

# Ultrasound OSCE: Standardized Assessment of Ultrasound Proficiency in Undergraduate Medical Education



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## Introduction

Background

Point-of-care ultrasound (POCUS) has become a popular facet of medical school curricula; what remains uncertain is whether acquisition of POCUS proficiency can be formally assessed and quantified.

Problem

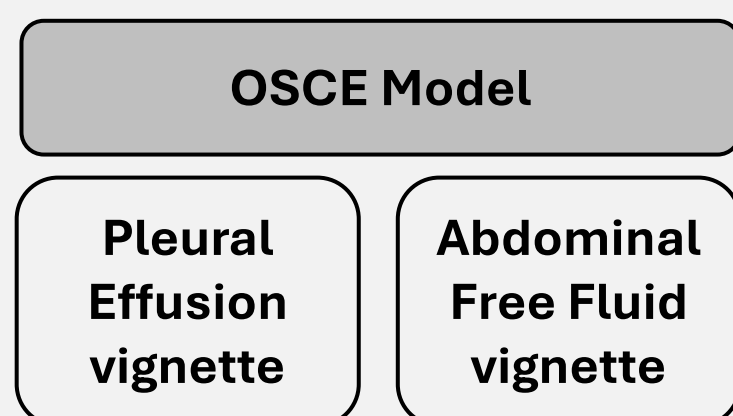
To date, no assessments have been standardized for use across institutions, adapted for use in specialties other than emergency medicine, or tailored to be appropriate at lower levels of training such as that of medical students.

Solution

Building a standardized OSCE to assess POCUS proficiency would provide individualized feedback for students on areas of improvement and generate broader insight into how to better adapt POCUS curricula to support students' learning needs.

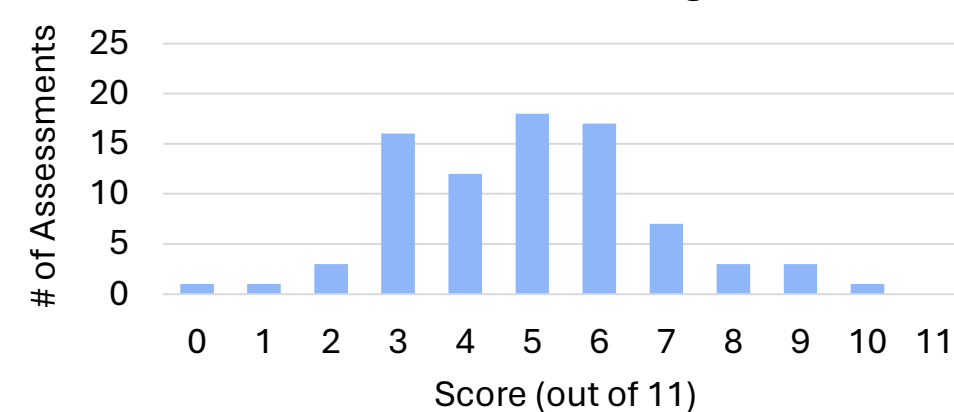
## Methods

1	Introduction and hygiene	1 pt
2	Positioning and draping	1 pt
3	Probe selection	1 pt
4	Image acquisition	2 pt
5	Image optimization	2 pt
6	Identifying anatomy	2 pt
7	Identifying pathology	1 pt
8	Clinical decision making	1 pt

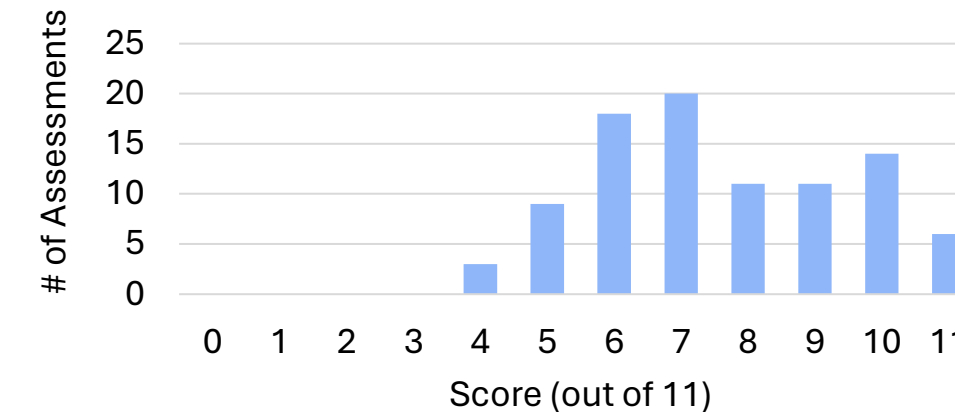


## Results

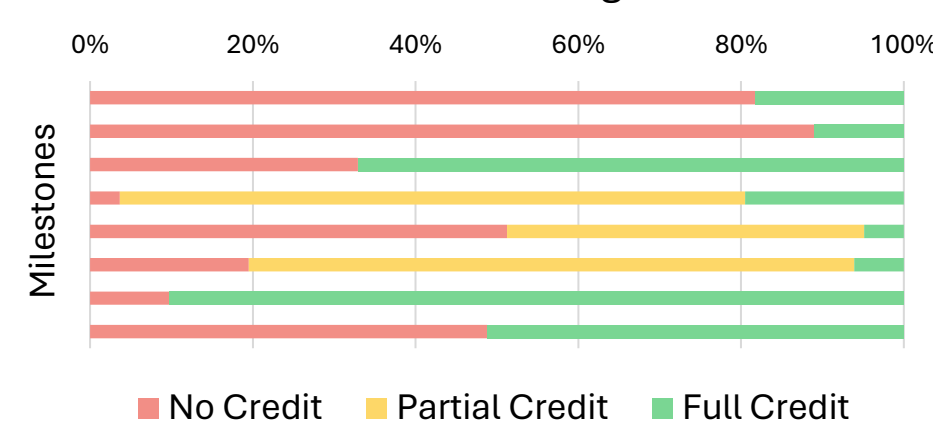
**Distribution of Total Scores**  
Pleural Effusion Vignette



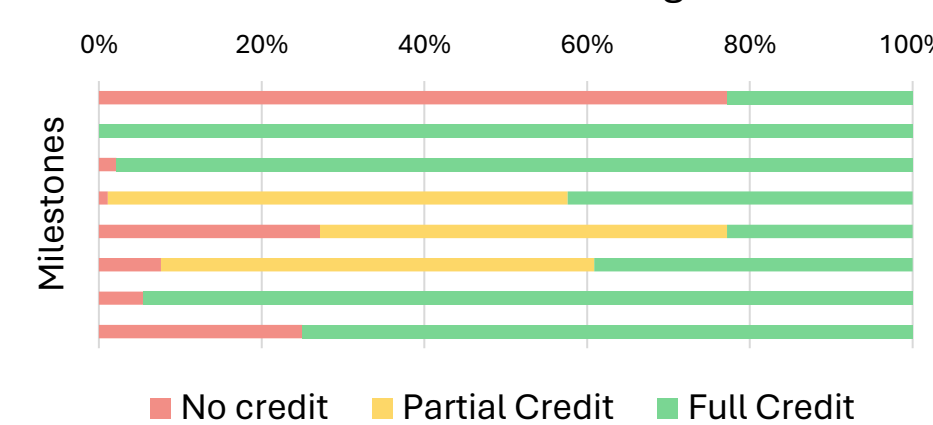
**Distribution of Total Scores**  
Abdominal Free Fluid Vignette



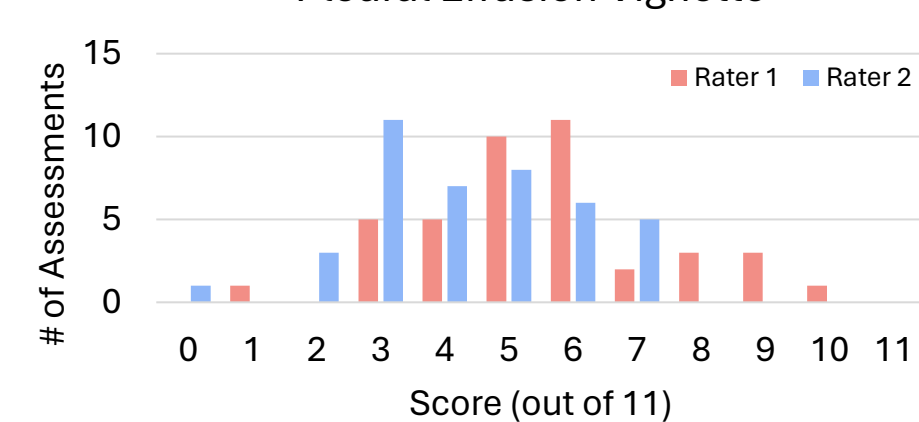
**Assignment of Partial vs Full Credit**  
Pleural Effusion Vignette



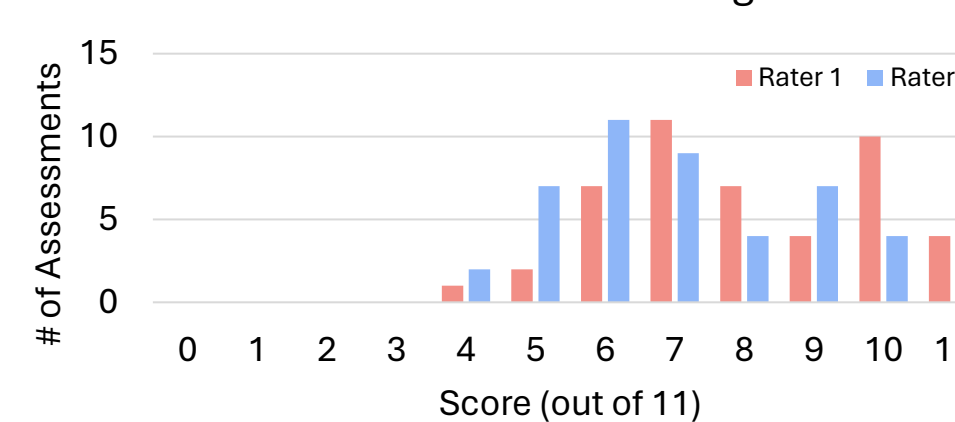
**Assignment of Partial vs Full Credit**  
Abdominal Free Fluid Vignette



**Distribution of Raters' Scores**  
Pleural Effusion Vignette



**Distribution of Raters' Scores**  
Abdominal Free Fluid Vignette



	Pleural Effusion	Abdominal Free Fluid
Sample size	n = 82	n = 92
Avg score + Std. dev.	$\mu = 4.94 \pm 1.89$	$\mu = 7.59 \pm 1.89$
Full $\pm$ Partial credit	10% $\rightarrow$ 79%	35% $\rightarrow$ 90%
Rater true agreement	17.1%	23.9%
Rater score differential	Rater 2: -1.20 pts	Rater 2: -0.87 pts
Rater score spread	$\sigma = 1.92$ vs 1.67	$\sigma = 1.84$ vs 1.86

## Discussion

- Greater proficiency in abdominal vs thoracic ultrasound
- Students' performance in technical milestones was promising
- Areas of improvement around introduction, hygiene, and positioning
- Low true agreement, but consistent inter-rater reliability

## Limitations

### Should we do it?

Strong consensus around value of helping medical students develop POCUS skills

### Can we do it?

- Can we create the curriculum space for POCUS?
- Can we utilize multimodal curricula?
- Can we invest in trained personnel?
- Can we accommodate the financial constraints?

### How do we do it?

- How do we determine the competencies to be assessed?
- How do we assessment proficiency qualitatively and quantitatively?
- How do we utilize the OSCE format to enhance simulation realism?

## Next Steps

### Refine grading rubric

*Encode subjective assessment as objectively as possible*

### Reevaluate workflow

*Optimize time, resource, and personnel demands*

### Share proposed assessment protocol

*Solicit input to strengthen assessment fidelity and broad adoption*