Abstract Form

Program Affiliation:	UCLA Internal Medicine
Presenter Name (Last, First):	Kyle Udd-Garnica
Co-Authors:	Emily Cantor
Project Title:	FoCUSing on the Future – A Curricular Innovation to Teach Cardiac Ultrasound to Internal Medicine Residents

Research Category (please check one):

☐	**Original Research**	☐	**Clinical Vignette**	☐	**Quality Improvement**	☒	**Medical Education Innovation**

Introduction: Point of care ultrasound (POCUS) is an increasingly used technical skill that has rapidly gained prominence within Internal Medicine (IM) training programs in the United States[1,2]. Patients with nonspecific cardiopulmonary symptoms are among the most commonly admitted to inpatient medicine wards and would benefit from rapid evaluation of cardiac function. Focused Cardiac Ultrasound (FoCUS) is a targeted exam that can quickly answer clinical questions based on a pre-established image acquisition protocol[3] which has been effectively taught to IM residents, however it is an underutilized technique. Gopal et al showed that both image acquisition and interpretation were highly teachable skills that could be learned with a brief intervention[4]. One of the important skills for effectively utilizing FoCUS is the ability to evaluate ejection fraction (EF) rapidly at the bedside following image acquisition. We developed a curricular innovation that created an asynchronous module to improve IM resident's confidence in EF evaluation and improve FoCUS skills to be used in clinical practice which may aid residents in clinical decision making to improve patient care while on the wards.

Methods: IM residents completed a brief survey immediately prior to completion of the initial FoCUS training module. Anonymous responses were paired pre- and post-module using a paired t-test. The survey evaluated confidence levels using a 5-point Likert scale and residents were provided with an opportunity to make suggestions for improvement.

Results: 17 medical trainees completed the surveys and the module. All respondents (17/17; 100%) identified the material within the module as relevant to training in Internal Medicine. Seventy-one percent (12/17; 70.5%) of respondents identified that "More Practice Interpreting Ultrasound Images," would improve their desire to utilize FoCUS on clinical rotations. All (17/17; 100%) respondents identified "More opportunities for hands on practice," would improve their desire to utilize FoCUS on clinical rotations. Following completion of the module respondents showed a significant increase in confidence related to evaluating EF (Mean pre-module confidence score 2.82, mean post-module confidence score 3.94; P = 0.0007).

Conclusion: FoCUS is a valuable skill that impacts IM residents and can be taught to help visually estimate EF and potentially guide clinical management decisions in real time. Using a brief, lecture-based module, IM residents at a single institution were able to significantly improve their confidence related to evaluating EF based on ultrasound imaging into ordinal categories of normal, mildly reduced, moderately reduced, or severely reduced. Current barriers to implementing FoCUS include mastery of both the physical skills related to ultrasound technique to obtain images and confidence in the ability to interpret the images once obtained. Further evaluation is needed to ensure residents can retain and use this skill in the future. Considerations to grow this program would include implementation of a skills practicum to provide more opportunities for technical mastery.
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[1]Martin R, Lau HA, Morrison R et al. The Rising Tide of Point-of-Care Ultrasound (POCUS) int Medical Education: An Essential Skillset for Undergraduate and Graduate Medical Education. Current Problems in Diagnostic Radiology. 52(6), 2023; 482-484. https://doi.org/10.1067/j.cpradiol.2023.06.003.
[2]Keddis MT, Cullen MW, Reed DA, et al. Effectiveness of an Ultrasound Module Training for Internal Medicine Residents. *BMC Med Educ* 11, 75 (2011). https://doi.org/10.1186/1472-6920-11-75.