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Simulation-Based Resuscitative Transesophageal Echocardiography Training for Emergency Medicine Residents

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Introduction

- Resuscitative TEE is an emerging tool in the cardiac arrest tool-box, and can improve outcomes in OHCA.
  - Identifies reversible causes
  - Decreases time off chest
  - Evaluates compression efficacy
  - Improves assessment during pulse-checks
- Simulation training can prepare EM residents to obtain and interpret TEE views on a live patient.

Methods

- Prospective cohort study
- 15 Senior EM residents
- 20 question pre-test
- 1 hour of TEE didactics
- 10 proctored TEE examinations on HeartWorks TEE Sim model
- 20 question post-test
- Standardized assessment by a credentialed Cardiac Anesthesiologist in OR

Results

Simulation Assessment

	Mean	STD	95% CI	Pearson's Skewness Statistic
Pre-Test	11.07	+/-3.105	9.35 -- 12.79	0.007
Post-Test	19.40	+/-0.828	18.94 -- 19.86	-2.17
	p<0.0001			

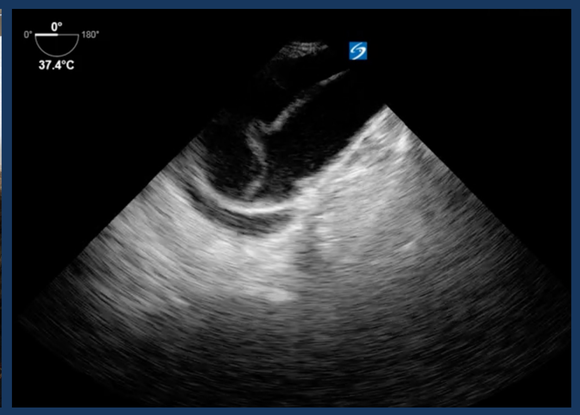
OR Assessment

		Mean	SD	95% CI	Pearson's Skewness Statistic
OR Probe Placement Attempts		1.27	0.458	1.01 - 1.52	1.76
Clinically Acceptable Views (% scoring ≥ 8/10 for Overall Clarity, Angle, Structure 1, 2, 3)	ME4C	93.3%			
	MELAX	93.3%			
	AAOSAX	60.0%			
	TGSAX	60.0%			
	TOTAL	***76.7%***			

Discussion

- Clinically acceptable views, defined as score of 8/10 or greater, found in: **ME 4C 93.3%, ME LAX 93.3%, Asc AO Sax 60%, and TG Sax 60%.** Of the 60 total views obtained, **76.7% were acceptable views.**
- Simulation training in resuscitative TEE is an effective method for preparing EM residents to obtain and interpret live TEE.

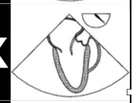
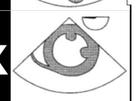
Simulation training in resuscitative TEE is an effective method for preparing EM residents to obtain and interpret TEE imaging in a live patient.



SCAN ME

SCAN to download the full poster, and SEE TEE VIDEOS!!

Graphs and Figures

VIEW	PROBE LOCATION	OMNIPLANE	TTE	
ME 4C	MID ESOPHAGUS	0°	APICAL 4	
ME LAX	MID ESOPHAGUS	120°	PLAX	
TG SAX	STOMACH	0°	PSAX	
Asc Ao SAX	UPPER/MID ESOPHAGUS	0°		

Probe placement:					
# of attempts					
Complications?					
Criteria	**Angle**	**Overall Clarity**	**Structure 1**	**Structure 2**	**Structure 3**
Score	**0** = Out of range	**0** = Poor	**0** = Not visible	**0** = Not visible	**0** = Not visible
	2 = Within range	**1** = Acceptable	**1** = Visible with fair clarity	**1** = Visible with fair clarity	**1** = Visible with fair clarity
		2 Excellent	**2** = Visible with good clarity	**2** = Visible with good clarity	**2** = Visible with good clarity

ME 4C (w/o flexion)		UE Asc Ao SAX	
Criteria	**Score (circle)**	**Criteria**	**Score (0-2)**
Angle (0-20)	0 2	Angle (0-20)	0 2
Structure 1 - **LA**	0 1 2	Structure 1 - **SVC**	0 1 2
Structure 2 - **LV**	0 1 2	Structure 2 - **Asc Ao**	0 1 2
Structure 3 - **RV**	0 1 2	Structure 3 - **PA**	0 1 2
Overall Clarity	0 1 2	Overall Clarity	0 1 2
Total (≥8 = acceptable)		**Total (≥8 = acceptable)**	

ME LAX		TG SAX	
Criteria	**Score (0-2)**	**Criteria**	**Score (0-2)**
Angle (110-130)	0 2	Angle (0-20)	0 2
Structure 1 - **LA**	0 1 2	Structure 1 - **Ant Pap**	0 1 2
Structure 2 - **LV**	0 1 2	Structure 2 - **Post Pap**	0 1 2
Structure 3 - **AV**	0 1 2	Structure 3 - **LV**	0 1 2
Overall Clarity	0 1 2	Overall Clarity	0 1 2
Total (≥8 = acceptable)		**Total (≥8 = acceptable)**	

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