

The purpose of this study was to determine how an error-focused training program affected performance, retention, and transfer of central venous catheter (CVC) placement skills when compared with traditional training methodologies” Gardner et al (2015).

Abstract:

INTRODUCTION: Error management training is an approach that encourages exposure to errors during initial skill acquisition so that learners can be equipped with important error identification, management, and metacognitive skills. The purpose of this study was to determine how an error-focused training program affected performance, retention, and transfer of central venous catheter (CVC) placement skills when compared with traditional training methodologies.

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METHODS: Surgical interns (N = 30) participated in a 1-hour session featuring an instructional video and practice performing internal jugular (IJ) and subclavian (SC) CVC placement with guided instruction. All interns underwent baseline knowledge and skill assessment for IJ and SC (pretest) CVC placement; watched a “correct-only” (CO) or “correct + error” (CE) instructional video; practiced for 30 minutes; and were posttested on knowledge and IJ and SC CVC placement. Skill retention and transfer (femoral CVC placement) were assessed 30 days later. All skills tests (pretest, posttest, and transfer) were videorecorded and deidentified for evaluation by a single blinded instructor using a validated 17-item checklist.

RESULTS: Both the groups exhibited significant improvements ($p < 0.001$) in knowledge and skills after the 1-hour training program, but the increase of items achieved on the performance checklist did not differ between conditions (CO: IJ $\Delta = 35\%$, SC $\Delta = 29\%$; CE: IJ $\Delta = 36\%$, subclavian $\Delta = 33\%$). However, 1 month later, the CO group exhibited significant declines in skill retention on IJ CVC placement (from 68% at posttraining to 44% at day 30; $p < 0.05$) and SC CVC placement (from 63% at posttraining to 49% at day 30; $p < 0.05$), whereas the CE group did not have significant decreases in performance. The CE group performed significantly better on femoral CVC placement (i.e., transfer task; 62% vs 38%; $p < 0.01$) and on 2 of the 3 complication scenarios ($p < 0.05$) when compared with the CO group.

CONCLUSIONS: These data indicate that incorporating error-based activities and discussions into training programs can be beneficial for skill retention and transfer.

Reference:

Gardner, A.K., Abdelfattah, K., Wiersch, J., Ahmed, R.A. and Willis, R.E. (2015) Embracing Errors in Simulation-Based Training: The Effect of Error Training on Retention and Transfer of Central Venous Catheter Skills. *Journal of Surgical Education*. September 8th. .

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