

MEDICINE

ABSTRACT

Purpose: Descriptive case study of pre-clinical ultrasound education for medical students at the University of Nevada, Las Vegas School of Medicine.

Background: The clinical value of Point-of-care ultrasound (POCUS) is escalating in nearly all medical arenas. As the benefits of US are recognized, so too is the understanding of the need to integrate US into undergraduate medical education (UME). Early exposure to ultrasound in a positive learning environment can contribute to increased student ease of use during clinical rotations. Our objective was to describe our process of integrating POCUS to medical students prior to clinical clerkship immersion and how such efforts are perceived by students.

Methods: 58 medical students participated in an US hands-on training session before initiation of clerkship duties. Students were enrolled in small groups of 14 - 15 for 3-hour sessions. A brief didactic introduction for US techniques began each session. Students were then further divided into duos/trios. Rotation through 6 separate stations designed to provide training in US of the abdomen, head/neck, and cardiac ensued. Each station consisted of an US machine, a standardized patient/model, and an instructor. Instructors included faculty/fellow physicians and sonographers. Clinical scenarios accompanied each station. Student feedback and satisfaction was collected via 6-point question survey at the end of the session.

Results: 58 / 58 students completed the survey 100% response rate. Clinical relevance and student satisfaction of the course was evaluated positively. 58/58 students answered "yes" that " the session met the stated learning objectives," 57/58 answered "yes" that "the learning environment was conducive to my acquiring new skills." Comments were entered in an optional field with the descriptors "great" and "helpful" trending throughout feedback, indicating high student satisfaction.

Discussion: The clinical applications of POCUS have expanded rapidly over the past decade. UME is changing, with new challenges to preparing students for clinical years. The overwhelmingly positive feedback for our ultrasound session indicates integrating POCUS as an educational tool with hands-on US practice can provide engaging and applicable skills for medical students

BACKGROUND

- Point-of-care ultrasound (POCUS) signifies a clinician driven and interpreted bedside ultrasound (US) exam.
- POCUS is increasingly valued across medical disciplines.
- It has been touted as invaluable due to its user friendly, cost-effective, and increased patient safety / satisfaction contributions.
- As US benefits are recognized, so too is the need to integrate ultrasound into undergraduate medical education (UME).
- Despite growing evidence supporting POCUS, its integration in UME remains variable and without widely adopted national standards and guidelines.
- Early POCUS exposure may contribute to ease of use during clinical rotations for medical students.
- We speculated that coupling POCUS with other skill sessions (such as knot-tying and surgical sterile technique practice), during student pre-clerkship orientation sessions would result in learner security and satisfaction prior to their clinical rotation launch.

OBJECTIVES

- To describe integration of POCUS before student clinical immersion.
- To evaluate medical student learner perceptions of our POCUS integration efforts.

Unique Exposure to Ultrasound in Pre-clinical Undergraduate Medical Education

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LEARNING SESSION

- 58 medical students participated in a hands-on training session before initiation of clerkship duties.
- Students' previous introduction to ultrasound imaging consisted of ultrasound basics such as physics, probe types, image optimization.
- A brief didactic introduction for ultrasound techniques began each session.
- Students were divided into duos and rotated through 6 stations designed to provide training in ultrasound of the abdomen, head/neck, and cardiac.
- Each station consisted of a clinical scenario, ultrasound machine, standardized patient/model, and instructor.
- Student feedback was collected via 8-point questionnaire at the end of the session.

STUDY DESIGN

- 3rd year medical students pre clerkship rotation
- Single site evaluation
- Questions on use of standardized patients, ultrasound equipment, learning environment, student satisfaction

Ultrasound Session Questionnaire:

- The learning environment was conductive to my acquiring new skills • The standardized patient models assisted in my learning session • I have a greater appreciation of ultrasound in patient care settings The simulation training added to my skill acquisition • I anticipate using ultrasound in my clinical practice

- The touch pad ultrasound was user friendly • I would like more ultrasound simulation practice
- The session met the stated learning objectives



- 58/58 students completed the survey.
- conducive to my acquiring new skills."

Question N=58

The learning environment was conductive to my acquiring new

The standardized patient models assisted in my learning session

I have a greater appreciation of ultrasound in patient care settings

The simulation training added to my skill acquisition

The touch pad ultrasound was user friendly

I anticipate using ultrasound in my clinical practice

l would like more ultrasound simulation practice

The session met the stated learning objectives

<u>Word</u>	<u>Freq</u> ı
great	18
helpful	17
ultrasound	17
session	12
experience	9
station	8
anatomy	7
awesome	7
lot	7
practice	7
awesome lot	7 7

Table 1: Frequency of student comments.

- applicable skills for medical students.

RESULTS

 Clinical relevance and student satisfaction of the ultrasound course were evaluated positively by the post questionnaire. • 57/58 answered "yes" that "the learning environment was

• Comments were entered in an optional field with the descriptors "great" and "helpful" trending throughout feedback, indicating high student satisfaction (Table 1 and Image 1).

	yes	%	no	%
	57	98	1	2
	58	100	0	0
	57	98	1	2
	58	100	0	0
	57	98	1	2
/	56	96	2	4
	57	98	1	2
	58	100	0	0



CONCLUSIONS

• UME is changing, with new challenges to preparing students for clinical years including the incorporation of POCUS. • The overwhelmingly positive feedback for our session indicates integrating POCUS as an educational tool with hands-on ultrasound practice can provide engaging and