

INTRODUCTION

For many decades, the use of weapons of mass destruction (WMD) against populations has been a serious concern to defence and public health authorities; notably with the war in Ukraine creating a lot of uncertainty and putting people around the world on edge. In this era of cognitive and hybrid warfare, wherein WMDs seem to be envisioned to be used as a rule rather than exceptions, very few studies have investigated medical responses in prehospital settings in the immediate aftermath of a CBRNE attack. A recent systematic review of chemical exposures identified the paucity of clinical data as a limitation lending urgency to the need to study acute settings.

HYPOTHESIS, OBJECTIVE AND AIM

Since acute prehospital settings are seldom studied, the present international research retrospectively evaluating medical responses was launched with the aim of describing the management of patients exposed to a CBRNE attack from the incident site until their transfer to a medical facility.

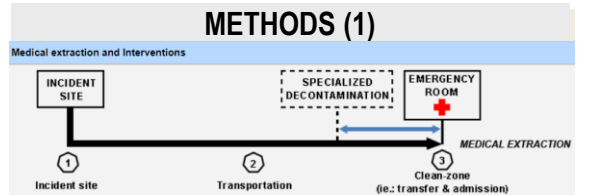


Figure 1. Representation of the medical extraction in acute prehospital settings.

This multicentric observational study addresses the period from 1970 to 2036 in a three-phase design. An online electronic case report form (eCRF) was created to collect data; it will be hosted on the Biomedical Telematics Laboratory Platform of the Quebec Respiratory Health Research Network (<https://cbrne-obs-demo-ltb.cred.ca/>) (Phase 1).

METHODS (2)

Relevant medical centres and international organizations are being solicited for their participation (Phase 2).

Participating medical centres and their clinicians are being asked to provide contextual and clinical information, including the use of protective equipment and decontamination capabilities for the medical evacuation of the patient from the incident site of the chemical attack to the moment of admission at the medical facility (Phase 3).

In brief, variables are categorized as follows: i. chemical exposure (threat); ii. prehospital and hospital/medical facility capabilities (staffing, first aid, protection, decontamination, disaster plans and medical guidelines); iii. clinical interventions before hospital admission, including the use of protection and decontamination; iv. outcomes (survivability versus mortality rates). Judgment criteria focus on decontamination drills applied to any of the patient's conditions. Descriptive statistics will include means and standard deviations, medians and interquartile ranges, proportions and percentiles, where it is appropriate. Analyses will be conducted with the latest version of IBM SPSS Statistics Software or its equivalent in due time. (SPSS Inc., Chicago, IL, USA; <https://www.ibm.com/analytics/spss-statistics-software>; Last accessed: July 2, 2021).

This study is approved by the CHU Ste-Justine University Hospital Research Centre's Ethics Review Board. The US Clinical trial registration number is NCT05026645 (<https://clinicaltrials.gov/ct2/show/NCT05026645?term=NCT05026645&draw=2&rank=1>). This study includes a submission of its methods in a paper addressing chemical exposures.

RESULTS (PRELIMINARY)



Figure 2. Medical centres solicited to date.

Of the 67 solicitation letters sent to medical centres worldwide to date, only the 1994 Matsumoto chemical attack clinical data has been received by CHU Ste-Justine University Hospital Research Centre for processing into the eCRF. We anticipate that the preliminary and final results of this study will have the following impacts. It will: i. Highlight the strengths of participating health care facilities in the medical management of patients exposed to CBRNE weapons; ii. Reveal gaps in the capability of participating health care facilities to manage chemically exposed patients, thereby contributing to the optimization of clinical standards and resource management during CBRNE incidents; iii. Demonstrate the need for future studies, including politicized cases where access to classified information will be required; iv. Pave the way for the implementation of a research program in CBRNE defence through which medical algorithms and technologies for use by medical clinicians will be developed to address identified gaps.

CONCLUSIONS

In conclusion, this multicentric observational study is a first step in the retrospective evaluation of clinical practice in the medical management of patients after a CBRNE attack. Results will contribute to the improvement and development of tools for the acute management of patients in the contaminated zone after a CBRNE attack. These may include guidelines, algorithms, artificial intelligence-powered systems, and other technologies.

REFERENCES (available upon request)