


# CAN YOU TEACH YOURSELF POINT-OF-CARE ULTRASOUND TO A LEVEL OF CLINICAL COMPETENCY? EVALUATION OF A SELF-DIRECTED SIMULATION-BASED TRAINING PROGRAM

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## ABSTRACT: Poster (1H)

- Purpose:** The primary goal of our study was to assess the effectiveness of a self-directed simulation-based training program for medical students, in terms of achieving competency in basic Point-of-Care Ultrasound (PoCUS) scans.
- Methods:** Fourteen second-year medical students with no prior ultrasound experience were provided access to online study modules created by SonoSim ultrasound training solutions (SonoSim, Santa Monica, CA, US), covering ultrasound theory and methodology, and attended a two-hour introductory session where they were introduced to the study protocol, simulation equipment, and software. Participants then undertook self-directed ultrasound simulation training throughout the year, using the CAE Vimedix PoCUS simulator (CAE Healthcare, Sarasota, FL, US) and the SonoSim ultrasound training solution system. Upon reaching 10 (and 25) scans in each of the four categories (cardiac, abdomen, aorta, and pelvic), a triggered assessment was arranged in which participants scanned a live volunteer under the direct supervision of PoCUS-certified physicians. The physicians scored the participant attempts in terms of image acquisition, interpretation, and clinical understanding. No feedback was provided to the participants. Following the study, participants submitted feedback regarding the design of the study and were asked to rank their preferred training program protocols out of a provided list of five different options.
- Results:** At the first triggered assessment (after completing only 10 scans in each category), four out of 14 participants were scored as competent in the aorta scan, two out of 14 participants were competent in the pelvic scan, and none of the participants were competent in both the cardiac and abdominal scans. Only nine out of 14 participants completed the second triggered assessment (after completing 25 scans in each category). At the second assessment, only three participants were scored as competent in the aorta scan, two participants were competent in the cardiac scan, and one participant was competent in the pelvic scan. None of the 14 learners completed the final phase of the training and assessment protocol. Feedback following the termination of the study showed that none of the participants supported continuing the study protocol as designed originally, and the preferred study design consisted of a full-day introductory course with live models and simulation, followed by self-directed learning with simulation and live models until 50 scans in each category were achieved.



Conclusion: We were unable to demonstrate the achievement of competence in PoCUS in medical learners engaged in our combined self-directed simulation-based training program. This is in contrast to the considerable literature supporting self-directed learning and simulation-based learning for other skills. Feedback from faculty, curriculum integration, and alignment with clinical experience may be beneficial.

