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

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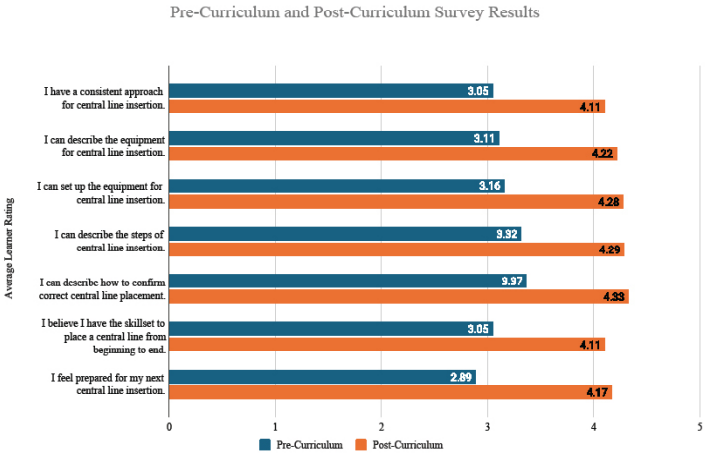
Introduction/Background: Central venous catheter (CVC) insertion is a core procedural skill in EM, thus programs dedicate significant time to building proficiency in PGY-1s. Mastery learning prioritizes deliberate practice with goal-oriented feedback, emphasizing learning outcomes over a pre-set educational 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

and penetrating injuries (Table 1). Additional "walk-in" patients were included to further simulate the demand expected on learners during an actual MCI. Standardized patients underwent training, moulage, and field triage prior to the event. After briefing, learners were expected to activate the hospitals disaster plan, designate medical command, establish triage and delegate team roles and responsibilities as incoming patients arrived. Encounters were directly monitored by EM faculty and learners were formally debriefed using the PEARLS method immediately after the exercise.

Impact/Effectiveness: 35 learners participated during the initial implementation of this exercise and were surveyed. Respondents agreed that that the MCI simulation and debrief session were effective, educational, and reported an overall increase in confidence with managing an MCI event. Future areas for improvement would include limiting the total number of learners per simulation exercise, use of a multidisciplinary team approach to more accurately reflect the practice at our institution and determining optimal frequency of practice for skill maintenance.

50 A Longitudinal ABEM Certifying Exam Curriculum for Senior Residents

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Introduction/Background: The new ABEM certifying exam format, to be implemented in 2026, required curricular innovation to prepare the Class of 2025 emergency medicine residents.

Educational Objectives: Familiarize residents with the eight content areas of the certifying exam. Develop test taking strategies to increase resident confidence and comfort heading into the exam.

Curricular Design: A year-long longitudinal curriculum was developed for twelve senior EM residents, culminating in a mock certifying exam. All case types within the longitudinal curriculum were administered on the second conference day of each month, a session designated for level-specific curricular content delivered separately to senior and junior residents. A comprehensive Mock Certifying Examination Day was conducted at the conclusion of the academic year, during which each resident participated in all eight standardized case types designed to assess the full spectrum of core competencies. Table 1 outlines the case type frequency and length, faculty and space needs, and tools required for the curriculum.

Impact/Effectiveness: A retrospective survey was administered to the twelve EM residency graduates four months after completion of the curriculum. Eleven graduates completed the survey (92% response rate). The survey demonstrated a statistically significant improvement in understanding the format of the exam ($p<0.001$) and confidence in passing the exam ($p< 0.001$). On a 5-point Likert scale, graduates strongly agreed that the mock certifying exam day felt realistic and prepared them for the ABEM certifying exam (4.8 ± 0.60). Additional results from the survey are available in Table 2. Our longitudinal curriculum prepared our residents for the certifying exam and offered opportunity for spaced repetition of skills required to apply their knowledge to a novel exam format.

Table 1. Longitudinal Certifying Exam Preparation Schedule & Needs

Type of Case	Frequency	Length of Time	Faculty Required	Space Required	Tools Required
Clinical Decision Making and Rotating 2nd Case Type*	Monthly from July through June	**45 minutes to 1 hour	1-2	1 room	Computer Large display screen / projector Table
Ultrasound	Monthly from September through April	1 hour	2	2 rooms	2 U/S machines 2 U/S Vimidex simulators 2 Standardized patient(s) for one session
Procedure	Every other month from July through June	1 hour	4 (1 pediatric, 3 adult)	3 rooms	Procedure models High fidelity simulation mannequin Procedure kits +/- U/S machines
Mock Certifying Exam Day	Once in June	3 hours	12 minimum	12 rooms	2 Standardized Patients (U/S cases) 2 U/S machines 2 U/S simulator models 2 Procedure models (ex: lumbar puncture trainers) 2 Procedure kits (ex: lumbar puncture kits) 12 Computers Case instructions outside of each room

* 2nd Case Types include: Prioritization, Reassessment/Troubleshooting, Difficult Conversations, Managing Conflict, and Patient-Centered Communication
** 45 minutes from September through April, 1 hour from May through August

Table 2. Post-Curriculum Survey

Question	Mean Likert Scale Response* (Standard Deviation)	Median Likert Scale Response*
Before completing the certifying exam curriculum, I understood the format of each type of certifying exam case.	1.8 (1.25)	1
Before completing the certifying exam curriculum, I felt confident about passing the certifying exam.	2.5 (1.12)	3
The certifying exam curriculum during my final year of residency was useful for preparing me for the certifying exam.	4.7 (0.65)	5
I understand the format of each type of certifying exam case.	4.5 (0.82)	5
I understand the expectations of an examinee taking the certifying exam.	4.7 (0.65)	5
I feel confident about my ability to pass the ABEM certifying exam.	4.3 (0.65)	4
The mock certifying exam day felt realistic and prepared me for the ABEM certifying exam.	4.8 (0.60)	5

*Likert scale: 1=strongly disagree, 5=strongly agree