

## **ABFM Guide for Exam Preparation**

2014

The following information is intended to assist exam candidates to devise exam preparation strategies. It is not intended as a guideline for passing the exam and each candidate should carefully evaluate the information to determine whether it is applicable to their unique situation.

Please note that the ABFM does not endorse, either explicitly or implicitly, any review course or study aid. The examples provided below are simply a few of the many useful resources available.

## **General Long-Term Strategies for Score Improvement**

You shouldn't count on a review course alone to maintain your medical knowledge, or to achieve passing test scores. You will also want to consider ongoing learning activities that you can do at home, during slow times in the office, or while on call. Consider scheduling time on at least a weekly basis to read generalist medical journals relevant to what we do as family physicians (e.g. *Journal of the American Board of Family Medicine, Annals of Family Medicine*)

Studying is most likely to be effective (i.e. memorable) if you keep specific clinical practice cases in mind while studying material that applies to those cases. This will be effective assuming that your practice robustly represents the breadth of family medicine. Likewise, referring back to an article after seeing a tricky patient will also greatly aid retention. This recommendation is consistent with decades of research in cognition and education.

On the other hand, if you work within a more narrowly defined population (such as Emergency Medicine, Sports Medicine, or Industrial Medicine), or don't have a clinical practice at all, then you have an additional challenge. If you work in one of these settings, a systematic approach to reviewing the spectrum of family medicine becomes all that much more critical in preparing to take the MC-FP examination. Our medical knowledge fades without periodic re-exposure – that's why we call it the “practice of medicine”.

As physicians mature in their professional roles, many tend to narrow the focus of our practices, aside from working in a narrowed field such as are mentioned above. Although not as problematic as entering a subspecialty, this too can put you at a disadvantage when taking an exam that measures your knowledge over the breadth of family medicine. The implication is that your study habits and readings will need to include those areas that you don't include in your practice any longer, as well as the common entities that you see every day.

## Specific Short-term Study Tips

As mentioned in the introduction, there is no substitute for a well-designed and executed study plan. Aside from this, there is no substitute for having an *adequately* designed but well-executed study plan.

If you consider taking a review course, choose one that is challenging and requires your active participation. Review courses that involve thorough, detailed study and active reading are more likely to help you acquire the knowledge you need to succeed on the examination. This approach obviously requires more time and effort, but will typically produce a larger gain than a procedure that requires less elaborate cognitive activity. For example, you might consider enrolling in one of the home-study programs offered by a number of family medicine organizations.

Feedback from successful examinees suggests that seminars are not very useful. Lecture-style reviews primarily involve passive listening, which doesn't work as well to acquire new information or update your knowledge base. They are unlikely to relay information at the level of detail that specific exam items measure. An item is likely to be written with specific materials in front of the item writer to capture very specific knowledge about a particular treatment circumstance. So, try to study material that is at the same level of specificity that the items are focused.

Some physicians take the approach of simply responding to hundreds of questions similar to those on the exams, and looking up the right answers. This does not usually produce meaningful improvement on the exam. This really should come as no surprise, because, if answering questions was a good way to acquire medical information, then medical school training would be boiled down to a lengthy quiz. Gaining points on the exam involves studying medical information, and there is a strong dose-response relationship. The same methods that worked for you when you originally acquired this information in your training are likely to be the best for you now.

The In-Training Exams that we make available for free on our website will provide a large number of specific items. Although these items are ineligible to be used on an actual exam because they are made public, they are written in the same way and by the same item writers as the actual exam. The best study information will be at the level of specificity found in textbook or journal readings, although it may certainly be in audio tape or another format as well. In fact, audio tapes have been very useful for physicians who have time to listen repeatedly (during commuting, jogging/exercise, etc.). However, the In-Training Exams are highly predictive of how examinees perform on the core of the exam and may be used as a pre- and post-test by taking one to mark your starting point and then take another after some time to see if your study strategy is effective. Try to take the In-Training Exam according to the standardized timing and instructions. Grade yourself using the answers posted in the Critique. The post-test measure should not be done too late to make changes if needed, but not so early that improvement is unlikely. Changes are likely to be noticeable within one month of regular studying, unless your initial performance was well above average.

## Steps to Creating an Effective Study Plan

**Step 1: Know what material is going to be on the exam.** Consult the ABFM website to find out more about what material is represented on the examination, and in what proportions of the exam. Appendix A lists the exam blueprint categories for the 2014 MC-FP exam. Appendix B provides a description of the self-selected modules that are available. It is well worth knowing the blueprint and identifying the appropriate modules when constructing your study strategy.

**Step 2: Identify your level of need for study.** There are two major considerations. First, how did you perform on your last standardized ABFM MC-FP? Research indicates that those who have previously failed the exam are much more likely to fail again and would presumably need a stronger study plan in order to pass. Second, do you practice broad-scope family medicine or is your practice relatively narrow? For example, those who move into emergency medicine, industrial medicine, or administrative positions are in a much higher risk group. The longer the time spent away from the practice of broad-scope family medicine, the more knowledge attrition (disuse atrophy) can be expected.

**Step 3: Identify how many hours you will need, would like, or will be able to study.** If you think you need a lot of preparation, or if you are retaking the exam due to a prior failure, then up to 10-14 hours per week for three or more months may be needed. Although this may seem daunting, consider that many physicians spend 10 hours per week commuting. If your schedule is already tight, then one hour in the morning and a half-hour in the evening may still be extractable. Also, be reasonable in the number of consecutive hours of study that will be useful for you because diminishing returns usually set in before a couple consecutive hours of study. Thus, two hours of focused studying per weekday is likely to be much more useful than a block of 10 hours each Saturday.

**Step 4: Evaluate how the designated amount of study will be fit into your weekly schedule.** If feasible, notify those around you (family, colleagues) of the schedule change so that this time can be as interruption-free as possible. Also, consider whether the hours sacrificed are going to add stress to your schedule to the extent that studying becomes less effective. If there is insufficient time, you might consider putting off taking the exam until the next administration cycle.

**Step 5: Identify and obtain the materials you plan to use.** As mentioned previously, there are many sources of high quality study material available. Some of these are available for free online. Do not spend an inordinate amount of time seeking out materials in hopes of finding the “magic bullet”, because MANY sources can be effectively used for study. To date, no material appears to be both “quick and easy” and effective.

The *Journal of the American Board of Family Medicine* and *Annals of Family Medicine* are freely available online. For those with a university or major hospital affiliation, check whether the library will allow staff online access to other electronic journals. If you have access to a medical library, then the need to spend money is cut further still. You are also likely to have useful textbooks and journals at your disposal already.

**Step 6: Focus on the relevant material with which you are least comfortable and familiar.**

For example, if you do emergent/urgent care 40 hours per week, you probably do not need to study it. In that case, management of chronic conditions should be your primary focus. More generally, if you are a relative expert in an area, you have less to gain by studying that area. *Keep the Exam Blueprint in mind during this step!*

Review articles, treatment guidelines, and large sample, comprehensive studies will be worth spending more time on, as opposed to smaller or case studies. Keep in mind that it is this sort of documentation that supports each question that you will see on the examination.

Physicians often ask how well new research findings should be studied. First, the material upon which items must be based requires a relatively high level of scientific certainty, so focus on established medicine. There will typically be multiple articles and/or studies supporting a particular piece of medical information upon which a test item relies, simply because a single study will almost never be definitive. Also consider that there is roughly a 9-month development cycle for the examinations, so brand-new information, no matter how reliable, is unlikely to appear as an item.

## Test-Taking Strategies

Theoretically, an exam result is a measurement of the knowledge of the test-taker on the content being assessed. As with any form of measurement, results may not be accurate under certain circumstances. Some examination circumstances are under the control of the examinee, and some under the influence of the exam's developers and administrators. Here are some common causes of mis-measurement:

- The test-taker has a physical problem that interferes with the expression of their knowledge on the exam. For example, an illness or uncorrected poor eyesight may cause examination difficulty to the extent of impaired performance.
- The examination environment is not conducive to exam taking. For example, there may be loud, ongoing construction noise in an adjacent room that impairs the concentration of examinees.
- The examinee does not (or cannot) focus on the task at hand and consequently fails to read, understand, or follow directions. For example, excessive tiredness or distractibility may interfere with recall of information, with recording of intended responses, or with misunderstanding the question at hand.
- The examinee's response strategy is ineffective in translating his or her knowledge into the exam's response format.
- Examination materials may be flawed in some way. For example, if an image that is part of an item stem fails to be presented, then performance on the item will obviously be impaired.

With regard to the first circumstance, examinees have to decide whether or not they are physically prepared to take the examination. If for example, an examinee is taking a prescription drug which may impair their memory or concentration, it is reasonable to expect that the resulting score will be lower than the optimal estimate of knowledge.

Some conditions, such as the exam environment and the presentation of the exam materials, are solely the responsibility of testing organizations. Testing agencies must ensure that examination sites uniformly provide appropriate noise and lighting levels as well as a reasonably comfortable environment for the examinees. The American Board of Family Medicine (ABFM) spends a considerable amount of time and resources evaluating the adequacy of its testing sites.

Examinees must carefully listen to the proctor and read the test directions. Optimally, all examinees will have taken time to familiarize themselves with the computer-based format and functions on the ABFM website, so that learning time during the actual exam will be negligible. Also, a review of materials available before the exam will aid the process as well.

The ABFM MC-FP examination uses multiple-choice questions (MCQ) that have one best answer. These items have a "stem" that presents the background information necessary for

answering the question, which usually comes at the end of the stem. The suggested rules for responding to these items are listed below. Although each suggestion may seem like merely common sense, developing a conscientious habit of doing each of these with each item usually requires sustained effort and practice.

The following is a list of things to consider when answering questions on the exam:

- 1) Read the stem carefully and make note of information that seems especially relevant.
- 2) Read EVERY response option, carefully. If you are sure that an option is not correct, cross out the option's letter. There is a computer function to allow this. This is particularly important if you plan to return to the reconsider the item later, for example, if you finish early and want to review. If you need to return to the item, write down the item number first, along with a brief note of your thoughts on the material available from the proctor.
- 3) If the item has physical and laboratory findings organized as a table or image, consider the data, taking note regarding findings that are particularly important.
- 4) Only after reading all options should you select the option that you think is correct. Marking an answer correct immediately upon reading it tends to cause cognitive foreclosure. That is, it is less likely that you will seriously consider possible alternative answers that appear later in the list of options.
- 5) If, after reading all of the options, you are totally unsure of the correct answer, make a guess from the options that you have not eliminated. The ABFM does not use a correction-for-guessing formula in scoring its examinations. Blank items will always be incorrect, whereas guessed items give you a reasonable chance to get the item correct. Furthermore, guessing by a knowledgeable person is never truly random, so your odds are better than chance.
- 6) Flag any and all items that you leave blank as you progress through the test. The computer-based flag feature enables you to quickly review unanswered questions later in the testing process.
- 7) Upon reviewing your responses, consider that the first thoughtful answer an examinee makes is usually the best answer. Merely second-guessing yourself is not likely to help your performance. However, if you realize that you actually misread or misunderstood a question, making a change may be reasonable.
- 8) Prior to considering the response options, attempt to determine whether general knowledge or patient-specific knowledge is being assessed.
- 9) Do not try to out-guess the item writers. Rely simply on your knowledge to respond to the selections. Items are not written to be "tricky." Writers do not rely on subtle wording

to identify the intended response, although the specific information in each item is important.

- 10) In some standardized examinations, a recommended test-taking strategy is to read the response options first and then find the correct answer in the preceding material. This strategy may not be effective in medical examinations because of the vast amount of knowledge that must be brought to bear in order to identify the best response. Consequently, such a test-taking strategy is not recommended.
- 11) For some examinees it will be essential that exam time is carefully managed. Initially, you will have roughly one minute per item. As you proceed through the examination, periodically assess whether your pace is reasonable. Don't get caught short on time, because if you are forced to guess on a series of items to complete the exam, your score will invariably suffer. On the other hand, you do not get a bonus for finishing the examination ahead of time, so don't commit the error of rushing to finish the test. Make the maximum use of all of the time available to you.
- 12) ALWAYS ensure that you have answered all items prior to exiting the examination.

### **Exam Information**

It is sometimes useful for potential examinees to hear the details about how an exam is constructed, because so much misinformation about exams exists. For example, having a framework for understanding the nature of the exam items may dispel myths about good test-taking strategy. This section describes the development and construction of the ABFM's MC-FP exam so that you may be a better informed test-taker. This section also includes information on what to expect when you arrive at the test center.

**Examination Development** The initial step in test development is the assignment of question topics to the exam item writers. The ABFM has 30–35 physicians writing items for the MC-FP Exam. These physicians have been trained by the Content Development staff, and are kept up-to-date at an annual conference where new directions in the testing processes are discussed and item-writing techniques are reviewed.

The blueprint for the examination was created by representatives from each organization representing the family of Family Medicine. The blueprint is available on the ABFM website and as Appendix A. The blueprint incorporates and largely reflects what Family Physicians do in practice, based on surveys of our diplomates as well as the National Ambulatory Medical Care Survey. For a more detailed description of the development of the blueprint, see "*From Specialty-Based to Practice-Based: A New Blueprint for the American Board of Family Medicine Cognitive Exam*" (JABFM, November/December 2005, <http://www.jabfm.org/>).

Each item writer is assigned 5 questions each quarter, with the topics coming either from the exam blueprint (e.g., cardiovascular, neurologic) or from the categories used to define the exam modules (e.g., ambulatory family medicine, geriatrics, maternity care). Every item must have a



critique explaining the rationale for the answer, as well as the reasons that the other options are incorrect. The item writer also supplies a reference for each item, whether it be a peer-reviewed journal commonly read by family physicians, or a standard textbook such as Harrison's internal medicine textbook or Novak's gynecology text.

As the items come in from the item writers, they are processed and edited by the Content Development team. Many of these new items will go into the In-Training Examination given to the residents each year, while others will go into the MC-FP Examination.

All of the scored items on the MC-FP Examination have been used in a previous examination, so that we have a performance history. This allows us to use only items that appear to discriminate, and should reduce the number of items that do not contribute to the goal of identifying candidates with an acceptable level of knowledge. We also include new, untested items in the examination, but these are not scored. An individual candidate will see 20 of these unscored items, and distributing the questions among several groups of candidates allows us to field test around 400 items to see how they perform. Items that perform well can be considered for use in future examinations.

The Content Development staff creates a draft for multiple versions of the following year's examination in late summer and early fall each year. The draft contains enough items for the final versions of the examination, with some common items to allow for equating. The draft also includes an overage so that items can be dropped if they are no longer accurate or relevant.

The draft is reviewed by a committee of 10–12 family physicians. This group includes both academics and physicians in private practice, and the members reflect the diversity of family medicine. The group meets twice during the fall to review the items. Any previously used items that are changed by this group will be field tested before they are included in the group of scored items. When the group members review the items the answers are not marked, but the critiques and answers are available for them to review after they have answered the questions on their own.

References are also updated during this process. If a reference is over 5 years old or there is a new edition of a textbook, then the information will be checked in a more recent article or textbook edition to ensure that it remains current. The old reference will be replaced with the newer one in our item bank.

After the draft has been reviewed, the final versions are assembled and are then reviewed by the Examination Committee of the ABFM Board of Directors. Once the final have been approved, the Content Development staff edits it for the final time and then converts the examination into the software format required by the test vendor. After the test vendor has converted the files into their testing format, the test is reviewed by the ABFM staff to ensure that it displays and functions correctly before final approval is given.

**Scoring** Prior to 2008, classical test theory was used to equate the different versions of the examination. Generally, no attempts were made to equate the examination across years. In 2008, the ABFM migrated from classical test theory to the dichotomous Rasch model, an item response

theory (IRT) model that possesses several special properties. The 2008 examination was equated to the 2007 examination, and subsequent examinations were equated to that same scale.

IRT is a family of psychometric models that adjust for the ability of the candidates when estimating the difficulty of items and for the difficulty of the items when estimating the ability of the candidates. The dichotomous Rasch model, a 1 parameter logistic (1PL) model, was selected to evaluate ABFM examinations.

The dichotomous Rasch model was selected over the 2 parameter logistic (2PL) and 3 parameter logistic (3PL) models for both practical and theoretical reasons. The Rasch model requires that comparisons among items and comparisons among candidates be invariant. Specifically, this means that if two items are presented to a candidate, the easier of the two items will *always* have the higher *probability* of being answered correctly, regardless of the ability level of the candidate. This is a fundamental piece of the definitions of *easy* and *difficult*. Similarly, if two candidates are presented with the same item, the high-ability candidate will *always* have the higher *probability* of answering the item correctly, regardless of the difficulty level of the item. This also is a fundamental piece of the definitions of *high ability* and *low ability*. Multi-parameter IRT models (2PL and 3PL) do not require this invariance of comparisons; therefore, the meaning of the construct can be different for candidates at different ability levels. If this occurs to any substantial degree, it damages the uniform nature of the construct as a hierarchy and degrades the interpretability of the results. When the data does not conform to the requirements of measurement, it is better to identify the disturbance than to try to model it at the expense of the construct.

The flexibility offered by multi-parameter models also creates problems with regard to scoring. When using multi-parameter models, the first step in the analysis is to assess how many parameters are necessary to represent the data. If different models are suggested across different versions or administrations of the test, which model (1PL, 2PL, or 3PL) should be used? Will different models be used on the same test across administrations? Will the scoring model vary from year to year? The reconsideration of scoring models across test administrations contradicts the idea of maintaining a single scale for a useful period of time.

Another scoring issue with multi-parameter models is that the amount of credit received for a correctly answered question varies based on a candidate's responses to the other questions. It would be undesirable to have to explain to a candidate, a court, or the press that some candidates receive less credit for correctly answering the *same question* as other candidates because of the pattern of correct responses.

**Setting the Passing Standard** Prior to analyzing the 2008 examination data, the July 2007 data was rescaled using the dichotomous Rasch model. Using a common-item linkage design, both version A and version B of the 2007 examination were converted to the same scale. Item equating is the process of ensuring that different versions of a test produce directly comparable results. When equating is successful, the particular version of a test that a candidate receives should be of no consequence. The ABFM uses a common item design to equate each version of the examination to a common scale. The common items can be any items for which there is a stable difficulty calibration in the item bank. Essentially, item anchoring techniques embed items

with known difficulty calibrations in a new test version and subsequently use those calibrated items as reference points to estimate the difficulty of the uncalibrated items. By linking all the items to a common scale, the performance of candidates can be estimated using a common frame of reference.

Because all exams are on the same scale, a new passing standard does not need to be set for each exam administration. Therefore, the ABFM Board of Directors requires that the passing standard should be reviewed at least once every three years. The most recent review of the MPS occurred prior to the scoring of the April 2014 examination and the MPS was reset to 380 for 2014, 2015, and 2016.

The examination was designed to measure a single construct, clinical decision-making ability within the scope of the practice of family medicine. Implied in the construct of clinical decision-making abilities is the ability to recall relevant elements from a large fund of pertinent medical information. The examination is intended to identify those candidates who can demonstrate that they possess at least the minimum amount of ability in family medicine to be considered board-certified from those who cannot.

ABFM diplomates rate the difficulty of each item to set a minimum passing score, using a process called the Angoff technique. This group of volunteer physicians is randomly selected from all the recent diplomates that performed well on their last examination. Ultimately, the exam's passing threshold is a standard set by your peers in family medicine. Because of the sampling procedure, the makeup of this group is similar to the overall group of family physician diplomates. The rating process they perform involves estimating the percentage of minimally-certifiable candidates who would correctly answer each particular question. This committee may also comment on and critique certain questions, particularly those in which relevance to Family Medicine may be debated. The minimum passing score established by this group, the impact on passing rate, and the procedures for setting the passing standard are reviewed and approved by the Examination Committee of the ABFM Board of Directors.

**Exam Day and Afterward** On exam day you should arrive 30 minutes prior to your scheduled exam appointment to allow time for checking your ID and the registration process of verifying your signature and fingerprint scan. Any personal items such as cell phone, pager, any electronic device, wristwatch, purse, bags, hats, books and notes must be left at home, in your car or stored in a secure locker provided at the test site. An erasable note board and marker will be provided at the computer workstation during the exam for preparatory work in answering a question.

The examination consists of 260 multiple-choice questions and two 45-question self-selected modules. The modules and their descriptions can be found on the ABFM website as well as Appendix B. The purpose of module selection is so that your exam performance might better reflect the expertise you have gathered in practice (e.g., those candidates who see obstetric patients and children might select modules that best correspond to those areas).

After the examination, your response data are returned to the ABFM by the testing agency. Items that do not perform as intended are reviewed once again for accuracy and precision of wording. Empirical data from thousands of respondents will invariably show when there is a problem with

an item. For example, if an alternate response is also correct, statistics will show that it is a popular answer, or that high-scoring examinees tended to choose that answer. Whenever this happens, prior to beginning the scoring of the exam, such items are reviewed once again. Problematic items will typically be deleted; however, there are usually no more than a small handful of items that are problematic.

Multiple checks of data and computer records are undertaken to ensure that the incoming data is an accurate record of each examinee's intended responses. When all data has been combed through, when scoring is complete, and when the lengthy individual performance report is compiled, the results are evaluated extensively by a quality assurance team. Score reports get released online following the full completion of each of these processes, typically 6-8 weeks after the last examination is administered.

For more information on the Prometric test centers, see the ABFM website section under Maintenance of Certification, Part 3 Cognitive Expertise, Test Center Information (<https://www.theabfm.org/moc/part3.aspx>).

Exam Content:

[\*\*Exam Blueprint Categories and Percentages\*\*](#)

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