

BUILDING THE EXAM OF THE FUTURE

Lela Lee, MD

Associate Executive Director, American Board
of Dermatology

Professor of Dermatology & Associate Program
Director, University of Colorado

The American Board of Dermatology is embarking on an initiative to significantly change our certifying examination. The current certifying exam is largely a test of factual knowledge and visual recognition and does not evaluate some very important aspects of practice – in particular, clinical judgment.

CERTIFICATION

Residency
+
Exam
=
Competent

Being certified means that one has satisfactorily completed a residency in an accredited program and passed a standardized exam. Together, these two steps are supposed to ensure that the certified dermatologist is competent. The results of the exam should, to the extent possible, be a reflection of clinical competence.

THE CURRENT EXAM

- Acquire knowledge base.
- Assess the physical findings.
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- Determine the most likely diagnosis.
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The current certifying exam primarily assesses knowledge base and the ability to evaluate physical findings and determine the most likely diagnosis. These are important aspects of competence. But there are many gaps – many components of competence that are not tested or insufficiently tested in the current exam.

COMPONENTS OF COMPETENCE

- Acquire knowledge base.
- Assess the physical findings.
- Generate a realistic differential dx.
- Obtain additional information, if necessary.
- Determine the most likely diagnosis.
- Form a management plan.
- Communicate with the patient.
- Evaluate effectiveness of plan.
- Manage complications of therapy.

For example, the ability to generate a realistic differential diagnosis, to know when to obtain lab tests and when not to do so, to generate a practical management plan, to have a dialogue with the patient about diagnosis and management, to modify the management plan depending on response to therapy, and to manage complications are all aspects of competence that are not covered or not sufficiently covered in the current exam.



Residents may focus on memorizing facts at the expense of refining their diagnostic and management skills. Thus, preparing for the exam does not align optimally with preparing to be an excellent clinician.

What follows is a draft proposal.

We expect that the final structure and details will be different, once we have received your ideas and feedback.

Implementation may take 3-5 years and will require extensive piloting.

What follows is a draft proposal. We are presenting it to you – program directors, chairs, and interested faculty – for your ideas and comments.

It is expected that the final structure and details will be different, and might be substantially different, depending on the feedback we receive from you.

Although it would be ideal to be able to institute change immediately, the process of implementation will necessarily take a few years. The items needed for an exam emphasizing clinical judgment are new types of items, and extensive piloting will be required.

OBSERVATIONS

- Elementary knowledge and skills are largely not tested in the certifying exam.
- The pass/fail decision is made on the basis of the overall score. It may be possible to pass while not having achieved minimum competence in certain areas.

Some additional observations about our current certifying process:

Basic knowledge and skills – the sorts of things that we expect everyone should and does know – are largely not tested on the certifying exam.

The pass/fail decision is made on the basis of the overall score. It could theoretically be possible to pass the exam while having less than a minimum level of competence in some important area of the scope of practice of general dermatology – i.e., surgery, pathology, pediatric dermatology, or perhaps even visual recognition.

OBJECTIVES

- Mastery of the basics
- Minimum level of competence in all major areas
- Test of clinical judgment / competence

PRODUCE THE BEST DOCTORS!

Our goals in changing the certifying process are

- To ensure that residents master the fundamentals
- To ensure that a minimum level of competence has been achieved in all the major areas of general dermatology
- To develop a certifying exam that is a more complete test of clinical competence and clinical judgment

In short, we want to do our part in producing the best doctors!

OVERVIEW

A qualifying exam during residency that primarily evaluates visual recognition skills and acquisition of knowledge – replaces ITE

A certifying exam following residency that primarily tests application of knowledge in clinically-relevant case scenarios

The overall structure for the Exam of the Future is as follows:

- A qualifying exam given during residency that primarily evaluates visual recognition and knowledge base This would replace the In-Training Exam.
- A certifying exam given after residency that primarily tests application of knowledge in a series of clinically-relevant case scenarios

CONSTRAINTS

- psychometrically valid
- feasible
- cost-neutral for examinees

There are certain constraints:

- The examination must be psychometrically valid.
- The process must be feasible.
- It should be cost-neutral for our examinees.

PROPOSED STRUCTURE

- BASIC – knowledge / skills every resident should have by end of year 1
- CORE – knowledge base appropriate for senior resident
- APPLIED – the “certifying exam” – focused on application of knowledge & clinical judgment through case scenarios

Could be aligned with Milestones

The qualifying exam is further divided into a BASIC exam, testing knowledge and skills that every resident should have by the end of year 1 of residency, and a CORE exam, primarily testing knowledge base appropriate for a senior resident.

The APPLIED exam, i.e., the certifying exam, is focused on the application of knowledge in clinically-relevant settings.

These exams represent a tiered acquisition of skills, from fundamentals through acquisition of more advanced knowledge through ability to apply knowledge. If it would be useful to do so, the exams could be aligned with the Milestones.

	BASIC	CORE	APPLIED
Timeline	First year	Senior residents	Post-residency
Purpose	Basic skills	Knowledge base	Clinical competence

The three exams are shown graphically.

- BASIC – end of year 1, fundamentals
- CORE – senior residents, more advanced knowledge base
- APPLIED – after residency, clinical competence

IS THERE A PRECEDENT?

- American Board of Anesthesiology: replaced Written and Oral with Basic, Advanced, and Applied exams
- During development, solicited input from PDs and chairs and changed plan accordingly

The American Board of Anesthesiology recently changed its exams to a “Staged Examinations System”, consisting of a BASIC exam, taken after 18 months of residency, an ADVANCED exam, taken after 30 months, and an APPLIED exam, taken after successful completion of residency. The BASIC + ADVANCED replace their Written exam. They wanted to ensure that residents learn the basics, and they felt that learning would be more durable if done throughout residency rather than in cramming for a single Written exam.

During development of this new system, the ABA sought input from program directors and chairs. As an example, the ABA initially envisioned the BASIC exam as an exam for information only – i.e., passing not required. The feedback from program directors and chairs was that they wanted passing to be required. The ABA listened and made the BASIC exam a pass/fail exam.

The ABA attributes much of the smoothness of the transition to having sought input from program directors, chairs, and other interested faculty during the development phase. This is what we hope to do at ABD.

BASIC KNOWLEDGE & SKILLS: END OF FIRST YEAR

- Recognize common conditions in classic presentations
- Manage common conditions in low complexity situations
- Understand use of common drugs
- Perform minor procedures competently
- Recognize classic histologic findings of common conditions (e.g., BCC, LP)

The BASIC exam is a test of knowledge and skills that residents should have by the end of their first year. Examples of basic knowledge and skills are as follows:

- The ability to recognize common conditions in their classic presentations
- The ability to manage common conditions in low- or moderate-complexity situations
- An in-depth understanding of drugs that are commonly used
- An ability to perform minor procedures competently
- An ability to recognize the histology of common conditions that have distinctive pathology findings (BCC, lichen planus)

These are the sorts of abilities that residents should attain regardless of what has been covered in didactics.

THE BASIC EXAM

- Can be transparent about what will be tested
- Identify the at-risk resident
- Provide an independent, third-party assessment for program directors

Expectations for what one needs to know in the BASIC exam can be definable and explicit. For example, residents can be given a list of 20-30 diagnoses, from which all of the visual recognition questions will be taken.

The major goal of having a BASIC exam is to ensure that fundamental knowledge and skills have been attained.

Ideally, all residents would perform well on this exam. However, if a resident is struggling with a fundamental skill such as visual recognition, the BASIC exam would help identify that resident. It is hoped that identifying an at-risk resident early would give the resident a chance to bring their performance up to an acceptable level while still practicing under supervision.

It is hoped also that providing a third-party, independent assessment will be helpful to program directors on those occasions when they have a resident who is performing at a level below expectations.

MODULES FOR BASIC EXAM

- Visual diagnosis
- General (med/ped) dermatology
- Surgical dermatology
- Dermatopathology
- Basic science
- Case presentations

The BASIC exam is envisioned as being given in modules. Proposed modules are visual diagnosis, general dermatology, surgical dermatology, dermatopathology, basic science, and case presentations / case management.

The rationales for administering the exam as modules are to ensure a minimum level of competence in each area and to identify strengths and weaknesses.

PRECEDENT

- ABRadiology gives its exams as modules and has a Core exam during residency that requires passing all modules.

The American Board of Radiology recently changed its exam structure to have a Core exam during residency, and to administer its exams as modules. The individual modules must be passed.

BASIC EXAM TBD

- Will it serve a useful purpose?
- Should passing be required?
- If passing is required, how often can the exam be retaken?
- How is it administered? E.g., residency program, Pearson VUE, remote proctoring

Several questions are to be determined about the BASIC exam:

- Will it be worth the effort? Will it serve the purposes for which it is intended?
- Should it be for information only, or should passing be required? If passing is required, the level of anxiety of residents will likely increase. If passing is not required, the results are less useful to the program director and resident.
- If passing is required, how often can the exam be retaken?
- How is it administered? Is it best administered the way the current In-Training Exam is given? Would it be better for residents to go to a testing center such as Pearson VUE? Can it be given by remote proctoring?

The most convenient of the exam administration options, both for the resident and for the program, is remote proctoring. The ABD has piloted remote proctoring with a few volunteers in the two most recent In-Training Exams and with 50 volunteers in the most recent Maintenance of Certification exam. It appears to be a viable, convenient way of test delivery.



For remote proctoring, requirements are a computer with a camera and microphone, a broadband internet connection, and a quiet room without access to books and papers. With remote proctoring, the exam can be taken from home, at a quiet room in an office, or even on vacation.

CORE EXAM

- Given to senior residents – could be in 3rd year or late 2nd year + 3rd year
- Modular – don't have to take all modules at once – can be tailored to where the resident is in his/her own training
- Must pass all modules, but can retake failed modules during residency
- The exam most closely resembling the current certifying exam

The CORE exam is primarily a test of knowledge base appropriate for a senior resident. Because knowledge base is emphasized, it is the exam most closely resembling the current certifying exam.

The CORE is envisioned as a modular exam. Residents would not have to take all the modules at one time. The exam schedule can be tailored to where the resident is in his/her own training. For example, a resident who has had a more intensive experience in surgery but has not yet had a more intensive experience in dermatopathology may opt to take the surgery module early on and the dermatopathology module later.

All modules should be passed, but there is an opportunity to retake failed modules during residency.

CORE EXAM MODULES

- Medical/general derm
 - Pediatric derm
 - Surgical derm
 - Dermatopathology
 - Basic science
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- Modules do not have to be taken at the same time, allowing residents to concentrate in content areas

The modules planned are medical/general dermatology, pediatric dermatology, surgical dermatology, dermatopathology, and basic science.

Affording residents some flexibility in when they take particular modules should allow them to concentrate in certain content areas. It is hoped this will lead to more durable learning.

	April 2 nd yr	Oct 3 rd yr	April 3 rd yr
Lisa	MedPedPathSurgBS	-	-
Marge	MedPedBS	PathSurg	-
Bart	MedPedPathSurgBS	PedPathSurg	Ped
Homer	MedPed	SurgBS	Path

Passed	Failed
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This is an example of how the CORE might work. The hypothetical residency program shown has four residents per year. In the cohort of Lisa, Marge, Bart, and Homer, Lisa is conscientious, competent, and confident, and takes all 5 modules late in her second year. She passes all of them. She has completed the CORE.

Marge is conscientious and competent but not as confident and takes some modules late in her 2nd year and the remainder early in her 3rd year. She completes the CORE in the fall of her 3rd year.

Bart is confident but not justifiably so. He takes all 5 modules early, fails 3, and has to take pediatrics twice before he eventually passes the CORE.

Homer knows he is slower, so he has a less ambitious schedule, but he passes the modules.

All of the cohort get to the same point eventually, but each at their own pace.

CORE ADMINISTRATION TBD

- Optimal times to give
- When repeat exams are available – likely q 6 months
- Remote proctoring v. Pearson VUE
- How to administer dermatopathology

Some details to be determined about the CORE:

- How often can the exams be repeated? This will depend in part on the size of the item bank. We are fairly confident we can offer them at least every 6 months.
- When would it be optimal to offer the exams? To some extent, this may depend on how often it can be offered. Residents need sufficient opportunity to retake failed modules during residency.
- How should it be administered?
- How can the dermatopathology practical exam be administered?

KNOWLEDGE BASE Q

- Of the following, which is the most likely adverse reaction to oral isotretinoin?
 - Depression
 - Diarrhea
 - Hyperbilirubinemia
 - Hypertriglyceridemia
 - Leukopenia

To illustrate the difference between knowledge base and application of knowledge, here are two relatively simple questions.

The knowledge base question asks the most common side effect of oral isotretinoin (of those listed). It is clinically useful to have the perspective that hypertriglyceridemia is reasonably common, whereas some other potential side effects are not so likely to happen. It is a reasonable question, but a question of fact.

APPLIED Q: MANAGEMENT

A 26-year-old woman is has severe, cystic, scarring acne. Her primary form of birth control is an oral contraceptive. Her weight is 80 kg and BMI is 27 kg/m². Treatment with isotretinoin 40 mg daily orally is initiated. After one month, the dosage is increased to 80 mg daily. On follow-up examination one month later, she says that her lips and eyes are dry; she reports no other adverse effects. Laboratory studies show:

The above question illustrates application of knowledge – specifically, evaluating results of therapy and modifying management, if appropriate.

In this example, a woman is placed on isotretinoin for an appropriate indication. She is started on 0.5 mg/kg/day for a month, then is given 1 mg/kg/day.

She appears well and has no symptoms except dryness.

	Baseline	One month	Two months
HCG	negative	negative	negative
AST	30	38	40
ALT	24	31	31
HDL	45	43	47
LDL	160	165	170
Triglycerides	170	240	350

Her labs are fine except that the triglycerides have been increasing. After a month at 1 mg/kg/day, her triglyceride level is 350.

Which of the following is the most appropriate recommendation at this time?

- A. Continue isotretinoin at the current dose and follow serum lipid concentrations.
- B. Decrease the isotretinoin dose to 40 mg daily.
- C. Discontinue isotretinoin.
- D. Change primary contraceptive method to intrauterine device.
- E. Change primary contraceptive method to progestogen implant.

What do you recommend?

Should she stop isotretinoin, lower the dose (which would double the length of time that she is at risk for pregnancy while on isotretinoin), or keep the dose the same and follow closely? The oral contraceptive could be contributing. Perhaps that should be changed.

This is one of the types of questions that may appear on the APPLIED exam.

Some characteristics to note:

The answers to questions like these often have to be determined by consensus, as there may not be evidence base.

It takes much longer to read and answer this item than it did for the knowledge base item. Thus, case presentations cannot cover the breadth of content per unit time as do one-best-answer-of-five knowledge base questions.

APPLIED EXAM

- Emphasis on judgment
- Can use items where more than one approach may be acceptable
- CPC when neither clinical nor path is definitive
- Before and after rx pics
- Weighted to conditions that are frequent or important

The APPLIED exam is the centerpiece of our proposed Exam of the Future.

It will emphasize application of knowledge and clinical judgment.

Realistic scenarios that do not fit well into one-best-answer-of-five-choices can be used. For example, cases may be used where there is not necessarily a single best management approach but rather any one of several approaches may be acceptable.

Clinical-pathologic correlations may be presented. In some cases, the pathology may lead to a definitive diagnosis, but in others, the examinee will have to decide what to do when neither the clinical nor the histologic is diagnostic.

Cases may be presented where one evaluates the response to treatment and modifies the treatment plan or revisits the diagnosis.

The APPLIED exam is envisioned to be a simulator of clinical practice. As such, it should be weighted toward conditions that are either frequent or important. Conditions that are both frequent and important would have highest priority.

WOULDN'T IT BE NICE . . .

. . . if you heard

- “We have to know how to manage a patient with pemphigus” !
- or
- “There are going to be questions about inpatient consults.”

Our hope is by testing application of knowledge, resident learning will be directed toward acquiring the skills needed to become excellent clinicians. It should lead to a richer and more valuable residency experience.

CHALLENGES

- Questions are much more difficult to write.
- The “correct” answers are often determined by consensus of experts, not by evidence base.

Probably the biggest challenge we face is that applied knowledge questions are much more difficult to write.

They are also difficult to grade. Correct answers are often determined by consensus, not evidence base.

WHERE ARE WE NOW?

- Engaged psychometrics consultant
- Formed applied exam committees
- Will take at least 3 years, more likely 4-5 to implement
- Will need to do extensive piloting

The ABD has engaged a psychometrics consultant to guide us through the changes and ensure that our final product is psychometrically valid.

We have formed committees to write these new types of questions.

The first meeting of the committees is in November.

We are still in the design stage. The entire process will probably take 4 years or so to implement.

The types of questions on the APPLIED exam are completely new for us. They will need extensive piloting before they can be used in certification.

THANK YOU!

- abderm@hfhs.org
- lee.lela.a@gmail.com

Please send us your comments.

Your feedback is important and will be much appreciated!