American Board of Pathology

The mission of the American Board of Pathology, a member of the American Board of Medical Specialties, is to serve the public and advance the profession of pathology by setting certification standards and promoting lifelong competency of pathologists.
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ABPath CertLink® Item Writing Guide

Overview

This guide will provide ABPath CertLink (ABPCL) Item Writers and Reviewers with general instructions for writing and editing high-quality exam questions that measure a pathologist’s knowledge and judgment about specific topics and content, and for writing good critiques that provide feedback and promote learning.

Item Quality Principles

Item Writers and Reviewers should always strive to achieve these important item quality principles:

- **Principle One**: Critiques Guide Item Writing, and Critiques and References Must Be Provided in the Appropriate Format.
- **Principle Two**: Items Test the Application of Knowledge Based on Cases/Scenarios Encountered in Practice, Not Simple Recall of Facts; Items Avoid Subjective or Controversial Topics.
- **Principle Three**: Each Item and Its Answer Choices Are Homogeneous, Testing a Single Dimension.
- **Principle Four**: Stems, Lead-ins, and Answer Choices Are Properly Formatted.
- **Principle Five**: No Technical Flaws in Test Items and/or Clues Benefitting Test-Wise Diplomates for Answering Items.
- **Principle Six**: Stems, Lead-ins, and Answer Choices Must Be Clearly Interpretable.
- **Principle Seven**: Each Test Item Has a Single Correct Answer.
- **Principle Eight**: Key Learning Objectives (KLOs) Add Value for Diplomates’ Learning and Mastery of Content.

Guidelines to Achieve Item Quality Principles

This section provides comprehensive guidelines to achieve the eight item quality principles. Appendix A has an example test question with several flaws and provides an explanation of how it can be improved to achieve each principle of item quality.

All items submitted must be multiple-choice questions with a single correct answer. Each item must include the following:

- Stem, lead-in, and answer choices
- Optional image file(s) (up to 10)
- Critique (the supporting information for the question that explains why the key is the single correct answer and why the distractors are incorrect answers)
- Key Learning Objective (KLO)
- Reference(s) (PubMed ID, DOI identifier, HTTP links, or ISBN for textbooks)
- Category Codes and Practice Areas
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➢ **Principle One: Critiques Help Guide Item Writing, and Critiques and References Must Be Provided in the Appropriate Format.**

The Critique:
- provides an instructional narrative about a single topic, and that narrative should guide item writing for that topic;
- explains why the key is the single correct answer and why the distractors are incorrect answers;
- should include any related or secondary information that must be known to answer the questions correctly;
- should be written first, and the rest of the item developed from it. First, write the instructional narrative, then write questions about the topic, which could be answered correctly after reading the critique;
- offers useful feedback and enhances learning;
- should be concisely written and not include long, detailed explanations of basic science concepts or topics, unless it is important for pathologists to know; and
- should have at least one parent item. Supporting justification in the Critique should provide clear and comprehensive explanations as to why the correct answers are correct, and why the distractors are incorrect.

ABPCL Item Writers and Reviewers are strongly encouraged to modify critiques to produce additional critiques and write additional questions associated with their additional critiques.

References should be the PubMed ID (PMID) or Document Object Identifier (DOI) for articles, or the ISBN for textbooks. (The CertLink software will automatically look up and include a link to the reference.) If the PMID or DOI is unavailable, references must include the name of the author(s), the title of the publication, published sources such as a journal or book, volume or edition number, year of publication, and page numbers.

➢ **Principle Two: Items Test the Application of Knowledge Based on Cases/Scenarios Encountered in Practice, Not Simple Recall of Facts; Items Avoid Subjective or Controversial Topics.**
- Questions test important, practical, or critical topics or concepts relevant to day-to-day practice. Coverage of timely topics is also desirable.
- Questions should be of a problem-solving nature.

➢ **Principle Three: Each Item and Its Answer Choices Are Homogeneous, Testing a Single Dimension.**
- Each question measures a single topic.
- Answer choices must be logical and homogeneous (eg, all diagnoses, all IHC stains, all laboratory test results, all clinical associations).

➢ **Principle Four: Stems and Answer Choices Are Properly Formatted.**
- Test items have longer stems and shorter answer choices.
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- Answer choices should be organized logically, in alphabetical or numerical order, approximately the same length, and grammatically similar.
- Answer choices must flow from the lead-in in content and grammar, independent of the other choices.
- The lead-in must be a complete sentence ending in a question mark (?) that clearly indicates how a diplomate should respond (eg, “What is the most likely diagnosis?”).
- Questions should be written in the past tense.
- True/False test questions are not permitted (eg, “Which statement regarding X is true?”).
- Do not use personal phrases or pronouns within stems/lead-ins (eg, “You are asked…” or “In your lab…”).
- The inclusion of age and gender in the stems is at the Item Writer’s discretion. If gender is included, it should still be written as male/female, not man/woman. A patient’s race should only be included if medically necessary; otherwise, it should be excluded.
- Place terms or phrases common to all answer choices in the lead-in (eg, if options A through E all have “the” as the first word, place “the” in the lead-in instead of at the beginning of each answer choice).
- Do not use “All of the above” or “None of the above” as an answer choice.
- Each item should have three to five choices with one correct answer (the key) and two to four incorrect options (distractors).
- Begin each answer choice using lowercase unless the option is an independent sentence or begins with a proper name.
- An answer choice should only end with a period when it is a complete sentence.
- An excellent question is one in which the answers can be covered up and the question can still be answered.

➢ Principle Five: No Technical Flaws in Test Items and/or Clues Benefitting Test-Wise Diplomates for Answering Items.

- Stems should not teach or include information that can clue a correct answer for another test item.
- Ensure that grammatical rules required for the stem or lead-in do not inadvertently function as a clue for the key.
- Answer choices will not be easily grouped (eg, four benign diagnoses and one malignant diagnosis).

➢ Principle Six: Stems, Lead-ins, and Answer Choices Must be Clearly Interpretable.

- Stems, lead-ins, and answer choices should be positive statements. Do not use “no,” “not,” “least,” “incorrect,” etc. (eg, “Which laboratory test would not be affected by rivaroxaban therapy?”).
- Do not use “All of the following except...”. The use of “except” in a question and negative lead-ins are not permitted. Do not use absolutes (“All,” “None,” “Always,” or “Never”).
- Stems, lead-ins, and answer choices should be succinct and should not contain unnecessary information.
- Short stems, lead-ins, and answer choices with basic information are best.
- Each stem should express a complete thought.
- State a single, clearly formulated problem as a question (eg, “What is the best treatment for a patient with mild von Willebrand disease undergoing minor surgery?”).
- Avoid the use of imprecise terms (eg, “may,” “often,” and “frequently”).

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• An ideal question is one that diplomates with mastery-level knowledge and skill can answer correctly without looking at the answer choices.
• Always provide reference ranges when units of measure or laboratory values are used. Present data in a table if it makes a question easier to read.
• Titers should be expressed as the reciprocal without the 1: - that is, 32, not 1:32. Dilutions and ratios, however, are expressed as 1: __.
• Only use well-known abbreviations and acronyms that have been accepted by the TDACs. A list of acceptable abbreviations and acronyms can be found here. Otherwise, place abbreviations and acronyms in parentheses after the spelled-out term. Thereafter, the abbreviation or acronym may be used to substitute for the spelled-out word in the text.
• Do not use the possessive case with eponymic terms (e.g., Down syndrome). Use generic terms instead of eponymic terms whenever possible.

➢ Principle Seven: Each Test Item Has a Single Correct Answer.
• All questions must include three to five answer choices, with a single correct answer.

➢ Principle Eight: Key Learning Objectives (KLOs) Add Value for Diplomates’ Learning and Mastery of Content.
• Each question’s KLO is generally a brief phrase or sentence that summarizes the “take-away knowledge” diplomates should possess after answering the question and reading the critique (e.g., “Diagnosis of pancreatic adenocarcinoma.”). A period should follow every KLO.
• KLOs should direct diplomates who incorrectly answer test questions to the topics that will improve their knowledge and reinforce the knowledge of diplomates who answer correctly.

Item Quality Checklist and Review of Items

☐ Principle One: The Critique Helps to Guide Item Writing, and Critiques and References Are Provided in the Appropriate Format.
☐ Principle Two: The Item Tests the Application of Knowledge Based on Cases/Scenarios Encountered in Practice, Not Simple Recall of Facts; Items Avoid Subjective or Controversial Topics.
☐ Principle Three: The Item and its Answer Choices Are Homogeneous and Test a Single Dimension.
☐ Principle Four: Stems and Answer Choices Are Properly Formatted.
☐ Principle Five: No Technical Flaws and/or Clues Benefitting Test-Wise Diplomates for Answering Items.
☐ Principle Six: Stems, lead-ins, and Answer Choices Are Clearly Interpretable.
☐ Principle Seven: Each Test Item Has a Single Correct Answer.
☐ Principle Eight: Key Learning Objectives (KLOs) Add Value for Diplomates’ Learning and Mastery of Content.

Requirements for Images

There are requirements that Item Writers must follow to submit images included with their questions. Each image associated with a test question should be saved and uploaded as a JPG file. Images should be high resolution and 5000 × 5000 pixels or less. A maximum of 10 images may be attached per item.
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Appendix

This section demonstrates a test question with several flaws. First, read the flawed item and try to identify the errors. Then read how to achieve the Eight Principles of Item Quality by correcting each flaw.

Example of a Flawed Test Question

Question
An unconscious girl of an overly strict religious family had a ruptured spleen after a motor vehicle crash. Her hemoglobin was 5 g/dL and she was in hemorrhagic shock. Considering adherence to their religion as more important, unfortunately, her parents refused consent to use of blood products on religious grounds. What is the most appropriate next step?

A. Transfuse allogeneic blood products, strictly following all hospital protocols.*
B. Wait for a court order that can be provided in three business days that approves transfusion.
C. Obtain an ethics service consultation.
D. Treat without the use of blood products.
E. Transfuse packed red blood cells.*

*Correct answer

Critique
A child in hemorrhagic shock with high-volume blood loss is at high risk for death unless transfused emergently. The physician must consider the ethical principles of autonomy and beneficence, the patient’s best interest standard, and the rights of parents and children in medical decision-making.

Key Learning Objective
Life-saving treatment of a critically injured or ill minor child vs parents’ religious objection.

How to Improve the Example of the Flawed Test Question

➢ How to achieve Principle One: Critiques Should Guide Item Writing, and Critiques and References Are Provided in the Appropriate Format.

There are no concise explanations why the distractors are incorrect answers in the flawed version of the item. Providing such explanations would improve the critique. In addition, no reference is provided.

➢ How to achieve Principle Two: Test Questions Test the Application of Knowledge Based on Cases/Scenarios Encountered in Practice, Not Simple Recall of Facts; Items Avoid Subjective or Controversial Topics.

Item Writers should avoid controversial topics for test questions. Editing the question stem so that it has no content that could be construed as being controversial and disparaging would improve the item.

➢ How to achieve Principle Three: Each Item and Its Answer Choices Are Homogeneous, Testing a Single Dimension.

No information about Practice Areas and Category Codes is provided for the question. Assign test questions to the correct Practice Areas and to the correct Category Codes.
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➢ How to achieve Principle Four: Use Proper Formatting for Stems and Answer Choices.
The test question incorrectly references gender by including the word “girl.” The item is a patient-based question that does not indicate the patient’s age. Properly referencing gender and indicating the patient’s age would improve the item.

➢ How to achieve Principle Five: No Technical Flaws in Test Items and/or Clues Benefitting Test-Wise Diplomates for Answering Items.
Waiting for a court order to come in three business days could take too long. Edit distractor B to make it a plausible correct answer by diplomates with less knowledge and skill.

➢ How to achieve Principle Six: Stems and Answer Choices Must Be Clearly Interpretable.
Stems and answer choices should be succinct and should not contain unnecessary information. Edit answer choice A to make it as succinct as possible.

➢ How to achieve Principle Seven: Each Test Item Has a Single Correct Answer.
Among the answer choices, both options A and E are correct. Edit the question to include a single correct option only. The edit can be made by either removing one of the correct answer choices, leaving only four options remaining, or editing one of the two correct answer choices so that it would function as a distractor.

➢ How to achieve Principle Eight: Key Learning Objectives (KLOs) Add Value for Diplomates’ Learning and Mastery of Content.
KLOs are specific, succinctly written, and generally a single phrase or sentence. Edit the statement of the KLO so that it is a succinct sentence or phrase that adds value to diplomates’ learning.

Improved Example Test Question

Making necessary improvements leads to higher-quality test questions that are fair. High-quality test questions lead to better data of diplomates’ responses, improve the validity of the test question for measuring diplomates’ levels of knowledge and skill, and consider the various cultural and religious backgrounds of diplomates. See the improved item below.

Question
An unconscious 6-year-old female had a ruptured spleen after a motor vehicle crash. Her hemoglobin was 5 g/dL and she was in hemorrhagic shock. Her parents refused consent for the use of blood products on religious grounds. What is the most appropriate next step?

A. Transfuse allogeneic blood products.*
B. Wait for a court order to approve transfusion.
C. Obtain an ethics service consultation.
D. Treat without the use of blood products.

*Correct answer
Critique
A child in hemorrhagic shock with high-volume blood loss is at high risk for death unless transfused emergently. Waiting for a court order or an ethics consultation would not be timely enough to save the child’s life. The use of colloids or crystalloids would not correct the severe, life-threatening anemia. Because of the patient’s age and condition, she cannot give autonomous consent; however, the child’s welfare takes precedence over parental autonomy. The physician must consider the ethical principles of autonomy and beneficence, the patient’s best interest standard, and the rights of parents and children in medical decision-making.

Key Learning Objective
A minor child’s health and future autonomy should be protected over the parents’ religious objections.

Reference