48 Step by Step: A Novel Approach to Central Venous Catheter Training Utilizing Microskills Stations

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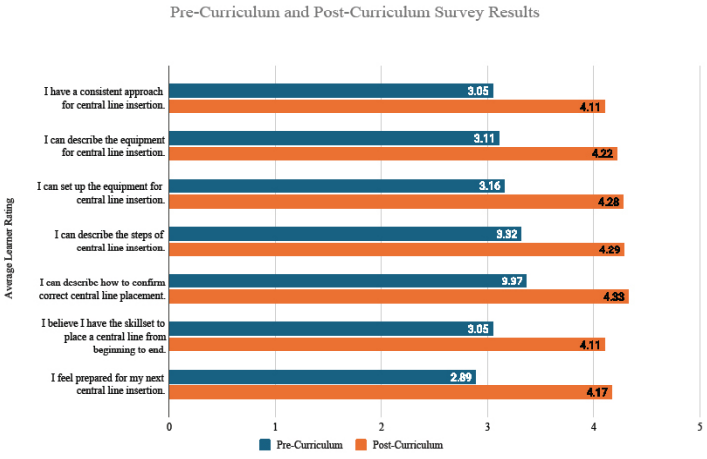
Introduction/Background: Central venous catheter (CVC) insertion is a core procedural skill in EM, thus programs dedicate significant time to building proficiency in PGY-1s. Mastery learning prioritizes deliberate practice with goal-oriented feedback, emphasizing learning outcomes over a pre-set educational approach. Microskills break down multi-step procedures into discrete building blocks that provide learners with targeted feedback and the ability to control the pace of their learning until proficiency is achieved.

Educational Objectives: Based on principles of mastery learning, we designed a microskills-based CVC insertion curriculum, which deconstructs the procedure into smaller, repeatable steps. We hypothesized this would help EM PGY-1s to better understand essential components of CVC insertion.

Curricular Design: A total of 11 microskills stations were designed based on a validated checklist developed for CVC training in resident learners. Each microskill station had three components: 1) description of the skill, 2) materials to attempt the skill, 3) materials to check mastery of the skill. Learners remained at each station until they felt confident performing the given skill.

Compared with traditional task trainers, microskill stations required a larger classroom footprint and the purchase of household supplies to provide low-fidelity representations of some steps, at an additional cost of $45 per deployment. Staggering learner start times helped prevent bottlenecks at more time-consuming stations.

Impact/Effectiveness: This curriculum was deployed in July 2024 and July 2025 intern orientation at a single academic institution, for a total of 17 EM PGY-1s. Pre- and post- curriculum surveys assessed EM PGY-1s' confidence, self-efficacy, and curricular satisfaction. Additionally, 3 faculty facilitators were surveyed on their impressions. This novel curriculum was well-received. EM PGY-1s reported statistically significant improvements in their confidence and self-efficacy in CVC insertion (Image 1). Qualitative surveys noted improved understanding of procedural nuances and clearer identification of steps needing additional practice. Faculty felt this curriculum offered a more individualized teaching strategy without significantly increasing facilitation time.



49 Surprise Mass Casualty Incident Simulation

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Background: Prioritization of care during a Mass Casualty Incident (MCI) highlight an essential competency of emergency medicine, yet residents frequently express lack of confidence in their ability to manage mass casualty incidents due to lack of exposure or insufficient practice during training. We believe the use of simulation is an effective means to bridge this gap.

Educational Objectives: At the end of this exercise, residents should gain hands-on experience with prioritization of care and management as they would be expected to encounter during a real-life MCI scenario. Residents will demonstrate effective teamwork, communication and leadership during an MCI event.

Curricular Design: EM residents and rotating 4th year medical students participated in an unannounced, simulated MCI scenario using standardized patients and procedural trainers. The scenario was based on an armed robbery that included both blunt

Table 1: MCI Event Timeline and Case Summary

Event Time	Arrival	EMS Triage	Mechanism	Injuries	Disposition
0min	N/A	N/A	"Notification"	N/A	N/A
20min	EMS	"Immediate"	GSW	Pneumothorax Hemoperitoneum Pulseless lower extremity	OR
25min	EMS	"Delayed"	AUTOPED	Femur fracture Multiple rib fractures Hemoperitoneum	OR
25min	Walk-In	N/A	FALL	Minor head injury Anterior epistaxis Vomiting DOAC use	ED
30min	EMS	"Immediate"	GSW	GSW to neck and Abdomen	Morgue
30min	EMS	"Delayed"	AUTOPED	Posterior knee dislocation with vascular injury	OR
35min	EMS	"Delayed"	AUTOPED	Pneumothorax Anterior shoulder dislocation Pelvic fractures	Floor
35min	Walk-In	N/A	CHEST PAIN	STEMI with vfib arrest and ROSC	Cath Lab
40min	EMS	"Immediate"	GSW	GSW to head, chest and lower extremity	OR
45min	EMS	"Immediate"	GSW	GSW to chest with loss of vitals upon arrival	Morgue
50min	N/A	N/A	"All Clear"	N/A	N/A