

# ABPath CertLink®

## Item Writer's Guide



## *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® Crowdsourcing Item Writing Guide

## Overview

This guide will provide ABPath CertLink (ABPCL) Crowdsourcing Item Writers with general instructions for writing 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

There are key item quality principles that Item Writers should always strive to achieve. The following section, *Guidelines to Achieve Item Quality Principles*, provides comprehensive guidelines that can be followed to achieve each of 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.

- **Principle One**: Critiques help 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 response options are homogenous, testing a single dimension.
- **Principle Four**: Stems, lead-ins, and response options 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 response options must be clearly interpretable.
- **Principle Seven**: Each test item has a single correct answer.
- **Principle Eight**: Key learning objectives add value for diplomates' learning and mastery of content.

## Guidelines to Achieve Item Quality Principles

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

- Stem, lead-in, and response options
- Optional image file(s) (no more than ten)
- Critique (ie, the supporting information for the question; explanation why the key is the single correct answer and why distractors are incorrect answers)
- Key learning objective
- Reference(s), which should be the PubMed ID, DOI name, http links, or ISBN for text books
- 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.
- The critique explains why the key is the single correct answer and why the distractors are incorrect answers.
- The critique should include any related or secondary information that must be known to answer the questions correctly.
- The critique should be written first, and the rest of the item developed from it.
- The critique offers useful feedback and enhances learning.
- Critiques should be concisely written; and not include long, detailed explanations of basic science concepts or topics, unless it is important for pathologists to know.
- First, write the instructional narrative for the topic (critique). Then write questions about the topic, which could be answered correctly after reading the critique.
- ABPCL Item Writers are permitted to modify critiques to produce additional critiques, and write additional questions associated with their additional critiques.
- References should be the PubMed ID or a 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 PMID or DOI are not available, references must include the name of the author(s), year of publication, title of publication, published source such as a journal or book, volume or edition number, 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 that are relevant for 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 Response Options are Homogenous, Testing a Single Dimension.***

- Each question measures a single topic; response options must be logical and homogenous (eg, all diagnoses, all IHC stains, all laboratory test results, all clinical associations, etc.).

## ➤ ***Principle Four: Stems and Response Options are Properly Formatted.***

- Test items have longer stems and shorter response options.
- Response options should be organized logically, in alphabetical or numerical order, approximately the same length, and grammatically similar.
- Response options must flow from the stem and lead-in in content and grammar, independent of the other responses.
- The “lead-in” must be a complete sentence ending in a question mark which clearly indicates how a diplomate should respond. (eg, “What is the most likely diagnosis?”)

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- Questions should be written in past tense.
- True/False test questions are not permitted. (“Which statement regarding X is true?”)
- Do not use personal phrases or pronouns such as, “You are asked...” or “In your lab...” within stems/lead-ins.
- When referring to gender, use male/female.
- Age, gender, and brief clinical history are required for patient-based questions.
- Place terms or phrases that are common to all response options 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 response option.
- Do not use “All of the above” or “None of the above” as a response option.
- Each item should have 3-5 responses with one correct answer (the key) and 2-4 incorrect options (distractors).
- Begin each response option using lower case, unless the option is an independent sentence or begins with a proper name.
- Each response option ends with a period.
- An excellent question is one in which the responses 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 correct response.
- Response options will not be easily grouped, eg, four benign diagnoses and one malignant diagnosis.

## ➤ ***Principle Six: Stems, Lead-ins, and Response Options Must be Clearly Interpretable.***

- Stems, lead-ins, and response options should be positive statements (ie, do not use no, not, least, incorrect, etc.). Do not use “All of the following except.” Do not use absolutes such as “All,” “None,” “Always,” or “Never.” The use of “except” in a question and negative stems/lead-ins are not permitted.
- Stems, lead-ins, and response options should be succinct and not contain unnecessary information.
- Short stems, lead-ins, and response options 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 mild von Willebrand Disease patient undergoing minor surgery?”.
- Avoid the use of imprecise terms, such as “may,” “often,” and “frequently.”
- An ideal question is one that diplomates with mastery-level knowledge and skill can answer correctly without looking at the response options.
- Always provide reference intervals 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: \_\_.

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- 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, ie, 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 response options, with a single correct answer.

### ➤ **Principle Eight: Key Learning Objectives Add Value for Diplomates' Learning and Mastery of Content.**

- Each question's key learning objective is generally a brief phrase or sentence that summarizes the "take-away knowledge" diplomates should possess after answering the question and reading the critique, eg, "Diagnosis of pancreatic adenocarcinoma."
- Key learning objectives should direct diplomates who incorrectly answer test questions to the topics that will improve their knowledge, as well as reinforce the knowledge of diplomates who answer correctly.

## Clone Test Questions

The purpose of clones is to have questions to present later if the original is answered incorrectly the first time. They are used to determine if the knowledge gained from reading the critique is retained. Clones of the original items (ie, parent items) will be delivered periodically during the longitudinal assessment. Clones can be created by modifying one or more aspects of the parent item without changing the original purpose and key learning objective; and can be as simple as changing the age, gender, and clinical scenario in the stem; or changing the distractors. Clone test questions should be able to be answered correctly after reading the original critique.

Every critique should have at least one parent item, and each parent item should have one or more clones. Supporting justification should provide clear and comprehensive explanations as to why the correct answers are correct, and why the distractors are incorrect.

## Item Quality Checklist and Review of Items

- Principle One: The critique helps to guide item writing and is in the appropriate format along with the references.
- 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 responses are homogenous & test a single dimension.
- Principle Four: The stem, lead-in, and responses are properly formatted.

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- Principle Five: The item has no technical flaws, and/or clues benefitting test-wise diplomates for answering correctly.
- Principle Six: The item stem, lead-in, and response options are clearly interpretable.
- Principle Seven: The test item has a single correct answer.
- Principle Eight: The key learning objective adds value for diplomates' learning and mastery of content.

## Requirements for Images

There are requirements that Item Writers must follow to correctly submit images that are included with their questions. Each image that is associated with a test question should be saved and uploaded as a JPG file. Images should be high resolution and 1500 × 1500 pixels or less. A maximum of ten images may be attached per item.

## Appendix A

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 Flawed Test Question***

#### Question

*An unconscious girl of an overly strict religious family had a ruptured spleen following a motor vehicle accident. Her hemoglobin was 5 g/dL and she was in hemorrhagic shock. Considering adherence to their religion as being more important, unfortunately, her parents refused consent for 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 3 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

*A minor child's health and future autonomy should be protected over the religious objections of parents. Treat the patient quickly, or she will die.*

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## *How to Improve the Example 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. 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 response options are homogenous, 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. Assign test questions to the correct Category Codes.
- How to achieve **Principle Four**: *Use Proper Formatting for Stems and Response Options.*
  - The test question makes incorrect reference to gender by including the word “girl.” The item is a patient-based question that does not indicate the age of the patient. 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 3 business days could take too long. Edit distractor B. so it would be a plausible correct answer by diplomates with less knowledge and skill.
- How to achieve **Principle Six**: *Stems and Response Options Must be Clearly Interpretable.*
  - Stems and response options should be succinct and not contain unnecessary information. Edit response option A to make it as succinct as possible.
- How to achieve **Principle Seven**: *Each Test Item Has a Single Correct Answer.*
  - Among the response options, both options A and E are correct. Edit the question to include a single correct option only. The edit can be made by either dropping one of the correct response options, leaving only four options remaining, or editing one of the two correct response options so that it would function as a distractor.
- How to achieve **Principle Eight**: *Key Learning Objectives Add Value for Diplomates’ Learning and Mastery of Content.*

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- Key learning objectives are to be specific, succinctly written, and generally a single sentence. Edit the statement of the key learning objective so that it is a succinct sentence that adds value to diplomates' learning.

### *Improved Example Test Question*

Making the necessary improvements will lead to a higher quality test question, which will (1) help lead to better data of diplomates' responses to the question and improve the validity of the test question for measuring diplomates' levels of knowledge and skill; and (2) ensure diplomates from various cultural and religious backgrounds, and with other differences in their personal preferences, deem the test question as being fair. See the improved item below.

#### Question

*An unconscious 6-year-old female had a ruptured spleen following a motor vehicle accident. Her hemoglobin was 5 g/dL and she was in hemorrhagic shock. Her parents refused consent for 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. Use of colloids or crystalloids would not correct the severe, life-threatening anemia. Because of the patient's age and condition, she is unable to 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 religious objections of parents.*

#### Reference

*John Doe, M.D., J Med Ethics, Vol 89, p. 21-29, 2015.*