



Guide to Writing and Evaluating Multiple-choice Test Items

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American Board of Facial Plastic and Reconstructive Surgery, Inc[®]
115C South St. Asaph Street • Alexandria, VA 22314

(703) 549-3223 • Fax: (703) 549-3357
Examiner-guide@abfprs.org • www.abfprs.org

ABFPRS Guide to Writing and Evaluating Multiple-choice Test Items

Please return new test questions directly to:

THE AMERICAN BOARD OF FACIAL PLASTIC AND RECONSTRUCTIVE SURGERY INC.®

115C South St. Asaph Street, Alexandria, VA 22314

(703) 549-3223; Fax: (703) 549-3357; e-mail: tshill@abfprs.org

■ INTRODUCTION

Each year, the American Board of Facial Plastic and Reconstructive Surgery conducts an examination of candidates for certification by the ABFPRS and of Fellows of the Educational and Research Foundation for the American Academy of Facial Plastic and Reconstructive Surgery (Foundation).

New items are needed for the examination every year, so that the questions asked reflect knowledge in the field. This *Guide* is a reference to use as you develop and review items for the Board written examination.

■ ITEM CLASSIFICATION SYSTEM

The ABFPRS Item Classification Guide on page 6 summarizes the categories of knowledge that have been deemed important for a facial plastic and reconstructive surgeon. The classification guide is the foundation for the test. The items that you write will fit one or more of the categories of knowledge described. Field testing will determine whether the item has a satisfactory statistical performance. If it does, the item will become part of the item pool.

■ MULTIPLE-CHOICE ITEMS

All items are multiple choice. The multiple-choice examination is an ideal way to measure knowledge, because it permits a broad sampling of many categories, and is generally associated with highly reliable test scores. It is important to note, however, that the Board examination measures knowledge, not skill. To assess the skill of a facial plastic and reconstructive surgeon, we would need to see him or her perform surgery or evaluate the results of that surgery. The Board has methods to evaluate skill, but a multiple-choice test is not suitable for this purpose.

■ ITEM CONTENT

Developing items, even with the *Guide*, is a challenging task. Item writers sometimes limit themselves to asking about very basic facts. Such questions are easy to write. Often, they are also easy to answer. Candidates merely recall what they have read. Item writers who try to avoid this trap sometimes fall into another one—writing items that test trivial or esoteric information that is not really important for competent practice.

Items should address the substantive concepts and principles of facial plastic and reconstructive surgery and test knowledge of important conditions, complications, and procedures. Many items are based on the *Curriculum Compendium*, a loose-leaf collection of the journal articles

published by the Foundation for its fellowship training program. Others are based on the general literature in the specialty. A good approach to writing items based on articles from either source is to consider them in light of your own practice, the situations you have encountered, common errors and misconceptions you have noticed, and questions you have been asked by residents, fellows, and colleagues. Remember that the topic must be important enough so that knowledgeable practitioners and graduate fellows should be familiar with it. There should be no controversy about how the question could best be answered.

■ ITEM FORMAT

The terms that the Board uses for the anatomy of multiple-choice items follow.

STEM	A description of the problem to be solved or the nature of the task to be done.
CORRECT ANSWER	The one answer that clearly is the only correct answer.
DISTRACTOR	One of two or three incorrect options, or an answer that is not the best.

A stem may ask a question that the options answer, as in the following example.

What is measured by Snellen's test?

- A. Near vision
- B. Distance vision
- C. Color vision

A stem also may begin a sentence that is completed by the options.

Snellen's test measures:

- A. near vision.
- B. distance vision.
- C. color vision.

Either of these formats is acceptable. It is NOT acceptable to use an item such as the one below, which requires the examinee to choose more than one of the options as correct. These complex multiple-choice items are generally difficult for examinees, but they do not discriminate well between well-prepared examinees and those less prepared. Such items also require excessive reading time.

The Delphian lymph node receives lymphatic drainage from the:

- I. upper, anterior lobes of the thyroid gland.
- II. thyroid isthmus.
- III. maxillary sinus.

- A. I and II only
- B. II and III only
- C. I and III only

Items that have negative words are also unacceptable. Such items generally include a NOT or an EXCEPT in the stem, as in “In a rhinoplasty, the facial plastic surgeon should NOT perform:” or “Recommended management includes all of the following EXCEPT:”.

■ INTELLECTUAL COMPLEXITY OF ITEMS

Different items require different levels of intellectual activity. In recognition of this, the Board uses three categories for classifying items.

Recall is the simplest task. The examinee must merely remember a fact that has appeared in a textbook or that has been learned by rote repetition. No understanding is involved. It is possible to answer items based on recall by memorizing words.

Rhinophyma is most commonly associated with:

- A. telangiectasia.
- B. acanthosis.
- C. sebaceous hyperplasia.

Interpretation requires the examinee to apply knowledge. Often, a visual is provided and the examinee is asked to decide what the visual suggests, or what other findings might be associated. Laboratory findings, clinical descriptions, and surgical results also can be interpreted.

An infant is delivered with forceps after a difficult, prolonged labor. Facial nerve testing for the next three days elicits no response on the right side of the face. The facial plastic surgeon should suspect that:

- A. the facial nerve is congenitally absent.
- B. there is a hematoma in the facial muscles.
- C. microtia and abnormalities of the temporal bone will be associated.
- D. there was prolonged facial nerve compression in the birth canal.

Problem-solving is the most intellectually complex activity. The examinee must recollect what he or she knows, interpret a set of circumstances, and choose an appropriate action.

Two weeks after undergoing a rhinoplasty involving tip revision, reduction of the dorsal hump, and medial and lateral osteotomies, a 39-year-old white woman has unilateral epiphora. The facial plastic surgeon should:

- A. explore the nasolacrimal sac.
- B. irrigate the nasolacrimal duct system.
- C. perform a dacryocystorhinostomy.
- D. reassure the patient that the epiphora is likely to resolve within a few weeks.

As you write, you may try to follow the natural progression from recall to interpretation to problem-solving. If you begin by just recollecting facts, move to asking why these facts are significant, and how they are applied in practice. Finally, try to think of what difficulty these facts might cause, or how they could be used to solve a difficulty.

■ TIPS FOR WRITING GOOD ITEMS

The Stem. The problems with stems generally fall into one of two categories: too few words or too many words. A good stem gives all the information necessary to answer a question or complete a statement, and gives no extraneous information. If the stem has been well-written, an examinee knows the correct answer without looking at the options.

Stems of too few words do not focus the examinee’s thought. They often consist of a single word, such as “Rhinoplasty:” and are followed by options that scatter in all directions. Item writers sometimes try to flesh out a stem by writing, “Which of the following statements about rhinoplasty is true?” Such a stem also has too few words, because it does not describe the actual question.

Stems of too many words also lack focus. Consider the following:

A 42-year-old computer programmer has consulted several physicians about his nose, which he considers too large. Because he travels extensively for his job, he has never been able to schedule surgery at a convenient time, but he now is on a six-month assignment to the Midwest. He requests that his nose be reshaped “something like Robert Redford’s.” Which of the following statements about rhinoplasty is true?

None of the information given relates to the closing, unfocused question. Remember, in most cases, an examinee should be able to give the correct answer without looking at the options provided. This is possible only if the stem has been properly written.

The Correct Answer. There should be no dispute about the correct answer. There should be only one correct answer among those provided, or, if you are asking for a best answer, a single option clearly should be best. You should provide a reference supporting the response as correct. The correct answer should be the same length as the other options and very similar to them in focus and degree of qualification. Using more detail in the correct answer than in the other options often signals less knowledgeable examinees about what the right answer is.

The Distractors. The distractors should be indistinguishable from the key in every respect—except in being the correct answer. The distractors should be attractive to people who are guessing what the right answer should be.

One good method of writing distractors is to think of a common error or misconception, or of an answer that might be correct if the circumstances were different. It is important that the language be just as technical as that used for the key. Remember, though, that distractors should not be humorous, and that they should not be composed of made-up terms.

Although distractors should be as parallel as possible, they should not overlap. This is often a problem with items that ask for numerical responses.

The flap should be rotated how many degrees?

- A. 90 to 100
- B. 95 to 100
- C. 115 to 140
- D. 130 to 150

Words such as “never” and “always” have little place in medicine, and examinees know it. Putting such words in a distractor lets many less knowledgeable examinees eliminate that distractor from serious consideration.

“None of the above” and “all of the above” are not acceptable distractors.

Identify the Intellectual Complexity. All items need to be classified according to the intellectual task that they will most likely require. To some extent, you will be guessing about the approach an examinee will take. Some examinees will have encountered precisely the situation described and will merely have to remember what the correct action was.

Some will be able to arrive at the right answer through interpretation. Some will have to use interpretation to solve the problem. It is best to classify an item at the highest defensible level of intellectual complexity.

Classify the Item. Use the Item Classification Guide on the back cover to complete the blanks. Items that are not classified cannot be used, so this step is vital.

■ ITEM SHELLS

An item shell is like the external skeleton of an item. It has no content, but it does provide an item form that can be filled in with appropriate words. Some examples follow to help you overcome the “item writer’s block” that can strike as you try to develop good questions. The examples have been derived from items that performed well. To use the shells, choose those that fit your topic and use them as stimuli for your thought.

Defining Behavior

- What is characteristic of ... (problem, condition, disease)?
- What is a distinguishing symptom of ... ?
- What is an example of ... ?
- What is the correct definition of ... ?
- What best defines ... ?

Predicting Behavior

- (Medical history given.) What is the cause of these symptoms?
- What is the consequence of ... (procedure, treatment, medication)?
- What complication is associated with ... (procedure, treatment, medication)?
- If ... (procedure) is performed, what will result? What happens when ... ?

Evaluating Behavior

- What is the most common cause of ... ?
- What is the most effective treatment of ... ?
- What procedure is most effective for ... ?
- What is the optimal management of ... ?
- What is the most common complication of ... ?
- What is the most important factor contributing to ... ?

Problem-solving

- (Information about patient is given.) What additional information is needed for diagnosis?
- (Information about patient is given.) What is the diagnosis?
- (Medical history is given.) What is the appropriate treatment?
- (Symptoms are described.) What is causing these symptoms?
- (Procedure is described.) What should the facial plastic surgeon do next?
- (Information about patient is given.) Why should the facial plastic surgeon administer (medication)?
- (Information about patient is given.) What should the facial plastic surgeon do next?

■ ITEM SETS

Item sets appear to be the best way that a written multiple-choice examination can measure interpretation and problem-solving activities. In item sets, the examinee is given a description of a patient or a situation. A series of 3 to 10 questions about managing the patient follows.

It is important that the items be independent. Knowing the answer to one question should not depend on knowing the answer to another. Properly constructed, however, item sets can allow an examinee to use several intellectual activities in processing information, and can elicit the same kind of in-depth measurement as oral examination protocols and patient management problems.

The stems of several item sets follow to exemplify the construction of item sets. To proceed, you would need to identify a situation with several associated questions and use questioning strategies—possibly including item shells—that treated the problem from beginning to end.

Item Set #1

Three months after undergoing a rhytidectomy, a 50-year-old Chinese American woman complains about a preauricular scar. Physical examination reveals that the patient is hypertensive and has a keloid.

- What is the cause of the keloid?
- What complications may arise?
- What impact does the hypertension have on treatment?
- What further information is needed?
- What is appropriate treatment?
- What follow-up is necessary?

Item Set #2

Four days after undergoing a chemical peel involving the maskless technique, a patient has an odorous crusting over the entire face.

- What is this problem called?
- What is the cause of this condition? or How could this condition have been avoided?
- What is the primary advantage of the maskless technique?
- What is the primary disadvantage of the maskless technique?
- What associated findings would be expected?
- If the patient is not treated, what will happen?
- What should management consist of?

Item Set #3

Eight days after undergoing a full-face dermabrasion as treatment of severe acne, a 25-year-old woman develops painful, scattered vesicles over the dermabraded areas.

- What is the cause of this complication?
- What is the treatment of this complication?
- What findings would be associated?
- What tests should be performed?
- If the condition is not treated, what will result?

■ REVIEWING ITEMS

After you have written an item, you should review it to make sure that you have included all of the important information, deleted all of the unimportant information, and followed the item-writing suggestions in this *Guide*. Whether you are reviewing your own item or an item written by someone else, the process is identical. You should:

1. Read the item as a content expert. Is the question important? Is the question focused? Is the information accurate?
2. Read the item as an examinee. Is the intent of the item clear? Are there internal clues as to what the correct answer is?
3. Verify that the answer is correct or that it is the best answer listed.
4. Make sure that the distractors are plausible and that all options are fairly parallel.
5. Review the key word or phrase for accuracy.
6. Make sure that the item is classified completely.

Each of these steps is important. Items that are not well written are not likely to perform well or to yield meaningful information about performance. Review, therefore, is an essential part of item development.

■ USING PATIENT PHOTOGRAPHS

Any photographs provided for use on the ABFPRS examination must be accompanied by a patient photo release form. This guide contains two models, both of which comply with the requirements of the Health Insurance Portability and Accountability Act of 1996 (HIPAA). The first allows the patient to select the uses for which he/she provides permission. The second authorizes general release of photos for myriad purposes. These model releases are provided as a service, and the ABFPRS recognizes that your own release may adequately cover use of photos in exam materials. It is recommended that you have your attorney review the release you submit with photos for the ABFPRS examination to assure your compliance with HIPAA.

A Handy Summary of Multiple-choice, Item-writing Rules

CONTENT CONCERNS

1. Base each item on something important for the surgeon to learn. Avoid trivial content.
2. Emphasize higher-level thinking at the expense of recall.
3. Avoid overly specific and overly general knowledge.
4. Focus each item on a single mental behavior instead of a complex chain of behaviors.
5. Avoid cuing the surgeon to a right answer to another item.
6. Avoid opinion-based items.
7. Avoid trick items.

FORMAT CONCERNS

8. Identify a format presentation style and follow it consistently.
9. Use the question format instead of the completion format.
10. Use the best-answer format when you can.
11. Avoid the true-false and the complex multiple-choice formats.
12. Format the item vertically instead of horizontally.

STYLE CONCERNS

13. Edit and proofread all items.
14. Keep vocabulary simple for the group being tested.
15. Use correct grammar, correct punctuation, capitalization, and spelling.
16. Minimize the amount of reading in each item.

WRITING THE STEM

17. Ensure that the directions to the surgeon in the stem are very clear. The surgeon should know exactly what is being asked.

18. Include the central idea in the stem instead of the choices.
19. Avoid window dressing (excessive verbiage).
20. Word the stem positively; avoid negatives like NOT or EXCEPT.
21. Avoid blanks in the stems.
22. Avoid unfocused stem.

WRITING THE CHOICES

23. Use as many good choices as possible. Generally, three seems to be about as many as we can write.
24. Make sure that only one of these choices is the right answer.
25. Vary the position of the right answer so that no one position usually has the right answer.
26. Place choices in logical or numerical order.
27. Keep choices independent; choices should not be overlapping.
28. Keep choices homogeneous in content and grammatical structure.
29. Keep the length of choices about equal.
30. Avoid using the choice none-of-the-above or all-of-the-above.
31. Avoid the choice I don't know.
32. Phrase choices positively; avoid negatives like NOT.
33. Avoid giving clues to the right answer.
34. Avoid repetitious wording in the options.
35. Make all distractors plausible.
36. Use typical errors of students to write your distractors.
37. Use a correct but irrelevant statement as a distractor.
38. Avoid humorous choices.

Item Classification System

I. Basic Sciences

II. Diseases and Disorders

A. Congenital

1. Genetic
2. Non-genetic (Familial)

B. Acquired

1. Degenerative
2. Developmental
3. Iatrogenic/Complications
4. Idiopathic
5. Infectious
6. Inflammatory
7. Metabolic/Endocrine
8. Neoplastic Benign
9. Neoplastic Malignant
10. Psychogenic
11. Traumatic
12. Vascular
13. Other

III. Management of Diseases and Disorders

A. Medical Management

1. Complications
2. Diagnosis/Assessment (hematology, Radiology, Special Tests)
3. Disease Prevention
4. Emergencies
5. Medico-legal
6. Office/Ambulatory
7. Psychology/Psychiatry
8. Rehabilitation
9. Treatment - Pre-operative
10. Treatment - Intra-operative
11. Treatment - Post-operative
12. Treatment-Non-operative
13. Other

B. Reconstructive Surgery

1. Complications
2. Congenital Defects
3. Emergencies
4. Laser
5. Neoplasia/ Ablation
6. Orthognathic/Dental
7. Scar Revision
8. Septal/Sinus Surgery
9. Skeletal/Maxillofacial/ Craniofacial
10. Soft Tissue - 10,20, Mohs
11. Soft Tissue - Grafts
12. Soft Tissue - Flaps
13. Soft Tissue Techniques
14. Trauma - Soft Tissue
15. Trauma - Skeletal
16. Other

C. Cosmetic Surgery

1. Blepharoplasty
2. Chemical Peel/Skin Exfoliation
3. Complications
4. Dermabrasion
5. Direct Brow Lift
6. Emergencies
7. Forehead Lift
8. Filling Agents/Implants
9. Hair Replacement
10. Laser
11. Liposuction/Lipoaugmentation
12. Malar/Submalar Augmentation
13. Otoplasty
14. Rhinoplasty
15. Rhytidectomy
16. Skeletal Augmentation
17. Other

IV. TAXONOMY

- A. Recall
- B. Interpretation
- C. Problem-solving

SAMPLE 1: Authorization for Release and Use of Photographs for Peer Review

The undersigned, _____, is a patient of _____, M.D., (“the treating physician”) and has been or will be photographed during the course of treatment. (By the term “photographs,” this form also includes digital images.) Those photographs will become part of the medical record in the patient chart. Under the Health Insurance Portability and Accounting Act of 1996 (HIPAA), those photographs may be supplied as part of the medical records to medical specialty boards and hospital medical staffs reviewing the treating physician’s credentials under a “Business Associate Contract” prescribed by HIPAA. In addition, the undersigned grants to the treating physician the on-going and unrestricted right to use those photographs (but not the patient’s name) in the following way (check all applicable):

- Use by medical specialty board in formulating its examination of applicant physicians
- Medical research, education, or science
- Professional medical journals, videos, or books
- Patient education purposes, including the treating physician’s procedural and general information brochures and photo book for prospective patient viewing
- Slides, computer images, website and televisions media providing information about physician’s practice to the interested public (including public relations)

The undersigned acknowledges that the persons to whom the photographs may be disclosed for above stated purposes include other practicing physicians, medical students, health care providers, credentialing organizations (such as the American Board of Facial Plastic and Reconstructive Surgery), and their staffs. Prospective patients and the public may, under some of the above alternatives, also view the photographs. Under HIPAA, if the organization or person authorized to receive the photographs is not a health plan or health care provider, the released information may not be covered by HIPAA’s protections from further disclosures or use by federal privacy regulations.

This authorization may only be revoked in writing, signed by the undersigned and delivered to the physician at treating physician’s address below. Such revocation shall thereafter be effective as to any further use not already committed to by the physician. Unless earlier revoked, this authorization will expire on the end of the treating physician’s practice of facial and reconstructive surgery, except there will be no expiration for the purpose of medical or scientific research or use in specialty-board examinations. Revocation will not affect uses and disclosures made before receipt of the revocation. This authorization is in consideration of services performed and consultations conducted or to be performed or conducted by the physician, and there have been no representations or inducements concerning this authorization except as set forth herein. The treating physician will not condition treatment on whether the individual signs this authorization. The undersigned may see and copy any photographs described on this form upon request and may receive a photocopy of this Authorization form upon request.

Signed: _____

Dated: _____

Patient

Witnessed: _____

Authorization by Parent or Guardian

I am the parent or guardian of _____, a minor. I am authorized to sign this authorization on his/her behalf, and I agree on my own behalf and his/her behalf to the terms of the foregoing authorization.

Parent/Guardian

Date

Treating physician's address:

SAMPLE 2: Authorization for Release and Use of Photographs

The undersigned, (please print) _____, is a patient of (please print) _____, M.D., ("the treating physician") and has been or will be photographed during the course of treatment. The undersigned grants to the treating physician and to the American Academy of Facial Plastic and Reconstructive Surgery and to the Educational and Research Foundation for the American Academy of Facial Plastic and Reconstructive Surgery the on-going and unrestricted right to use those photographs for general information, education, scientific, medical and public relations purposes and to permit others to use them for those purposes.

The undersigned further acknowledges that he/she relinquishes all right, title, and interest in these photographs, or any right to profit or gain directly or indirectly realized through the use of the photographs. The persons to whom disclosure may be made include physicians, medical students, patients and prospective patients, examining boards, medical and other periodicals, medical editors, insurers (if any), outside firms, the staff of the Academy and the Foundation, readers of medical literature and the general public.

This authorization may only be revoked in writing, signed by the undersigned and delivered to the physician and to the American Academy of Facial Plastic and Reconstructive Surgery at its office in Alexandria, Virginia. Such revocation shall thereafter be effective as to any further use not already committed to by the physician or the Academy or the Educational and Research Foundation. Unless earlier revoked, this authorization will expire on the end of the treating physician's practice of facial and reconstructive surgery, except there will be no expiration for the purpose of medical or scientific research. Revocation will not affect uses and disclosures made before receipt of the revocation. If the photographs are disclosed, there is obviously potential for redisclosure some of which would not be subject to this authorization. This authorization is in consideration of services performed and consultations conducted or to be performed or conducted by the physician, and there have been no representations or inducements concerning this authorization except as set forth herein. The treating physician will not condition treatment on whether the individual signs this authorization, but, if any portion of the treating physician's services is to be covered under any insurance or third-party-payment plan, the signing individual will be responsible for authorizing release as required by that insurance or third-party-payment plan.

Signed

(Patient)

Date

Witnessed

New Item Form—Use for Independent Items

Your name: _____ Date: _____

Instructions. Before completing this form, please read the *Guide to Writing and Evaluating Multiple-choice Test Items*. Then write one or more items based on an article, using a separate form for each item. *Return forms with the article referenced to ABFPRS, 115C South St. Asaph Street, Alexandria, VA 22314, (703) 549-3223; Fax: (703) 549-3357; e-mail: tshill@abfprs.org.*

1. Note author and title of article on which your item is based: _____

2. Using principles set forth in the *Guide*, write an item that tests knowledge of facts or principles covered in the article referenced above:

Stem: _____

Correct answer: _____

Distractor: _____

Distractor: _____

Distractor: _____

3. Please note the main idea you intend this item to test: _____

4. Please provide a few key words that denote the main topics tested by this item (e.g., revision rhinoplasty, facelift complications, etc.)

5. Please rate the article referenced in the item (circle one): Excellent Good Poor

6. If you circled "poor," in question 5, please recommend (and **enclose a copy** of) a specific article you believe better covers this topic:

**Please submit items you write for the ABFPRS solely to the ABFPRS.
Make NO copies; return all material to the ABFPRS as directed above.**

New Item—Set Form—Use for Related Sets of Items

Your name: _____ Date: _____

Item Set Lead in: _____

Item 1 Question: _____

Correct answer: _____

Distractor: _____

Distractor: _____

Distractor: _____

Item 2 Question: _____

Correct answer: _____

Distractor: _____

Distractor: _____

Distractor: _____

**Please submit items you write for the ABFPRS solely to the ABFPRS at:
ABFPRS, 115C South St. Asaph Street, Alexandria, VA 22314.
Make NO copies; return all material to the ABFPRS.**

Item 3 Question: _____

Correct answer: _____

Distractor: _____

Distractor: _____

Distractor: _____

Item 4 Question: _____

Correct answer: _____

Distractor: _____

Distractor: _____

Distractor: _____

Please use a separate sheet of paper for additional questions.

Main Point: Please note the main idea you intend this item to test. _____

Key words: Please provide a few key words that denote the main topics tested by this item set (e.g., revision rhinoplasty, facelift complications, etc.)

Article(s) that validate item set answers: _____

Please enclose a copy of article(s) to support your answer.

**Please submit items you write for the ABFPRS solely to the ABFPRS at:
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