

UC Irvine

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

Title

A Simulation-Based Randomized Controlled Trial on Teaching Best Practices in Firearm Safety

Permalink

<https://escholarship.org/uc/item/48n3p2v8>

Journal

Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 24(3.1)

ISSN

1936-900X

Authors

Hoyne, Jake
Ketterer, Andrew

Publication Date

2023

DOI

10.5811/westjem.60993

Copyright Information

Copyright 2023 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/>

organizers and faculty were satisfied with the quality of the conference and would participate again. This suggests that the design-thinking process effectively enabled students to organize and manage the event. With the success of this conference-planning trial, a similar student-initiated conference will be included within the course curriculum.

4 A Novel Sustainable QI Residency Elective

Madison Miracle, Katharine Weber, Bhargavi Checkuri

Introduction/ Background: While the climate crisis remains a serious public health emergency, the US healthcare sector produces >10% of its greenhouse gas emissions. Harm from these emissions is on par with harm from medical errors and thus a safety and quality of care issue. Currently no standardized GME interventions exist that address the relationship between climate change, sustainability, and quality improvement (QI)—nor the vital role of physicians in this space.

Objectives: Describe the healthcare sector’s climate impact Apply sustainable clinical practice principles Measure ‘sustainable value’ using a multi-dimensional approach.

Curricular Design: The University of Colorado launched a novel climate medicine residency elective in 2021. Competencies and learning objectives were outlined by faculty experts. Accepted residents meet virtually with the elective director to narrow scope, goals, and objectives. This method allows for flexibility, meeting residents at their level of expertise and accommodating residents’ clinical duties. This resident’s elective was focused on sustainable QI (SUSQI). Didactics, literature, conferences, networking, modules, and weekly meetings were used to teach, identify and define a capstone QI project. Collaborating with staff, the resident independently

Table 1. Resident-specific learning objective defined at beginning of elective with associated core competencies in climate change and health education published by the Global Consortium of Climate and Health Education.

Core Competency	Learning Objectives
Fundamentals of climate and health	Describe the climate impact of the health care sector and identify opportunities to create climate-smart health care tailored to local emergency department needs.
Sustainable quality improvement	Define a quality improvement problem and set a sustainability goal. Study the system using principles of quality improvement as set forth by the Institute for Health Care Improvement and assess resource use locally.
Climate change and clinical practice	Apply the principles of sustainable clinical practice (e.g. circular healthcare, sustainable waste management, low carbon pharmaceuticals, sustainable food in healthcare, health system effectiveness, energy supply in health systems, buildings and infrastructure, financing sustainable healthcare). Measure ‘sustainable value’ using a multi-dimensional approach of environmental, social, financial, and patient outcomes at the micro- and population-level.

Table 2. Resident learning resources: Example resources utilized by resident during elective to meet learning objectives and guide sustainable quality improvement project development.

READ	<ul style="list-style-type: none"> Global Climate Change and Human Health: From Science to Practice, 2nd Edition Health Care Without Harm Road Map for Health Care Decarbonization PubMed literature: articles on sustainable healthcare and climate medicine topics
WATCH	<ul style="list-style-type: none"> U.S. Department of Health & Human Services Webinar Series: Accelerating Healthcare Sector Action on Climate Change and Health Equity University of Colorado School of Medicine EMED 8010 Lectures
MEET	<ul style="list-style-type: none"> University of Colorado School of Medicine Climate & Health Science and Policy Fellowship weekly synchronous virtual didactics Weekly virtual meetings with elective director and Climate Health Fellow mentors NorCal Symposium on Climate, Health, and Equity 2022
DO	<ul style="list-style-type: none"> Institute for Healthcare Improvement QI Essentials Toolkit Practice Greenhealth Cost Of Ownership Toolkit M+WasteCare Calculator

designed and implemented an insulin waste reduction project in her ED with pre/post-intervention data.

Impact/Effectiveness: Despite the substantial contribution the healthcare sector makes to global emissions, hospital SUSQI measures are lacking. This curriculum provides innovative tools to support resident-driven healthcare sustainability while fulfilling ACGME requirements and can be utilized by other medical educators to increase awareness and support hospital sustainability initiatives of impact. The potential for SUSQI initiatives to drive institutional cost saving interventions while improving community health solidifies the importance of our innovative approach to climate medicine and applicability to GME.

5 A Simulation-Based Randomized Controlled Trial on Teaching Best Practices in Firearm Safety

Jake Hoyne, Andrew Ketterer

Introduction/ Background: Americans’ high rate of gun carriage correlates to the burden of firearm injury in the USA. Previous studies show that emergency providers (EPs) are at risk of encountering firearms in or around the emergency department (ED). Only a minority of EPs report familiarity with firearms, creating a safety risk if an EP is required to remove a firearm from the clinical care space. There is a clear need for firearm safety curricula directed at EPs.

Objectives: To train EPs in the principles of safely handling firearms with the goal of removing a firearm from the clinical care space.

Curricular Design: Using Kern’s 6-step approach, a critical action checklist was developed by emergency medicine faculty in collaboration with local police, validated in a pilot study, and an instructional video was created to teach these key concepts. Simulation was chosen to allow for hands-on training and skills assessment. The scenario was a patient with undifferentiated altered mental status. During their evaluation, participants discovered a firearm that they

had to remove from the bedside. Participants were scored on their performance of the critical actions on the checklist. Each resident's performance was compared to residents who had not yet received the training module.

Impact: This intervention is easily integrable into pre-existing simulation curricula. Preliminary data show 60% of participants have no prior firearms training. On a 5-point Likert scale, participants without prior firearms training reported low confidence in safely removing a firearm from the clinical care space (median 1, IQR 0), while those with prior training reported high confidence (median 5, IQR 0.75). Data collection is ongoing, so definitive conclusions on this intervention's effectiveness cannot yet be made, but participants receiving the intervention prior to simulation performed all 8 action items correctly, while control participants performed a median of 5 items correctly.

6 An Educational Curriculum for Healthcare Costs and Price Transparency. Is Training In Cost-Effectiveness Possible?

Keel Coleman, Daniel Lareaux, Timothy Fortuna

Introduction/ Background: Cost-effectiveness in healthcare has been stymied by lack of real-time costing data. The Cost Transparency Act has provided a platform from which educators may describe the expenses our patients incur as they utilize our healthcare system. This is new training and has an unfortunate dearth of formal study or literature.

Educational Objectives: Provide a framework of cost awareness for resident education learners in Emergency Medicine via the following aims: 1. Appreciate the variability of costing across payor groups 2. Understand how clinical decisions affect the financial health of patients seeking care in the ED 3. Perceive the underlying dysfunction of 'market-based' healthcare.

Curricular Design: Nine 30 min lectures, occurring once a month, were provided to a population of 36 Emergency Medicine Residents during their dedicated conference time. Following the ninth lecture, learners completed a survey with the following questions: Overall, how would you rate the course and was the course material useful? How clearly did your instructors explain the course material? Name one thing you learned in the course.

Impact/Effectiveness: Greater than 80% of responses to all questions rated the course as Excellent or Very Good. The expository item included answers with themes around: The cost of American healthcare. The lack of standardized pricing. Coding level effects on price. The Healthcare Cost Transparency Act has provided a platform from which curricula may be assembled that are well received by Emergency Medicine Learners. Our patients recognize that financial health is part of their global health picture. Further advancement in how to teach the cost of care is possible. The

next area of study is evaluating how this curriculum changes practice patterns.

7 Scoring Tools in Emergency Medicine: A Novel Video Lecture Series

Nao Yoneda, Patrick Monahan, Anita Lui, Jonathan Siegal, Timothy Khowong, Saumil Parikh, Ameer Hassoun, Michael Chary, David Simon, Sheetal Sheth

Introduction/ Background: Scoring tools such as the HEART score play an integral part in Emergency Medicine (EM) and are used daily by providers to aid in clinical decision-making. Evidence-based tools aim to provide concrete guidance to secure the safest disposition and management. Despite their ubiquity, clinicians early in training lack adequate exposure to utilize these tools properly and there is no formal training in how to rigorously apply these scoring tools. By creating a voice-over lecture series to educate clinicians on how to properly utilize these tools, we hope to promote the appropriate use of these tools in the clinical setting.

Educational Objectives: The objective of this innovation was to create an easy to follow, voiced over, PowerPoint lecture aimed at educating medical students and residents about commonly used clinical scoring tools. This activity can be used asynchronously or shared as a free, open-access medical education resource.

Curricular Design: Our group of EM educators created a voiced-over lecture series on 22 commonly used clinical scoring tools. Each lecture covered a scoring tool's derivation, validation, indications for use, sensitivity/specificity, and limitations. A 30-question quiz including relevant clinical scenarios was given before and after the lecture to assess the amount of information retained.

Impact/Effectiveness: This lecture series provides EM educators with a user-friendly educational tool to educate future providers about the benefits and limitations of scoring tools. The effectiveness was measured by a quiz administered before and after the lecture which showed an improvement in resident performance before ($M = 55.9$, $SD = 9.2$) and after the intervention ($M = 82.2$, $SD = 5.8$), $t(8) = 6.5$, $p < .001$. A benefit was also demonstrated amongst fourth year medical student performance before ($M = 56.3$, $SD = 8.6$) and after the intervention ($M = 76.7$, $SD = 10.7$), $t(8) = 8.5$, $p < .001$.

8 Beyond the Basics: A Novel Approach to Integrating a Social Determinants of Health Curriculum into an Emergency Medicine Course

Nikkole Turgeon, Katie Dolbec, Florence On, Erica Lash, Emily Reed, Kateline Wallace, Adam Fortune, Katie Wells

Introduction/ Background: There is a paucity of