

**“I THINK EVERYONE PROCESSES
INFORMATION DIFFERENTLY”**

**GATHERING VALIDITY EVIDENCE BASED
ON RESPONSE PROCESSES FOR A NEW
CLINICAL REASONING ITEM TYPE**

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March 24, 2023

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NBME has been researching a new item format to enhance the assessment of clinical reasoning.

- Could not be a multiple-choice question**
- Computer-based, does not rely on human interactions**

The SHARP item (Short Answer, Rationale Provision)

Focus: Obtain evidence of an examinee's ability to provide a justification for some clinical decision they have made.

A 32-year-old man comes to the physician because of a 3-week history of severe right heel pain that is worse in the morning or after prolonged sitting. He has not had redness, swelling, or recent trauma. He has not had eye pain, urethral discharge, redness, or pain of any other joints. He is an avid runner; during the past 6 weeks, he has been preparing to run a marathon. He has no history of serious illness. His only medication is acetaminophen as needed for heel pain. He does not smoke cigarettes, drink alcohol, or use illicit drugs. Vital signs are within normal limits. Examination shows mild tenderness to deep palpation of the right heel. The Achilles tendon is nontender and intact. The remainder of the examination shows no abnormalities.

What is the most likely diagnosis?

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 ₂ 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 ²

- Appearance: well developed; no apparent distress
- Skin: warm; well perfused
- HEENT: clear oropharynx; no scleral injection or icterus
- Pulmonary: clear to auscultation
- Cardiac: regular rate and rhythm; no murmurs, rubs, or gallops
- Abdominal: soft; nontender; 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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A strong validity argument is built through obtaining many sources of evidence

Quantitative data

Qualitative data

“...evidence concerning the fit between the construct and the detailed nature of the performance or response actually engaged in by test takers.” - (Standards, p.15)

Want to understand *how* they are working through the item and *what* examinees are thinking about

Do we see students engaging in clinical reasoning / rationale provision

Conducted 19 2-hour interviews with 4th year medical students

Participants instructed to think out loud as they worked 12 SHARP items

No demographic information obtained

- Appeared to be balanced with respect to gender, URM, but no self-identifying demographics collected**
- Proof-of-concept study; no group analysis is appropriate yet**

Codebook was developed using deductive and inductive coding approaches.

Major code categories:

- Interpreting Information**
- Framing the Problem**
- Generating Hypotheses**
- Justifying Hypotheses**

Connecting disparate pieces of information together to support a hypothesis / diagnosis / answer. Or the inverse.

“It's certainly looking more like she has, um, some sort of immuno defect, especially considering that she has **both sinus infections and a pneumonia, as well as, um, diarrhea** as well.”

Using clinical processes and/or relationships to support a hypothesis / diagnosis / answer.

“...rash on soles of feet could be the way he got infected ... then the worm moved through the bloodstream into his GI region, which is leading to the belly issues, and, uh the respiratory problems we’re seeing now”

Using knowledge of risk factors and/or test results to support a hypothesis / diagnosis / answer.

“Um, smoked a half pack a day for 40 years. Quit smoking four years ago. So that **lowers her risk** of getting a malignancy, that she stopped, but, um, still at risk.”

Ranking information to support a hypothesis / diagnosis / answer.

“Her specific symptoms **don't necessarily matter as much** as, like, the recurrent sinus infections and pneumonia.”

“Five pieces of information. So... acute onset. Worse in the morning. Less severe. **These three things, I think, were the biggest things, as far as supporting, uh, the diagnosis that I have in my mind.**”

Ranking information to support a hypothesis / diagnosis / answer.

“I think the fact that he's had this progressive dyspnea for three weeks is useful to know as well as the weight gain. Um, **but I only get [to choose] five**. So I would probably choose his three week history first, and then I would probably choose the, the weight gain. Well, but the weight could be suggestive of multiple things. I think the fact that he has edema of the lower extremities is maybe **more specific to the diagnosis**. Um, so I maybe would choose to use that as one of my pieces of evidence, um, the most.”

Referencing perceived knowledge of standardized tests or test-taking strategies to support a hypothesis / diagnosis / answer / selection of information.

“... psychosocial history, 30 pack year. Um, **I know if it's under 40, it's not cancer on a test question**, um, most of the time.”

“I feel like typically it **happens in females more on test questions**. I don't know if that's true in real life or not, but definitely on test questions.”



**QR Code for 2022 GEA
SHARP Presentation**

<https://tinyurl.com/sharpresearch>