

**Abstract:**

**OBJECTIVES:** Central venous catheter insertions may lead to preventable adverse events. Attending physicians' central venous catheter insertion skills are not assessed routinely. We aimed to compare attending physicians' simulated central venous catheter insertion performance to published competency standards.

**DESIGN:** Prospective cohort study of attending physicians' simulated internal jugular and subclavian central venous catheter insertion skills versus a historical comparison group of residents who participated in simulation training.

**SETTING:** Fifty-eight Veterans Affairs Medical Centers from February 2014 to December 2014 during a 2-day simulation-based education curriculum and two academic medical centers in Chicago.

**SUBJECTS:** A total of 108 experienced attending physicians and 143 internal medicine and emergency medicine residents.

**INTERVENTION:** None.

**MEASUREMENTS AND MAIN RESULTS:** Using a previously published central venous catheter insertion skills checklist, we compared Veterans Affairs Medical Centers attending physicians' simulated central venous catheter insertion performance to the same simulated performance by internal medicine and emergency medicine residents from two academic centers. Attending physician performance was compared to residents' baseline and posttest (after simulation training) performance. Minimum passing scores were set previously by an expert panel. Attending physicians performed higher on the internal jugular (median, 75.86% items correct; interquartile range, 68.97-86.21) and subclavian (median, 83.00%; interquartile range, 59.00-86.21) assessments compared to residents' internal jugular (median, 37.04% items correct; interquartile range, 22.22-68.97) and subclavian (median, 33.33%; interquartile range, 0.00-70.37; both  $p < 0.001$ ) baseline assessments. Overall simulated performance was poor because only 12 of 67 attending physicians (17.9%) met or exceeded the minimum passing score for internal jugular central venous catheter insertion and only 11 of 47 (23.4%) met or exceeded the minimum passing score for subclavian central venous catheter insertion. Resident posttest performance after simulation training was significantly higher than attending physician performance (internal jugular: median, 96%; interquartile range, 93.10-100.00; subclavian: median, 100%; interquartile range, 96.00-100.00; both  $p < 0.001$ ).

**CONCLUSIONS:** This study demonstrates highly variable simulated central venous catheter insertion performance among a national cohort of experienced attending physicians. Hospitals, healthcare systems, and governing bodies should recognize that even experienced physicians require periodic clinical skill assessment and retraining.

**Reference:**

Barsuk, J.H., Cohen, E.R., Nguyen, D., Mitra, D., O'Hara, K., Okuda, Y., Feinglass, J., Cameron, K.A., McGaghie, W.C. and Wayne, D.B. (2016) Attending Physician Adherence to a 29-Component Central Venous Catheter Bundle Checklist During Simulated Procedures. *Critical Care Medicine*. June 22nd. (Epub ahead of print).