

# CONSIDERATIONS FOR A NATIONAL EXAMINATION OF CLINICAL SKILLS: THE U.S. EXPERIENCE

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## Agenda

1. USMLE Program – brief history
2. Need for a clinical skills examination
3. Step 2 CS
  - a. Elements
  - b. Logistics
  - c. Impact
  - d. Challenges
4. Covid effect
5. Continued assessment of clinical skills
6. Questions and answers



**NBME founded 1915 to establish exam demonstrating a physician's excellence**

**NBME subsequently developed or supported multiple examinations:**

NBME Part exams

Federation Licensing Exam (FLEX)

Foreign Medical Graduate Examination in the Medical Sciences (FMGEMS)

**Motivation to develop single, unified licensure examination**

**United States Medical Licensing Examination (USMLE) was implemented in 1992–94**

**Computer-based administration began in 1999**

**Step 2 CS examination began in 2004**

# WHY SHOULD WE HAVE A CLINICAL SKILLS EXAM?



**Comprehensive synthesis of a physician's tasks**

**Perceptions of legitimacy, value by the public, regulators, (students, educators)**

In US, ECFMG required Clinical Skills Assessment of international medical graduates

**Meaningful complement to other testing modalities, e.g., computer-based multiple choice question exams**

Assessment of skills and behaviors

**To motivate behavior of:**

Students

Medical schools



# WILL SCHOOLS BE WILLING TO FAIL STUDENTS? A SAMPLING OF THE LITERATURE



Cohen GS, Blumberg P, Ryan NC, Sullivan PL. **Do final grades reflect written qualitative evaluations of student performance?** Teach Learn Med. 1993;5:10–15.

Cohen GS, Henry NL, Dodd PE. **A self-study of clinical evaluation in the McMaster clerkship.** Med Teach. 1990;12:265–72.

Dudek NL, Marks MB, Regehr G. **Failure to fail: The perspectives of clinical supervisors.** Acad Med. 2005;80:S84–S87.

Hatala R, Norman GR. **In-training evaluation during an internal medicine clerkship.** Acad Med. 1999;74:S118 – S20.

Santen S, Christner J, Mejicano G, Hemphill R. **Kicking the Can Down the Road - When Medical Schools Fail to Self-Regulate.** NEJM. 2019;381:2287-2289.

Tonesk X, Buchanan RG. **An AAMC pilot study by 10 medical schools of clinical evaluation of students.** J Med Educ. 1987;62:707–18.

Yepes-Rios M, Dudek N, Duboyce R, Curtis J, Allard RJ, Varpio L. **The failure to fail underperforming trainees in health professions education: A BEME systematic review: BEME Guide No. 42,** Med. Teach. 2016;38:1092-1099.

Ziring D, Frankel RM, Danoff D, JH Isaacson, Lochnan H. **Silent Witnesses: Faculty Reluctance to Report Medical Students' Professionalism Lapses.** Acad Med. 2018;93:1700–1706.

## DESCRIPTION OF STEP 2 CS



**Break times: orientation and lunch**

**12 standardized patient cases**

Each lasting up to 15 minutes

10+ minutes for post-encounter exercises (patient note)

**Five cities in US: Atlanta, Chicago, Houston, Los Angeles, Philadelphia**

**Offered year-round, 5-6 days/week**

**Non-compensatory pass/fail scoring**

Communications and Interpersonal Skills (CIS)

Integrated Clinical Encounter (ICE)

Spoken English Proficiency (SEP)

**Development of Standardized Patient (SP)-based clinical skills examinations**

**Administering highly reliable, large-scale, multi-site SP-based clinical skills examinations**

**Testing and assessment of all aspects of the clinical encounter**

Communication and Interpersonal Skills

Physical Examination

Clinical Reasoning

Spoken English proficiency

**Clinical skills test center design and operation**

**Examinee scheduling**

**Continuous SP training and case portrayal quality assurance**



**Patient Note rating process**

**Continuous training and quality assurance of physician raters for post-encounter exercises**

**Quality assurance methods and auditing services for continuous, clinical skills examinations and resources**

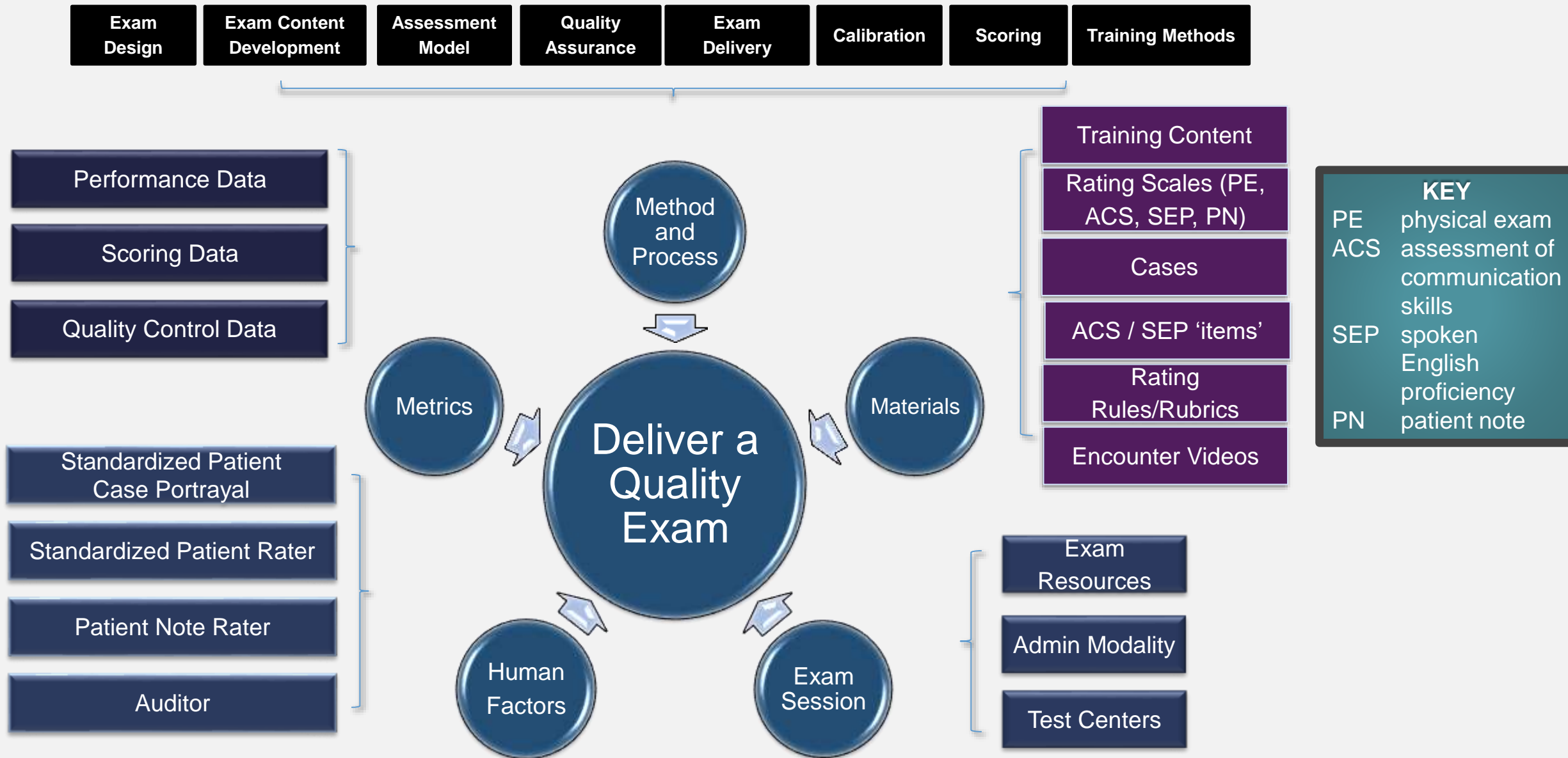
**Building and maintaining continuous exam schedule of SPs, cases, and examinees for all 5 centers against a standard blueprint**

**Scoring services, equating, and standard setting methods**

**Risk management and exam and test security**

**Provision of test accommodations in accordance with the Americans With Disabilities Act (ADA)**

# Operational Factors Contributing to Exam Quality



## STEP 2 CS: IMPACT



## STEP 2 CS – SELECTED STATISTICS



### EXAMINEE IMPACT

<b>Examinees tested</b>	<b>481,118</b>
<b>Examinees failed</b>	<b>51,932</b>
<b>Retested</b>	<b>36,084</b>
<b>Excluded</b>	<b>15,848</b>

### TYPICAL PASS RATES

<b>US/Canadian first-time takers</b>	<b>94-97%</b>
<b>US/Canadian repeaters</b>	<b>80-90%</b>
<b>International first-time takers</b>	<b>75-80%</b>
<b>International repeaters</b>	<b>60-70%</b>

<b>Percentage Change in the Introduction or Use of Various Educational Methods</b>		
(n=88/109 respondents)		
<b>Educational method</b>	<b>Use of method increased (%)</b>	<b>Use of method introduced (%)</b>
Standardized patients	31	14
Direct observation of real patients	24	6
Simulators or synthetic mannequins	16	13
Faculty development programs	11	8

Gilliland WR et al. Changes in clinical skills education resulting from the introduction of the USMLE Step 2 clinical skills examination. Medical Teacher. 2008;30:325-27.

## STEP 2 CS: CHALLENGES



## **Operational and organizational complexity**

### **Stakeholder opposition due to:**

Expense

Need for travel

Scheduling inflexibility

Impact on clerkship scheduling

Redundancy with school exams

Perceived value

Lack of performance feedback

### **Psychometric/measurement:**

Human variability in performance AND ratings

Standardization across multiple sites

## **Security:**

- Case memorability

- Limited content

- Internet

## **Exam Design:**

- Limited assessment of physical examination skills

- Limited assessment of other competencies

**Prior to Covid pandemic, staff was already considering alternate models because of these challenges**



**COVID**



**Step 2 CS examination (and other examinations) suspended March 16, 2020**

**Primary concern: Examinee, staff, and standardized patient SAFETY**

**Additional concerns:**

- Staff support

- Impact on entry to graduate medical education

**We explored:**

- Resuming the examination with personal protective equipment

- Revising to a “telehealth” examination

- “Wait and see”

**Committed to resume an “appreciably better” examination**

## **Definitions of “appreciably better” included:**

- ▶ Virtual administration
- ▶ Reduced travel
- ▶ Lower cost
- ▶ No physical exam
- ▶ Enhanced construct assessment

## **Medical education environment had changed**

- ▶ Step 2 CS drove schools to teach clinical skills
- ▶ Teaching methodologies had evolved
- ▶ Medical practice had evolved
- ▶ Step 2 CS had not kept pace with these changes

**Persistent impact and uncertainty surrounding infection risk**

**Backlog of untested examinees, system capacity constraints**

**Political opposition to relaunch**

American Medical Association position statements

Input from USMLE committee members

Comments from organizations' governance

**Time needed to gather validity evidence to support new testing modalities**

**Opportunity cost of relaunching vs. pursuing innovation**

# PRESENT AND FUTURE OF CLINICAL SKILLS ASSESSMENT



## **Within USMLE examinations:**

Multiple choice questions – Steps 1, 2 CK, and 3

Computer-based Case Simulations – Step 3

## **U.S. Medical Schools**

NBME OSCE for Clinical Reasoning Creative Community

Objective Structured Clinical Exams (OSCE)

Direct observation, multiple other assessments

## **International Medical Schools**

ECFMG Pathways

Occupational English Test (OET) Medicine

As we develop assessments for prioritized skills and behaviors, we need to expand beyond the use of traditional MCQs.



- SHARP (Short Answer Rationale Provision) items
- Short Answer Questions (SAQs)
- Patient Video Prompts (PVP)
- OSCE assessment

All these contain some form of free-text responses from the examinees.

A patient chart is shown below.

#### Patient Information

Age: 32 years  
Gender: M, self-identified  
Ethnicity: unspecified  
Site of Care: office

#### History

Reason for Visit/Chief Concern: "My right heel hurts."

#### History of Present Illness:

- 3-week history of severe right heel pain
- pain worsens in the morning and after prolonged sitting
- pain is less severe after he completes 1 mile of running
- has not had redness, warmth, or swelling
- has had no history of recent trauma
- has not had pain in other joints or other areas

#### Past Medical History:

- no serious illnesses

#### Medication:

- acetaminophen prn for heel pain

#### Vaccinations:

- received HPV vaccine 5 months ago

#### Allergies:

- no known drug allergies

#### Family History:

- mother: alive with type 2 diabetes mellitus
- father: alive with hypertension

#### Psychosocial History:

- avid runner
- does not smoke cigarettes, drink alcoholic beverages, or use other substances

#### Physical Examination:

Temp	Pulse	Resp	BP	O <sub>2</sub> Sat	Ht	Wt	BMI
37.0°C (98.6°F)	65/min	16/min	120/75 mm Hg	98 % on RA	175 cm (5 ft 9 in)	70 kg (155 lb)	23 kg/m <sup>2</sup>

- Appearance: well developed; no apparent distress
- Skin: warm; well perfused
- HEENT: clear oropharynx; no scleral injection or icterus
- Pulmonary: clear to auscultation
- Cardiac: normal rate and rhythm; no murmurs, rubs, or gallops
- Abdominal: soft; no tenderness; normal bowel sounds
- Genitourinary: testis descended; meatus clear with no discharge or erythema
- Musculoskeletal: mild tenderness to deep palpation of the right medial heel;
- Neurologic: fully oriented without focal motor or sensory deficits; muscle strength 5/5 on dorsiflexion and plantar flexion

What is the most likely diagnosis?

plantar fasciitis



You indicated that ***plantar fasciitis*** was the most likely diagnosis.

Choose **up to 5** pieces of information on the patient chart that best support ***plantar fasciitis*** as the most likely diagnosis.

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- SHARP**
- Appearance: well developed, no apparent distress
  - Skin: warm, well perfused
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  - Pulmonary: clear to auscultation
  - Cardiac: regular rate and rhythm; no murmurs, rubs, or gallops
  - Abdominal: soft; nontender; normal bowel sounds
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  - Musculoskeletal: mild tenderness to deep palpation of the right medial heel;
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# PATIENT VIDEO PROMPT (PVP): A SLICE APPROACH TO THE ASSESSMENT OF COMMUNICATION SKILLS



- Examinees are presented with written patient background information as well as an encounter point defining where they are in the patient interaction.
- A pre-recorded video prompt of the patient follows the text with the patient asking a question or making a statement.
- The examinee records a spoken response as if speaking directly to the patient.

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## Vignette: Mabel Flynn

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Your next patient is Mabel Flynn. Her screening mammography revealed a suspicious spot which was biopsied a week ago. The biopsy report revealed invasive breast cancer. She is here today to learn the result. You enter the room, greet her, and ask how she is doing. She replies:



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*I haven't slept well since the biopsy.*

What would you say next?

Press the record button to record your audio. Press the button again to stop recording. Audio will automatically be submitted on after 1 minute(s) of recording or when the recording is stopped.



# OSCE FOR CLINICAL REASONING CREATIVE COMMUNITY



- 10 US medical schools, one lead faculty
- Support (\$) of faculty + students
- 2-year project
- Began May 2022
- Combine subject matter expertise of community members with NBME measurement science and medical education expertise
- Formative feedback to learners and coaches to promote clinical reasoning skills



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# CLINICAL REASONING CREATIVE COMMUNITY – COLLABORATIVE ENGAGEMENT TO:



**Enhance the development, characterization and assessment of learner clinical reasoning skills**

**Present patient groups without bias or stereotypes**

**Minimize group differences in learner outcomes**

**Enable all institutions to better support learner skill development across the continuum of medical education and training**

**Assessment of clinical skills remains a critically important part of medical education and training**

**An OSCE-based high-stakes national exam program poses multiple challenges**

**Alternatives may support better measurement of important competencies and yield better value for the resources used**

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**Hundreds of standardized patients and staff who supported the Step 2 CS examination throughout its 16 years in operation**

