (Table of Specifications)
  o Promote the development of better assessments
  o Link learning objectives and examinations items
  o Encourage an adequate sampling of content
  o Allow a breakdown of item types
Test Blueprints are a matrix composed of columns and rows
✓ Columns and rows define course content and skills
✓ Cells contain learning objectives
  o MCQs should align with cells (learning objectives)
  o MCQs can be of low-level or high-level difficulty
    ▪ Low-level items = assess declarative knowledge
    ▪ High-level items = assess procedural and conditional knowledge

<table>
<thead>
<tr>
<th>Topic</th>
<th>Signs &amp; Symptoms</th>
<th>EKG changes</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial Infarction</td>
<td>A</td>
<td></td>
<td>D</td>
</tr>
<tr>
<td>Unstable Angina</td>
<td></td>
<td></td>
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<tr>
<td>Pericarditis</td>
<td>B</td>
<td>C</td>
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</tbody>
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A = Learning objective about S4 heart sounds; MCQ should assess this finding
B = Learning objective about friction rubs; MCQ should assess this finding
C = Learning objective about global ST segment changes
A higher order level MCQ item may be required to assess understanding
D = Learning objective about thrombolytic agents; MCQ to assess identification

MCQ items consist of two parts: Stem and Options
✓ Stem - identifies a problem and/or asks a question
  o A stem that is a question is better written than an incomplete sentence
    ➢ Stems that end with a question mark (?) are generally less confusing
  o The best stems are:
    ➢ Complete, Succinct, Focused, Positive, and written in the Present Tense.
✓ Options - include the keyed (best) answer and distracters
  o The best options are:
    ➢ Positive Statements, Distinct, and Homogeneous.

STEM : A patient presents with chest pain..... What is the most likely diagnosis?

OPTIONS: A. Myocardial infarction
         B. Pericarditis
         C. Unstable angina *
         D. Dissecting thoracic aortic aneurysm
         E. Pulmonary embolism

* Keyed (best) answer
Writing good MCQ items is part science and part art

When writing MCQ items:

- Write the stem and keyed response first.
  - Be clear - examinees should not be confused after reading the stem or options
  - Be reasonable - only test important facts and concepts
  - Do not give away answers
  - Bad items share common flaws (examples include)
    - Irrelevant information (window dressing) is included
    - Reading comprehension is being tested, not learning achievement
    - The main idea is found in the options, not the stem
    - A cue to the correct answer is obvious to the test-wise student

**Poor Item**

STEM : A patient presents with chest pain... the patient is 56 years old and a chess player. The patient played high school soccer and was a goalie. The patient has a history of appendicitis. Today's pain is unlike any pain the patient has ever had before. EKG reveals ST segment changes. What is the most likely diagnosis?

OPTIONS:  
A. Myocardial infarction  
B. Pericarditis  
C. Unstable angina  
D. Shingles  
E. Fractured rib

**Better Item**

STEM : A patient presents with chest pain... the patient is 56 years old. He has had similar heavy feelings in his chest before, always associated with activity. Today's pain has been present for 25 minutes. His EKG reveals ST segment elevation limited to leads II, III and aVF. His chest x-ray reveals fibrosis in the left costophrenic angle. What is the most likely diagnosis?

OPTIONS:  
A. Myocardial infarction  
B. Pericarditis  
C. Pleurisy  
D. Pulmonary embolism  
E. Pneumothorax
Item writers suggest allocating one hour for the creation of each MCQ

MCQs should relate to learning objectives identified on a test blueprint.
MCQs should be referenced to a current, relevant textbook or peer-reviewed reference.
MCQs should be edited by a team.
MCQs should move from a test pool to a test bank.

✓ Test pool includes items that have never been used before
✓ Test bank includes items that have psychometric data

References