

Abstract

Cite this article: Kman NE, Panchal AR, Patterson J, Danforth D, Mani A, Babbitt D, Hyde JN, Phippen B, de Visser E and McVay J (2024). Virtual Reality Simulation for Assessment of Hemorrhage Control and SALT Triage Accuracy in First Responders. *Disaster Medicine and Public Health Preparedness*, **18**, e195, 1
<https://doi.org/10.1017/dmp.2024.233>

Virtual Reality Simulation for Assessment of Hemorrhage Control and SALT Triage Accuracy in First Responders

Nicholas E Kman MD¹, Ashish R Panchal MD PhD¹, Jeremy Patterson BFA¹, Douglas Danforth PhD¹, Ashutosh Mani PhD², David Babbitt MS², Jacob N Hyde PsyD³, Brian Phippen MS⁴, Ewart de Visser PhD⁵ and Jennifer McVay PhD⁴

¹The Ohio State University, Columbus, OH, USA; ²Big Bear AI, Columbia, MD, USA; ³Warfighter Consulting, Scottsdale, AZ, USA; ⁴CACI, Inc, Annapolis Junction, MD, USA and ⁵de Visser Research, Springfield, VA, USA

Abstract

Objective: Hemorrhage control, triage efficiency, and triage accuracy are essential skills for optimal outcomes in mass casualty incidents. This study evaluated user application of skills through a Virtual Reality (VR) simulation of a subway bombing.

Methods: EMS clinicians and healthcare professionals engaged in a VR simulation of a bomb/blast scenario utilizing VRFirstResponder, a high-fidelity, fully immersive, automated, customizable, and programmable VR simulation platform. Metrics including time to control life-threatening hemorrhage and triage efficacy were analyzed using median and interquartile ranges (IQR).

Results: 389 EMS responders engaged in this high-fidelity VR simulation encountering 11 virtual patients with varying injury severity. The median time to triage the scene was 7:38 minutes (SD = 2:27, IQR = 6:13, 8:59). A robust 93% of participants successfully implemented all required hemorrhage control, with a median time of 3:51 minutes for life-threatening hemorrhage control (SD = 1:44, IQR = 2:41, 4:52). Hemorrhage control per patient took a median of 11 seconds (SD = 0:47, IQR = 0:06, 0:20). Participants accurately tagged 73% of patients and 17% effectively utilized the SALT sort commands for optimal patient evaluation.

Conclusion: The VRFirstResponder simulation, currently under validation, aims to enhance realism by incorporating distractors and refining assessment tools.

Supplementary material. The supplementary material for this article can be found at <http://doi.org/10.1017/dmp.2024.233>.