

Integrating Point of Care Ultrasound into Orthopedic Residency: A Longitudinal Evaluation

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INTRODUCTION: This study aims to introduce a longitudinal PoCUS (point of care ultrasound) training program as an addition to the Orthopedic Surgery curriculum and assess the efficacy of such a training program in terms of knowledge retention and PoCUS usage within the group of residents. We hypothesize that a practical, longitudinal PoCUS curriculum increases interest in ultrasound, increases knowledge and hands-on clinical use of PoCUS in the practice of orthopedic residents.

METHODS: This prospective project was done within the McGill University Orthopedic Surgery Program. This study comprised of a half-day of didactic and hands-on teaching. Evaluation of the impact of the teaching session was performed through three surveys. All participants filled one pre-course, one immediate post-course and one delayed post-course survey (6 months following the teaching session). The surveys were divided in 3 sections: participant's interest and usage of PoCUS, ultrasound-related knowledge and perceived limitations related to the usage of ultrasound in their clinical settings. The study included all junior and senior orthopedic residents who were enrolled at the time of the study, who attended the teaching session and who answered all surveys.

RESULTS SECTION: There were 14 participants in total (11 males, 3 females). There was a significant increase in interest towards PoCUS (scale 1 to 5) from 3.36 ± 0.50 in the pre-course survey to 3.93 ± 0.83 in the final post-course survey ($p=0.04$). However, there was no significant change in the amount of PoCUS usage in clinical settings. Comfort levels for PoCUS-related procedures significantly increased immediately following the teaching session but did not stay significantly higher than pre-course levels after 6 months. When tested on knowledge, the cohort scored a mean of $36.61\% \pm 19.28$, $68.75\% \pm 18.83\%$ and $52.68\% \pm 17.11\%$ in the three surveys respectively. At 6 months, there was a significant decrease compared to the immediate post-course result ($p=0.02$) but was still significantly greater than the pre-course test ($p=0.01$). Lack of ultrasound-related knowledge and lack of time were the two most prevalent perceived barriers in the first two surveys. The participants also voiced in the last survey that site culture was a significant obstacle in conjunction with the previous two factors.

DISCUSSION: This study demonstrates that PoCUS teaching for orthopedic residents yields long-term benefits in terms of interest and knowledge. However, recurrent teaching sessions and further efforts are required to address perceived obstacles to PoCUS usage and increase clinical implementation.

SIGNIFICANCE/CLINICAL RELEVANCE: PoCUS is a diagnostic tool gaining gradual importance within clinical practice due to its ease of access and low risk profile. This study contributes to understand how to efficiently incorporate PoCUS teaching in orthopedic residency programs.