MONITORING AND EVALUATION

SIMEDIS: A Computerized Medical Management Simulator for Testing Medical Responses to Disasters

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Background/Introduction: The use of computer modelling and simulation is allowing researchers to test operational assumptions in a virtual but controlled experimental environment.
Objectives: Developing a valid computer simulation model allowing (1) to model complex medical response systems with several types of victims, (2) to test different aspects of the medical response.
Method/Description: The SIMEDIS (**Si**mulation for the Assessment and Optimization of **Me**dical **Dis**aster Management) computer simulator consists of 3 interactive components: the victim creation model, the victim monitoring model, and the medical response model.

The objectives of the study were to create a disaster medical response simulation model in the case of an aircraft crash and in a CBRN incident simulation, to test and to optimize existing and future medical disaster response plans, to develop a victim model, to develop a victim creation model and a victim monitoring model, and to produce a pre-hospital medical response model.
Results/Outcomes: The case studies showed that the SIMEDIS simulator is offering a valuable tool for testing the impact of several interventional factors on the disaster medical response in specific scenarios including more complex situations such CBRN-incidents.
Conclusion: This study reflects the potential of SIMEDIS to model complex systems, to test different aspects of the disaster medical response and to potentially inform changes in practices. This might be of potential interest for disaster response planners allowing them to make the best choices in composing their medical teams and adapting the medical response system.

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Rapid Response in High-Risk Environments: A CBRN Assessment Tool for WHO Emergency Medical Teams (EMTs)

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Background/Introduction: The World Health Organization (WHO) Emergency Medical Teams (EMTs) frequently deploy in high-risk environments, including conflict zones, where Chemical, Biological, Radiological, Nuclear (CBRN) threats are a concern. This study aimed to develop a CBRN assessment tool to evaluate the preparedness of WHO EMTs to respond effectively to such incidents.
Objectives: Develop a comprehensive CBRN assessment tool for evaluating the preparedness of WHO Emergency Medical Teams (EMTs) to respond effectively to CBRN incidents.
Method/Description: Utilizing the WHO Classification and Minimum Standards for EMTs and adapting the Harvard Public Health School's hospital decontamination self-assessment tool, this tool focuses on key areas aligned with WHO recommendations, including decontamination, staffing, training, response procedures, alert systems, security, personal protective equipment (PPE), staff safety, medical monitoring, decontamination zone setup, and triage.
Results/Outcomes: The developed CBRN assessment tool provides a structured framework to evaluate EMT preparedness across multiple domains critical for CBRN incident response. The tool highlights potential gaps in preparedness and facilitates targeted improvements. This assessment tool can be a valuable resource for WHO EMTs to proactively assess CBRN capabilities. Regular use of this tool can enhance preparedness, response efforts, and improve patient outcomes in the face of CBRN events. Further research is needed to validate the tool's effectiveness in team preparedness and refine its components.
Conclusion: This CBRN assessment tool is an important step towards strengthening the capacity of WHO EMTs to manage CBRN incidents. By facilitating self-assessment and targeted improvements, the tool contributes to a more effective and coordinated preparedness and response to these complex and challenging events.

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PEMAT Information Systems (PIS): Digitalizing Health Emergency and Disaster Response

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Background/Introduction: The Philippines, being prone to natural disasters, often faces challenges in securing real-time data, hindering effective decision-making. In response, the Philippine Emergency Medical Assistance Team (PEMAT) of Dr. Jose N. Rodriguez Memorial Hospital and Sanitarium (DJNRMHS) developed the PEMAT Information System (PIS) to enhance real-time reporting and support the functions of EMT-Type 1 Fixed facilities during disaster responses. The PIS was successfully launched and fully implemented during the 7.8 Magnitude Earthquake in Türkiye in February 2023.

Objectives: The PIS aims to enhance the efficiency and effectiveness of Emergency Medical Team (EMT) Type-1 facilities, improve healthcare service quality and patient safety, and deliver real-time data to stakeholders like the Emergency Medical Teams Coordination Cell (EMTCC) and local government agencies for informed planning and action. It also assists in patient tracking during disaster response and recovery phases.
Method/Description: During the Türkiye earthquake response from February 11-24, 2023, PEMAT used the PIS for data collection and reporting per international standards like the International Classification of Diseases and the EMT Minimum Data Set. Timely reports on patient numbers were provided to the EMTCC.
Results/Outcomes: PEMAT catered to 1,022 patients, primarily aged 18-64 (68.59%), with a majority (54.60%) being male. The top reasons for consultation were Acute Upper Respiratory Infection (36.30%), Minor Injury (6.36%), and Skin Disease (6.07%). Notably, 74.16% of cases were unrelated to the earthquake. Timely reporting to the EMT MDS Portal earned commendation from the EMTCC.
Conclusion: The PIS significantly improved healthcare service quality and provided crucial real-time data for decision-making during disaster response and recovery.

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Progress in Health Data Collection and Management During and After Emergencies and Disasters: Increasing Evidence by EMT Minimum Data Set

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Background/Introduction: Reliable health data before, during and after emergencies and disasters are essential for evidence-based policies and programs. However, standardization of health data collection and reporting was a historical challenge for the medical team dispatched to emergency areas.

The WHO Emergency Medical Team (EMT) Minimum Data Set (MDS) was established in 2017, and has been applied in different health emergencies and disasters as a common health data collection tool.
Objectives: Summarize the findings from analyzing the health data collected by the EMT MDS in emergencies and disasters since 2018
Method/Description: The WHO Centre for Health Development (WHO Kobe Centre (WKC)) supported and jointly conducted a research project to synthesize the existing knowledge and analyze case studies on the application of the WHO EMT MDS. The study was led by Hiroshima University and collaborated with WHO EMT and multinational research institutes.
Results/Outcomes: The research project demonstrated the function and value of the EMT MDS to timely collect analyzable data that enables decision makers to understand the health needs of affected areas, and conduct data-based resource allocation. Multiple barriers and facilitating factors for successful application of the tool were also identified. In addition, several new findings on early onset of mental health problems and other related matters were identified.
Conclusion: EMT MDS is now used as a common health data collection tool in emergencies and disasters. Accumulated data from different emergencies and disasters will support building robust scientific evidence to better protect people from emergencies and disasters.

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Medical Data in Humanitarian Emergencies: Does the WHO MDS Need a Revision?

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Background/Introduction: The World Health Organization (WHO) Emergency Medical Team (EMT) Minimum Data Set (MDS) consists of a package of selected medical data items for recording and reporting patient encounters during sudden onset disaster. The MDS is primarily tailored for trauma and surgical care, and its effectiveness, particularly in contexts where other levels of care are needed, namely primary health care (PHC), has been strongly debated.
Objectives: This study aims to analyze medical data from three UK-MED/UK-EMT deployments, compare the current MDS tool with its context-adapted versions, and explore potential improvements to enhance the effectiveness and adaptability of medical reporting.
Method/Description: We conducted a statistical analysis of medical data collected and reported in three types of settings: a) Ukraine (conflict), b) Malawi (outbreak), and c) Türkiye (earthquake).
Results/Outcomes: The analysis of data from recent deployments in Ukraine, Malawi, and Türkiye reveals that non-trauma medical encounters are often categorized as "other" indicating that the current MDS lacks adaptability to various disaster types (non-trauma), local contexts, and specific medical needs. In addition, the tool generates extensive data with low granularity which has proven unhelpful in supporting health programming decision-making and for analysis of disaggregated data during and post-deployment.
Conclusion: We advocate for a comprehensive revision of the MDS, emphasizing the development of a modular data collection approach that can be tailored to specific local contexts and health services. This revised approach will enhance the utility of collected data for both immediate response efforts and long-term health system improvements, without adding extra data collection burden on clinicians.

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