

Mixed Reality–To Better Prepare Medical First Responders for Mass-Casualty Incident Response

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Introduction: Mass-casualty incidents (MCI) featuring a large number of injured persons caused by human-made or by natural disasters are increasing globally. During these incidents, medical first responders (MFR) need to take appropriate action that saves lives. In this context, the adage “practice makes perfect” is befitting to MCI training. However, providing large-scale MCI training is often difficult due to the significant effort required to create these types of exercises. Drawbacks include a large number of actors needed to portray victims, availability of infrastructure, and realistic treatments. Virtual Reality (VR) has been demonstrated in several domains to be a serious alternative, and in some areas also a significant improvement to conventional training. As an advanced alternative to VR, Mixed Reality (MR) have the potential to provide a dynamic simulation of an VR environment and hands-on practice on injured victims.

The aim is: 1) to present insights of a newly developed MR training system for increasing MCI preparedness and 2) discuss pedagogical aspects e.g. how the intended learning outcomes are perceived in MR training, how the participants experience the learning in MR training, and what impact MR training will have in their future work practice.

Method: An MR training system, designed for teams of up to four MFRs to perform training in real-time, will be pilot-tested at the beginning of 2023. The system features a fully functional touch-enabled human manikin design for practicing skills in emergency situations. The pilot tests will be carried out within the Med1stMR project (<https://www.med1stmr.eu/>) where approximately four teams of MFR will be evaluated based on the intended learning outcome.

Results: Preliminary results from the pilot tests will be available at the conference.

Conclusion: Research is needed to strengthen the knowledge and impact of MR training as a pedagogical method to better support MCI training and preparedness.

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Emergency Department-Based HIV Testing Services and Self-Testing Programs: A Qualitative Study of Healthcare Providers and Patients in Kenya

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Introduction: Young people in Sub-Saharan Africa, especially males, have been insufficiently engaged in HIV Testing Services (HTS). In Kenya, these persons are often treated in emergency departments (EDs) for injuries, a healthcare

interaction where HTS including HIV self-testing (HIVST) could be leveraged. There is, however, limited data from stakeholders on ED-HTS which impedes programmatic advancement.

Method: A qualitative study was completed to understand facilitators and challenges for ED-HTS and HIVST delivery in Kenya (12/2021-03/2022). Data were collected via 28 in-depth patient interviews (14 males and 14 females) who had been treated in the Kenyatta National Hospital (KNH) ED and through seven focus-group discussions conducted with 49 ED healthcare personnel (nurses, doctors, HIV testing counselors, and administrators). Transcripts were double-coded and thematically analyzed with Dedoose™ software using a parallel inductive and deductive approach to capture both a priori and emergent themes.

Results: Patients and providers viewed ED-HTS as a beneficial provision that was facilitated by engaged staff, education, perceived high HIV risk, and confidentiality. However, ED-HTS was limited by burdens on staff time and material resources, lacking systems integration, and patient illness severity. Facilitators of ED-HIVST delivery were perceived to have greater autonomy and confidentiality as well as lower health resource utilization. Challenges for ED-HIVST identified included patients' concerns about HIVST accuracy and psychological stress, as well as providers' concerns for loss to follow up and inability to complete confirmatory testing.

Conclusion: ED stakeholders are receptive to HTS and HIVST provisions. This data provides insight into the patient, provider, and systems aspects that can be leveraged in ED-based HTS to enhance program impacts via intervention functions in the forms of education, care integration, resource scaling, and solidified post-self-testing follow-up mechanisms.

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Web-Based Multistate Disaster Rehearsal of Concepts Exercises

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Introduction: The Mountain Plains Regional Disaster Health Response System (Mountain Plains RDHRS) works to build disaster capacity across US Federal Region VIII, a rural western six-state region. It conducts an annual rehearsal of concepts and exercises to identify gaps and inform policy development. In 2022, a multi-state exercise was conducted involving responders from individual hospitals coordinating with Healthcare Coalitions and State Public Health. These responses rolled up to a multi-state emergency operations center overseen by the Mountain Plains RDHRS.

Method: A fictitious mass multi-state botulism incident generated a pediatric surge across the region. Individual patient cards with demographic information were given to a set of hospitals in participating states. The communication pathways within states were identified. Communication between local