



New Horizons: Examining the efficacy of a 2-day ultrasound course on proficiency and confidence in incoming Family Medicine residents

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Introduction

As dramatic and rapid advancements to medical technology continue to impact patient care, one field that has gained increasing attention has been in ultrasound. Ultrasonography has become increasingly inexpensive and portable, and this has allowed non-radiologists to begin exploring bedside techniques and point-of-care ultrasound (PoCUS).



Several specialties, such as Emergency Medicine, have ACGME training requirements in PoCUS that focus on the diagnosis of various life-threatening illnesses in a rapid timeframe.¹ The Family Medicine community, however, has been slower to incorporate bedside ultrasound training into daily practice. One barrier to the adoption of PoCUS curricula has been the lack of data regarding how to incorporate training in residency. However, literature supporting the efficacy of training workshops for diagnostic and procedural skills has been rapidly growing.

Short-term PoCUS training programs are proven to deliver adequate knowledge and skills to a novice. A study by Clay et al. focused on United States Internal Medicine residents, found that a single day of intensive PoCUS training at the beginning of the year yielded significant improvement in PoCUS interpretation skills.



Hypothesis

This study hypothesized that after an introductory workshop for incoming Family Medicine residents at the University of California, San Diego, residents would be more proficient and confident in their ultrasound skills.

Methods

This was a nonrandomized prospective cohort study with incoming first-year residents serving as their own historical controls. Interns participated in a 2-day bedside ultrasound workup led by Emergency and Family Medicine faculty as part of a comprehensive 5-day orientation designed to prepare new interns for residency.

Interns completed an original 25-question assessment covering provider confidence, ultrasound basics, procedural skills, and image interpretation prior to and following the training. Tested topics were based on current recommended curriculum guidelines outlined by the American Academy of Family Physicians (AAFP).

Results

Out of 10 interns that were participating in orientation events with the UCSD Family Medicine program, only 9 were available for the workshop and participated in this study. Of the interns who participated, 7 had received ultrasound training prior to this study.

Proficiency

Overall, residents had higher proficiency test scores following the ultrasound workshop. For the twenty questions devoted to proficiency, the group had a collective average of 59% correct before training compared to 79% correct following training.

Other Findings

- Before training, 13 out of 20 proficiency questions had at least 7 of the 9 residents answer correctly.
- Of the remaining questions, there were only 3 where the number of residents that answered correctly doubled following training. These tested probe selection, knobology, and cardiac anatomy.

Confidence

Following the two-day ultrasound workshop, residents rated themselves as more confident on all five topics tested.

Confidence Question Topic	Pre-Training Mean Score (1-5)	Post-Training Mean Score (1-5)
Knobology	2.44	3.88
Cardiac EF	1.67	2.75
FAST exam	1.67	3.25
Fetus Position and AFI	1.89	2.38
Pleural Sliding	2.33	4.25

Table 1: Confidence scores by question. Residents scored their confidence level from 1 to 5.

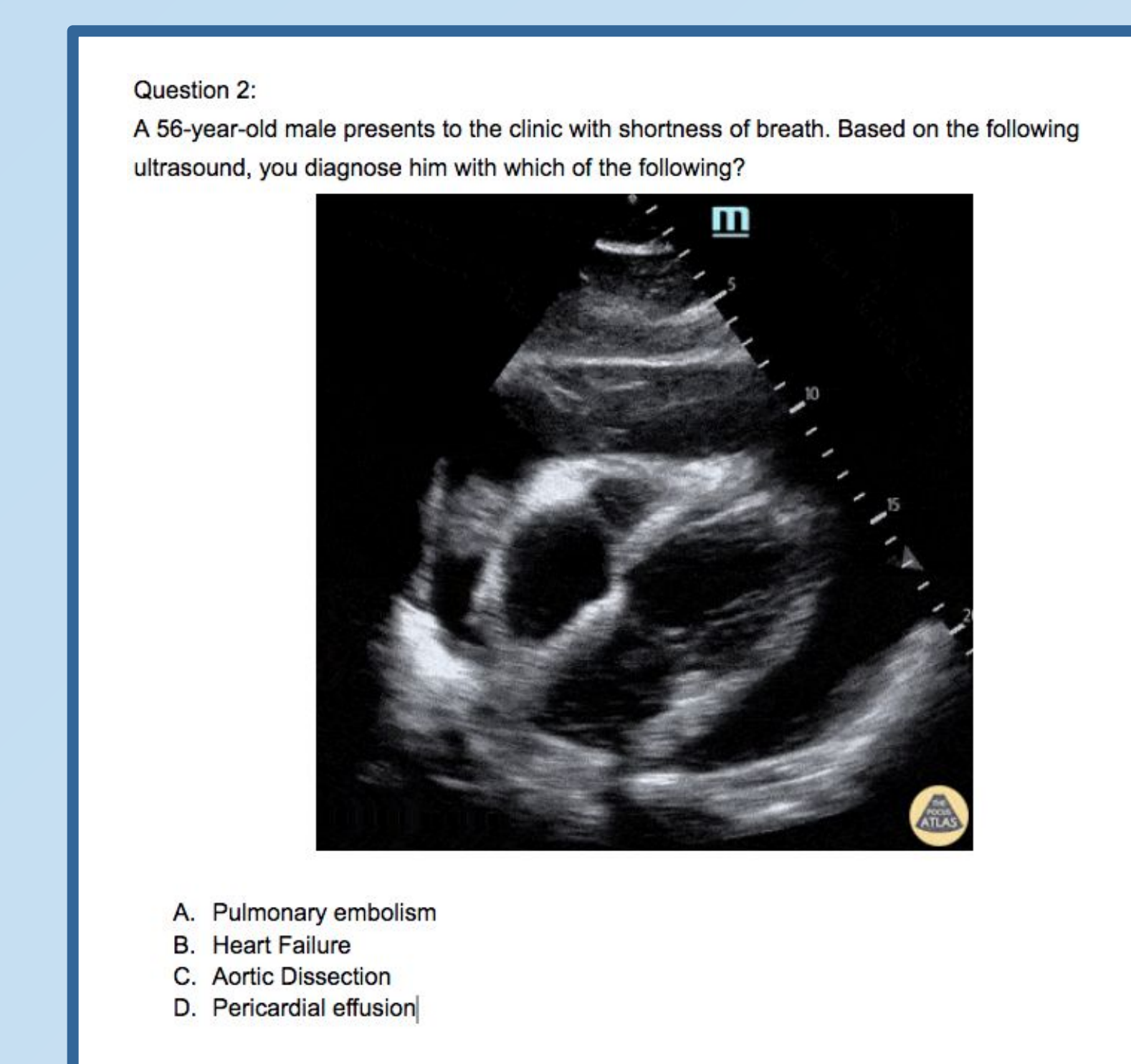


Figure 1: Sample image-based proficiency question

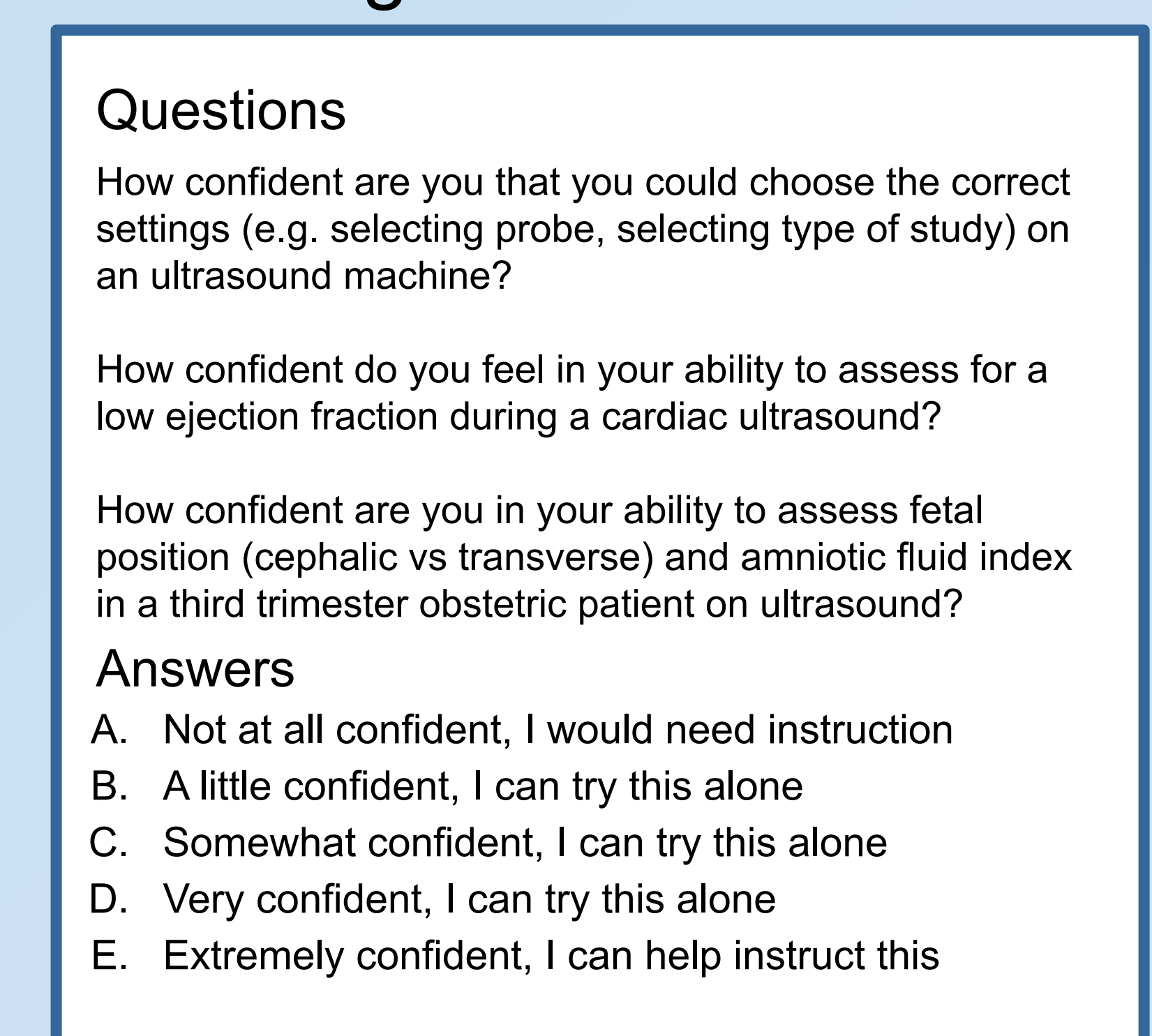


Figure 2: Sample confidence questions and available answers

Discussion

This was a small study with several limitations, but with exciting potential. Although there was only a modest increase in proficiency by the group of residents that participated in this study, this may be due in part to the test itself and variable medical school training.³ The pre-training scores were higher than expected, with a large majority of residents able to answer more than half of the questions before having done the workshop. Despite prior training, residents still felt more confident in their skills following the workshop overall.

There are several limitations to this study, most notably the small group evaluated and the unvalidated test created specifically for this study. Furthermore, the workshop was geared towards Emergency Medicine residents, with additional topics covered by Family Medicine faculty. In the future, a validated test specific to Family Medicine could be developed to guide training and examine proficiency. In addition, a study using a workshop specifically for Family Medicine may yield more robust results in the future.

References

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3. Bahner DP, Goldman E, Way D, Royall NA, Liu YT. The State of Ultrasound Education in U.S. Medical Schools. *Academic Medicine*. 2014;89(12):1681-1686. doi:10.1097/acm.0000000000000414