



The aim of this study was to evaluate the effectiveness of a simulation-based training program for improving novice technical performance during ultrasound-guided internal jugular CVC placement” Corvetto et al (2017).

Abstract

**BACKGROUND:** Current evidence supports the utility of simulation training for bedside procedures such as ultrasound-guided jugular central venous catheter (CVC) insertion. However, a standardized methodology to teach procedural skills has not been determined yet. The aim of this study was to evaluate the effectiveness of a simulation-based training program for improving novice technical performance during ultrasound-guided internal jugular CVC placement.

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**METHODS:** Postgraduate year 1 (PGY-1) residents from anesthesiology, emergency medicine, cardiology, ICU, and nephrology specialties were trained in four deliberate practice sessions. Learning objectives included principles of ultrasound (US), preparation (gown, glove, draping), procedural skills I (US scanning and puncture), and procedural skills II (catheter insertion). CVC technical proficiency was tested pre- and post-training using hand-motion

analysis with the Imperial College Surgical Assessment Device (ICSAD) and a global rating scale (GRS).

**RESULTS:** Thirty-five PGY-1 residents successfully completed the program. These novices' GRS scores improved significantly after the training ( $P < 0.001$ ). Total path length measured with the ICSAD decreased significantly after the training ( $P = 0.008$ ). Procedural time decreased significantly after training from 387 (310-501) seconds to 200 (157-261) seconds (median and interquartile range) ( $P = 0.029$ ).

**CONCLUSION:** This simulation-training program based on deliberate practice significantly increased the technical skills of residents in US-guided short-axis, out-of-plane internal jugular CVC placement. Data also confirm the validity of the ICSAD as an assessment tool for ultrasound-guided internal jugular CVC placement learning.

Reference:

Corvetto, M.A., Pedemonte, J.C., Varas, D., Fuentes, C. and Altermatt, F.R. (2017) Simulation-based training program with deliberate practice for ultrasound-guided jugular central venous catheter placement. *Acta Anaesthesiologica Scandinavica*. July 6th. .

doi: 10.1111/aas.12937.

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