

Almost half of the surgical residents committed multiple errors while performing subclavian CVC placement” Nathwani et al (2016).

Abstract:

OBJECTIVE: The purpose of this study is to coevaluate resident technical errors and decision-making capabilities during placement of a subclavian central venous catheter (CVC). We hypothesize that there would be significant correlations between scenario-based decision-making skills and technical proficiency in central line insertion. We also predict residents would face problems in anticipating common difficulties and generating solutions associated with line placement.

DESIGN: Participants were asked to insert a subclavian central line on a simulator. After completion, residents were presented with a real-life patient photograph depicting CVC placement and asked to anticipate difficulties and generate solutions. Error rates were analyzed using chi-square tests and a 5% expected error rate. Correlations were sought by comparing technical errors and scenario-based decision-making skills.

SETTING: This study was performed at 7 tertiary care centers.

PARTICIPANTS: Study participants (N = 46) largely consisted of first-year research residents who could be followed longitudinally. Second-year research and clinical residents were not excluded.

RESULTS: In total, 6 checklist errors were committed more often than anticipated. Residents committed an average of 1.9 errors, significantly more than the 1 error, at most, per person expected ($t(44) = 3.82, p < 0.001$). The most common error was performance of the procedure steps in the wrong order (28.5%, $p < 0.001$). Some of the residents (24%) had no errors, 30% committed 1 error, and 46 % committed more than 1 error. The number of technical errors committed negatively correlated with the total number of commonly identified difficulties and generated solutions ($r(33) = -0.429, p = 0.021, r(33) = -0.383, p = 0.044$, respectively).

CONCLUSIONS: Almost half of the surgical residents committed multiple errors while performing subclavian CVC placement. The correlation between technical errors and decision-making skills suggests a critical need to train residents in both technique and error management.

Reference:

Nathwani, J.N., Fiers, R.M., Ray, R.D., Witt, A.K., Law, K.E., DiMarco, S. and Pugh, C.M. (2016) Relationship Between Technical Errors and Decision-Making Skills in the Junior Resident. Journal of Surgical Education. September 23rd. .



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