



#IVTEAM #Intravenous literature: Scholtz, A.K., Monachino, A.M., Nishisaki, A., Nadkarni, V.M. and Lengetti, E. (2013) Central Venous Catheter Dress Rehearsals: Translating Simulation Training to Patient Care and Outcomes. *Simulation in Healthcare*. September 20th. .

Abstract:

INTRODUCTION: Central line-associated blood stream infection (CLABSI) is a preventable burden to our current health care system. Inconsistencies in knowledge and practice of central venous catheters (CVC) dressing change procedures are associated with CLABSI. We hypothesized that participation in a “just-in-time” and “just-in-place” CVC dressing change program would improve nurses’ knowledge, confidence, and psychomotor performance on mannequins (eg, T1 outcomes). Moreover, this simulation program would be associated with improved procedural competence on real patients (T2 outcomes) and hospital CLABSI rate (T3 outcomes).

METHODS: We conducted a prospective before and after timed series study at a large urban children’s hospital. This program provided an opportunity to practice a CVC dressing change using a simulated patient chest/arm. Cognitive and psychomotor skills were evaluated using a pre-self-assessment/post-self-assessment, written knowledge test and direct observation using a standardized checklist. Central line-associated blood stream infection rates were monitored monthly by the Office of Quality and Patient Safety.

RESULTS: Five hundred twenty-four inpatient nurses participated in this program between

November 2008 and May 2010. Knowledge and self-confidence improved significantly (knowledge, 4.1 [0.7] vs. 4.6 [0.5], $P < 0.001$; self-confidence, 4.1 [0.8] vs. 4.6 [0.6], $P < 0.001$). Of 2469 real-patient CVC dressing changes observed, dress rehearsal trainees required fewer corrective prompts (9% vs. 21%, $P < 0.001$), and CLABSI rates decreased from 5.3/1000 to 2.9/1000 line days ($P < 0.001$) during the study.

DISCUSSION: This program improved nurse's knowledge, self-confidence, and psychomotor skill performance on mannequins (eg, T1 outcomes). These improvements were associated with improved procedural competence on real patients (T2 outcomes) and a temporal association with decreased hospital CLABSI rates (T3 outcomes).



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