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Teaching the Teachers of Point-Of-Care Ultrasound (POCUS): Creating a checklist for an Objective Structured Teaching Examination (OSTE) for Instructors of the Focused Assessment with Sonography for Trauma (FAST) Exam

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Figure 2.

62 Teaching the Teachers of Point-Of-Care Ultrasound (POCUS): Creating a Checklist for an Objective Structured Teaching Examination (OSTE) for Instructors of the Focused Assessment with Sonography for Trauma (FAST) Exam

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Background: Competency in POCUS is required by the Residency Review Committee for multiple medical specialties not just limited to Emergency Medicine. As ultrasound use increases there is a need to ensure that senior residents and faculty are adept at instructing novice learners in POCUS. OSTEs focus on the teaching skills of residents and faculty and have been utilized to evaluate and enhance clinical teaching. There is a lack of literature detailing OSTE use in teaching procedures like POCUS.

Educational Objectives: We sought to create an OSTE checklist that could be used to evaluate an instructor teaching a FAST exam to a novice ultrasound learner. This OSTE is the basis for creating a curriculum for the instructor and evaluating the effectiveness of teaching the teachers of POCUS.

Curricular Design: A panel of faculty from our institution with both POCUS and medical education expertise created a preliminary OSTE checklist after reviewing the literature. The checklist was organized into three parts: short didactics, hands-on scanning and overall learning climate. We conducted a cross-sectional survey which was IRB exempt. We sent the draft checklist to a convenience sample of ultrasound directors for review. We asked specifically, “Is each particular point/item important for a FAST teacher to perform when instructing a novice ultrasound learner?” and the results were recorded in a binary fashion.

Impact/Effectiveness: The checklist was reviewed by 13 US directors nationally. A cutoff of 75% of respondents scoring the item as YES/KEEP was used to determine whether individual items should be kept or dropped. The final OSTE checklist reflects a total of 29 items out of the original 33 draft items (Table 1). Creation of a FAST OSTE will facilitate the development and evaluation of curriculum specifically designed for the instructors of POCUS starting with the core application of the FAST exam.



POCUS: OSTE Checklist for the FAST Exam

Didactics	Keep	Discard	Hands-On Scanning	Keep	Discard
1. Reviewed Basic Ultrasound Principles			1. Facilitated learner's image acquisition by recognizing and correcting probe position and beam direction.	100%	0%
<ul style="list-style-type: none"> • Piezoelectric crystals send/receive sound waves converting back and forth sound/energy 	69.2%	30.8%	2. Used verbal cues to slide, rotate, fan, rock, flatten or change pressure of the probe prior to demonstrating or physically directing the learner's hand	100%	0%
<ul style="list-style-type: none"> • Tissue appearance based on acoustic impedance (Bone high attenuator/white, Tissue medium/grey, Fluid low/black) 	100%	0%	3. Emphasized the importance of fanning through the entire window (liver/kidney, spleen/kidney, pelvis long and transverse) to evaluate for hemoperitoneum.	92.3%	7.7%
<ul style="list-style-type: none"> • Two keys to resolution: Frequency (High/good resolution, Low/good penetration), Focal zone (keeping object of interest in center of screen) 	76.9%	23.1%	4. Instructed how to visualize above the diaphragm in the LUQ and RUQ views.	100%	0%
<ul style="list-style-type: none"> • Artifacts positive and negative role in the EFASST exam: enhancement/posterior to bladder, mirror/present in normal thorax 	100%	0%	5. Instructed how to rotate probe when rib shadows obstruct visualization.	92.3%	7.7%
2. Reviewed Machine Knobology			6. Highlighted need to visualize inferior pole of R kidney in RUQ.	76.9%	23.1%
<ul style="list-style-type: none"> • Probe selection 	100%	0%	7. Highlighted need to visualize entire spleen/subdiaphragmatic not just the splenorenal interface in LUQ.	84.6%	15.4%
<ul style="list-style-type: none"> • Frequency button and settings 	69.2%	30.8%	8. Explained that the Trendelenburg position will improve sensitivity for detecting free fluid.	53.8%	46.2%
<ul style="list-style-type: none"> • Gain button and settings 	100%	0%	9. Explained that perinephric fat may appear as free fluid and the importance of comparing to opposite side.	69.2%	30.8%
<ul style="list-style-type: none"> • Depth button and settings 	100%	0%			
3. Reviewed Orientation			Learning Climate		
<ul style="list-style-type: none"> • Probe marker relationship to screen indicator 	100%	0%	1. Actively sought questions from the learner.	92.3%	7.7%
<ul style="list-style-type: none"> • Tips to confirm probe marker (gel or touching one end) 	84.6%	15.4%	2. Probed the learner with questions to gauge understanding.	100%	0%
<ul style="list-style-type: none"> • Standard Longitudinal view (head/left side screen) 	84.6%	15.4%	3. Offered specific positive feedback.	84.6%	15.4%
<ul style="list-style-type: none"> • Standard Transverse view (patient's right/left side screen) 	84.6%	15.4%	4. Offered specific corrective feedback.	100%	0%
4. Defined the mnemonic FAST	84.6%	15.4%	5. Created a comfortable/safe learning environment.	76.9%	23.1%
5. Reviewed indications for FAST exam	100%	0%	6. Summarized key teaching points from the encounter.	92.3%	7.7%
6. Reviewed the limitations of FAST exam	100%	0%			
7. Reviewed the four anatomical windows for the FAST exam	100%	0%			
8. Presentation was understandable and organized.	76.9%	23.1%			

Figure 1.

63 Teaching Video and Hands on Learning Improve Slit Lamp Exam Workshop

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Background: Learning through multimedia can fill gaps in less commonly performed procedures and clinical exam skills. 4th year medical students (MS4's) and interns are generally uncomfortable and not proficient with slit lamp exams (SLEs). A concise video presentation that can be watched prior to an educational workshop, and also available for review on shift improves the provider's comfort and proficiency in performing a SLE. This model incorporates video learning, interactivity, practice, and repetition, which have been shown in prior studies to improve learning outcomes.