other using a more traditional, lecture-based approach, with an effort to determine the efficacy of patient simulation in Emergency Medicine Toxicology education.

Methods: DESIGN - Prospective, randomized study comparing performance on pre- and post-test within a specific education modality. A satisfaction survey was used to assess the participants' subjective experience with the SIM cases. SETTING -The study was conducted at a large academic institution with a Toxicology consult service. PARTICIPANTS - Residents and medical students rotating through the toxicology department at a single academic institution, over one academic year.

INTERVENTIONS/OBSERVATIONS - Three toxicology cases were presented during a month-long rotation using either the SIM- or lecture-based format. For each case, participants were randomized to one of two learner groups, varying by the teaching modality applied. Knowledge gained was quantified by comparing their performance on pre- and post-test written assessments. Improvements in scores of the SIM group were compared to those of the lecture group. A survey assessing the participants' subjective experience in the SIM cases was sent.

Results: A total of 22 rotators participated in the learning modules, of which 14b completed the pre-and post-tests for data collection. There was no statistical difference in pre-test scores (mean 2.62 points, p=0.43, 95% CI of -9.35 to 4.11) amongst the 2 groups. There was significant improvement in scores after both learning modalities (SIM: mean 17.21, p=0.0016, 95% CI of 7.3-27.08; Lecture: mean 9.72, p=0.0016, 95%CI of 3.9-15.5). The SIM group experienced a higher jump in their scores, compared to the lecture group (mean 10.08, p=0.0057, 95% CI 3.27-16.9). Five participants responded to the satisfaction survey and all felt that participation in SIM improved their confidence, engagement, and clinical knowledge.

Conclusions: While both the SIM- and lecture-based format improved toxicology knowledge, the SIM modality was more effective. This pilot study suggests that SIM can be a useful educational tool in toxicology education.

11 CPR Education in Schools: A Novel Approach to Bystander CPR Disparities

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Background: Community CPR initiatives represent an important mechanism for increasing CPR awareness, particularly in lower-income areas which tend to have a higher incidence of out-of-hospital cardiac arrest coupled with lower rates of bystander CPR. CPR education within school systems remains a novel approach to address these bystander CPR disparities.

Objectives: Implement a sustainable Hands-Only CPR education program in Denver and Aurora middle schools with a focus on schools in lower-income areas, and evaluate the effect of the intervention on student CPR knowledge and comfort.

Methods: Participants: Over 30 middle schools (grades 6-8) in the Denver and Aurora school system were offered the opportunity to participate during the 2014 calendar year based on location and proportion of lower-income population, and 16 of them agreed.

Intervention: Participants completed a pre-test survey prior to the intervention consisting of 5 questions to assess baseline CPR knowledge and a 6th question to assess overall comfort performing CPR. The classroom teacher then initiated the standardized Hands-Only CPR training session using the CPR in Schools Training KitTM, which includes an instructional DVD, 10 inflatable manikins, and additional resources for the facilitator. Participants then completed a post-test knowledge and comfort survey, identical to the pre-test survey.

Data Analysis: A McNemar's test was performed on all aggregate paired pre-/post-test data, and chi square and unmatched pairs t-tests were performed on any aggregate unpaired data.

Results: Among the 16 participating sites, 12 (75%) returned training data, resulting in 1884 students trained. Analysis of pre- and post-test data demonstrated an increase in the mean number of CPR knowledge questions answered correctly from 2.22 to 4.1 (out of 5) (p<0.001). The majority of students (80.7%) felt comfortable performing Hands-Only CPR after the intervention.

Conclusions: Middle school students in the Denver and Aurora school system demonstrated increased knowledge and comfort with Hands-Only CPR following standardized instruction with CPR in schools training kits. Thus, a CPR education program for students is a novel yet promising way of increasing CPR awareness in areas with high incidence of out-of-hospital cardiac arrest yet low rates of bystander CPR.

Table 1. Pre-/Post-test Survey Results.

Topic Tested	Correct on Pre-Test (N=1,679)		Correct on Post-Test (N=1,679)	
	n	(%)	n	(%)
Compression rate	273	(16.3)	1,041	(62.0)*
When to stop CPR	838	(49.9)	1,520	(90.5)*
Depth of compressions	789	(46.9)	1,553	(92.5)*
What an AED does	934	(55.6)	1,387	(82.6)*
Correct steps of HOCPR	894	(53.3)	1,403	(83.6)*
Comfort performing HOCPR ‡	932	(55.5)	1,355	(80.7)*
Mean Score (Questions 1-5)	2.22	(44)	4.1	(82.2)*

*p<0.001
‡ Pre-Test n=1,679, Post-Test n=1,679