

UC Irvine

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health

Title

Teaching and Assessing Bag Valve Mask Ventilation to 4th Year Medical Students via Checklist

Permalink

<https://escholarship.org/uc/item/8n847147>

Journal

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 23(4.1)

ISSN

1936-900X

Authors

Pandey, Aman
McHugh, Mary
Michael, Meghan

Publication Date

2022

Copyright Information

Copyright 2022 by the author(s). This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>



Image 1.

33 Medical Simulation Training on Trauma-Informed Care in the Emergency Department

Caroline H. Lee, Carlos Dos Santos, Taylor Brown, Henry Ashworth, Jason Lewis

Learning Objectives: To describe a novel simulation training developed to teach Trauma-Informed Care principles and applications for patient care in Emergency Medicine. To present results from pre- and post-surveys about effectiveness of simulations to learn and apply Trauma-Informed Care in acute-care settings.

Introduction/Background: Emergency Medicine physicians often care for patients experiencing direct sequelae from traumatic events including abuse, discrimination, and violence. Trauma-Informed Care (TIC) is a framework that recognizes the prevalence of trauma, promotes patient empowerment, and aims to minimize retraumatization. Limited curriculum on TIC in acute-care settings exists despite its widespread utility, with medical simulations (SIM) presenting a novel educational opportunity for this aim.

Educational Objectives: Describe principles of TIC and its importance in clinical practice. Present strategies for performing TIC-guided history taking and physical exams. Discuss situations when trauma screenings are indicated for patient safety and care. Facilitate the practice of TIC in acute-care settings.

Curricular Design: An SIM workshop reproducing relevant clinical encounters was developed for medical students to practice implementing TIC in the Emergency Department (ED). Students attended a didactic on TIC fundamentals and its applications in clinical care. Small groups then interacted with three SIM cases caring for patients with urgent medical needs and pertinent history related to intimate partner violence, transgender health, and discrimination in the healthcare system.

Impact/Effectiveness: Application of TIC principles

is essential to providing patient-centered care in the ED. A pilot group of 12 students participated in these SIM sessions. The workshop was well-received, as 100% of participants found simulation training “Very” or “Extremely Useful” in preparing to apply TIC in patient interactions, compared to 42% prior to the session ($p < 0.05$). Students also developed relevant skills, as 42% of students felt “Very” or “Extremely Confident” in using appropriate TIC language during physical exams, compared to 0% initially ($p < 0.05$). Overall, this novel intervention represents a feasible and effective session for teaching TIC skills in Emergency Medicine.

34 Teaching and Assessing Bag Valve Mask Ventilation to 4th Year Medical Students via Checklist

Aman Pandey, Mary McHugh, Meghan Michael

Learning Objectives: Create a checklist that is expert reviewed to teach BVM to 4th year medical students. Implement a curriculum to teach using the checklist and then assess performance with high-fidelity simulation.

Introduction: Bag-valve-mask ventilation (BMV) is an essential skill to master when teaching medical students basic airway management. Standardized checklists help teach and assess learners. A validated checklist for teaching BMV to medical students does not exist in the literature. Current standards typically involve teaching learners BMV skills on mannequins in static situations.

Educational Objective: Create a checklist that is expert reviewed to teach BVM to 4th year medical students. Implement a curriculum to teach using the checklist and then assess performance with high-fidelity simulation.

Curricular Design: A previously published checklist was improved upon using expert consensus of 10 EM and 10 anesthesia faculty. A 2-handed technique using an oropharyngeal airway was emphasized to maximize a novice’s success. Senior anesthesiology and EM residents taught 200 4th year medical students using rapid sequence deliberate practice methods and the checklist. After achieving proficiency, they participated in a SIM case that required BMV. Video review was used to assess the students’ skills with the checklist.

Impact/Effectiveness: We now have a standardized, expert reviewed checklist to teach BMV skills to 4th year medical students. While all students achieved proficiency using a static mannequin, many of the students’ skills deteriorated in the high-fidelity simulation. For example, in the simulation, only 65% of students connected the oxygen to the wall correctly, 24% of students did not use the two-handed technique, and 81% of students did not correctly size and insert the oropharyngeal airway. Since our goal is to teach students BVM for use in the hospital environment, by collecting the high-fidelity simulation

data we know that our method was inadequate for skill retention in the complex environment. This enables us to continue curriculum development this year incorporating more repetition in a complex environment.

Table 1. Bag-valve-mask ventilation checklist.

BVM Ventilation Check List			
Step	Skill	Score	
Opening remarks will need to be clear that we want them to put in an OPA. Something like: You find a victim in this hospital bed who is unresponsive and you are assigned airway. You need to assess the airway, use an OPA, and use a BVM			
1	Call for Help	2	1 0 N/A
2	Attach the mask to wall oxygen and turn it all the way up to 15	2	1 0 N/A
3	Establish position directly above the patient's head	2	1 0 N/A
4	Place the mask on the patient's face using the bridge of the nose as the guide with the most narrow portion of the mask on the bridge of the nose (bottom of the mask should not be past the chin or on the bottom lip)	2	1 0 N/A
5	Using a two handed technique and either the Thenar Eminence or the E-O technique		
5a	Thenar Eminence (thenar eminence and thumb of both hands are placed on the top of the mask while the remaining fingers of both hands perform jaw thrust under the angle of the mandible)	2	1 0 N/A
5b	E-O technique (place the neck of the mask between the webs between the thumbs and index fingers of both hands. Simultaneously, chin lifting should be performed with the other fingers of both hands.)	2	1 0 N/A
6	Open the airway by performing a head tilt and chin lift by extending the neck and lifting at the mandible pressing the face to the mask	2	1 0 N/A
7	Squeeze the bag to give a breath over 1 second and assure air entry (watching chest rise, listening for breath sounds, End-Tidal CO2)	2	1 0 N/A
8	Question the student (or observe them for accuracy): What is the rate of breaths for an apneic adult patient? (6-10 breaths/minute)	2	1 0 N/A
9	At some point the student should place an OPA without prompting. Note they size the OPA (tip of OPA at corner of mouth and phalange at angle of mandible)	2	1 0 N/A
10	Insert OPA with either technique:		
10a	With the C shape facing up and rotating it 180 degrees as it is advanced until the phalange is flush with lips	2	1 0 N/A
10b	With tongue blade assist and insert directly with C shape facing down until the phalange is flush with lips	2	1 0 N/A

Score Key: 2 = Done Correctly 1 = Done Incorrectly 0 = Not Done N/A = Not Applicable

Table 2. Results of students' grades.

BVM Ventilation Check List Skill	% Done Correctly
1. Call for Help	100%
2. Attach the mask to O2	65%
3. Establish Position at Patient's Head	73%
4. Place the mask correctly	99%
5. Use a two-handed technique	76%
6. Open the airway	82%
7. Squeeze the bag	43%
8. Use correct rate	40%
9. Place the OPA, after sizing	19%
10. Correct OPA technique	48%

35 A Novel Social Emergency Medicine Curriculum: An Alternative to Lecture-Based Didactics

Ashley Vuong, Hannah Janeway, Amanda Amen, Lauren Fryling, Alexander Garrett, Jaime Jordan, Natasha Wheaton

Learning Objectives: We sought to create a Social EM

rotation to improve residents' understanding of structural vulnerability, health inequity, and social determinants of health and improve their ability to address barriers to care and social needs in the emergency department.

Introduction: Social determinants play an important role in patient health. While many Emergency Medicine (EM) residency programs agree that Social EM is an important component of education, few programs have formal curricula addressing Social EM. Social EM education varies widely from program to program.

Objective: We sought to create a Social EM rotation to meet the needs of EM residents. This rotation would allow dedicated time to learn Social Medicine skills and familiarize residents with hospital and community resources. The main objective is to improve residents' understanding of structural vulnerability, health inequity, and social determinants of health and improve their ability to address barriers to care and social needs in the emergency department.

Curricular Design: We created a novel, two week Social Emergency Medicine rotation, exposing residents to a variety of Social Emergency Medicine concepts. Residents rotate with community organizations including a street medicine team, medication-assisted treatment clinics, a harm-reduction needle exchange, a medical asylum clinic, a food pharmacy, and a trauma recovery center. These activities are paired with didactics covering topics such as substance use disorder, immigration health, food insecurity, violence intervention, homelessness, incarceration, LGBTQA+ and gender identity, language equity, race and culture, financial insecurity, and healthcare access and coverage.

Impact/Effectiveness: Our novel Social EM rotation was successfully implemented. Five residents have completed the rotation. Residents reported increased knowledge about resources for housing, substance use, immigration rights, and food insecurity and also were more comfortable addressing gender diversity. Residents particularly valued performing asylum work in Tijuana and their street medicine experience. In the future, similar rotations can be implemented at other residency programs through partnerships with local organizations.

36 Implementation of Foundations of Emergency Medicine Cases Through High Fidelity Simulation for PGY-1 EM Residents

Jessica L. Beadle, Kathleen A. Murphy, Leila Getto

Learning Objectives: Describe the process of converting "Foundations of Emergency Medicine" cases to high-fidelity simulation scenarios, implement cases for PGY-1 EM, EM/IM, and EM/FM residents, and survey simulation specialists and residents regarding the resources required and the curriculum's educational value.