

A New Model for Postgraduate and Continuing Education in Disaster and Terror Medicine

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Introduction: Postgraduate education is important in preparing and enhancing health professionals for the practice of disaster and terror medicine. The World Association for Disaster and Emergency Medicine (WADEM) has formulated a standardized international perspective for education and training in disaster medicine and health. Notwithstanding, there continues to be a reported gap in competency-based training in disaster and terror medicine internationally, particularly across Asia Pacific, which is a known vulnerable region. We report on a new Graduate Diploma in Disaster and Terror Medicine, to be expanded to Master level in 2024. The course is delivered mainly online to a multidisciplinary international audience. This paper summarizes the development of the course and outlines the key influences that have contributed to the design of the course.

Method: A survey of the critical care workforce conducted by the Department of Critical Care at the University of Melbourne in early 2020 identified the need to develop education in disaster and terror medicine. A market and competitor analysis identified there was a gap in clinician focused courses offered in Australia and internationally. Based upon these results, a new course was developed to meet these needs.

Results: Based on the results of the survey and feedback from expert stakeholders, the new postgraduate courses in disaster and terror medicine were developed. They offer both core and elective subjects, utilizing a modular approach with supervised simulation and practical training. The courses incorporate problem-based learning, the principles and practices of online education and advances in simulation-based learning, providing both a public health and clinical lens.

Conclusion: The nested suite of postgraduate disaster and terror medicine courses at the University of Melbourne is at the forefront of learning within this field and meets the contemporary needs of health professionals who practice disaster and terror medicine

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Evaluating the Level of Disaster Preparedness of Tunisian University Hospitals Using the Hospital Safety Index: A Nationwide Cross-sectional Study

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Introduction: Midway through the 'Sendai Framework for Disaster Risk Reduction 2015–2030', many nations are spending time, money and effort to enhance their level of preparedness when facing disasters, on the other hand communities, countries and even continents are being left behind. This study was conducted aiming at evaluating the level of disaster preparedness and response of Tunisian University Hospitals.

Method: This is a cross-sectional nationwide study conducted in Tunisia, from November 2020 to April 2021. Including nine Tunisian University Hospitals and using the Hospital Safety Index. The data were analyzed using the 'Module and safety index calculator'.

Results: This study showed that seven out of the nine University Hospitals were assigned the 'B' category of safety with overall safety indexes that ranged between 0.37 and 0.62. Also, four out of nine University Hospitals had safety scores less than 0.20 regarding their emergency and disaster management.

Conclusion: This is the first study to evaluate disaster preparedness and response of university hospitals in Tunisia and in north Africa. It showed that the lack of knowledge, resources and willingness, are the most important issues that need to be addressed in order to enhance the preparedness of Tunisian hospitals.

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Toxic Fumes Exposure—More than Just an Airway Concern – RETRACTED

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Introduction: Exposure to toxic fumes from an industrial chemical fire may not only lead to airway burns and inhalational injury but also toxic exposure via the transdermal route.

Method: A 45-year-old gentleman presented with dyspnea two hours after a ten-minute exposure to toxic fumes while fighting an industrial chemical fire without personal protective equipment. He reported voice hoarseness and chest tightness. Nasoendoscopy demonstrated paranasal sinus soot and significant upper airway edema. Awake fiber-optic intubation was performed for prophylactic airway protection in the Burns ICU but bronchoscopy did not reveal any inhalational burns.

However, the patient developed worsening lactic acidosis (serum lactate 2.8mmol/L to 8.1mmol/L with pH 7.28) within 12 hours post-exposure. Carboxyhemoglobin was 0.9%. Toxicology was consulted for suspicions of transdermal HAZMAT contamination, in particular cyanide given the profound lactic acidosis. The patient was given two doses of hydroxocobalamin and brought to the Hospital Decontamination Unit for de-gowning and thorough wash-down. The chemical scan meter showed high levels (352IU) of an unknown chemical on his skin pre-decontamination, which could not be detected post-decontamination. Lactate improved to 5.0mmol/L within two hours post-decontamination while acidosis resolved at eight hours post-

decontamination. The patient was extubated and discharged without sequelae.

Results: To our knowledge, no other human cases of transdermal cyanide poisoning have been reported. Cyanide interferes with mitochondrial oxidative phosphorylation pathways to cause toxicity and death if untreated. However, its effects via transdermal exposure are often delayed compared to exposure via more conventional inhalational routes. This makes recognition difficult and compounds the challenge of long turnaround time for blood cyanide tests. Increased transdermal absorption is possible through intact skin if moistened by sweat.

Conclusion: The potential for transdermal HAZMAT absorption from exposure to toxic fumes is underrecognized. It is crucial to maintain vigilance given the challenges in diagnosing transdermal cyanide toxicity and importance of initiating treatment early.

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Current Disaster Triage Methods in Mass Casualty Incidents

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Introduction: Triage in a disaster scenario centers around doing the greatest good for the greatest number of people. There are a variety of triage systems, and to this date there is no US national endorsement of one system because triage is a dynamic procedure and there is no fixed rule for it. The Simple Triage and Rapid Treatment (START); Sort, Assess, Life-saving interventions, Treatment/Transport (SALT); Sacco; CareFlight; JumpSTART; and Pediatric Triage Tape (PTT) triage systems are discussed with emphasis on how they perform.

Method: There are approximately 20 adult and two pediatric triage systems that exist for primary disaster triage. The focus is on six primary triage systems. A literature search was performed using textbooks and original research.

Results: A basic assignment to immediate, delayed, minimal, or expectant can sort a large group of casualties in a matter of minutes, but improper category assignment can lead to under-triage or over-triage.

When assessed by a trained paramedic arriving at a Level 1 pediatric trauma center, SALT was found to be the most accurate triage system at 59% compared to JumpSTART, CareFlight, and TriageSieve. All triage systems exhibited under-triage rates of at least 33% and SALT had the highest over-triage rate at 6%. In another study, the START triage system was found to be 85% sensitive and 86% specific in predicting critical injury in designated trauma patients.

Conclusion: Mass casualty incidents are unfortunately becoming more common as the increasing numbers of violent attacks produce an overwhelming number of victims. One triage process may not work in all disasters, but first responders should be trained to evaluate for the most critical patients in a sea of evolving patient presentations. Furthermore, randomized, controlled

trials in real-world conditions are nearly impossible to perform given the specific circumstances of disasters.

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Delphi Process Recommendations for Pediatric Disaster Medicine Training Curriculum Key Competencies

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Introduction: Children differ from adults, developmentally, physiologically, and psychologically. Additionally, children lack legal agency, and thus rely on adults to gain access to the health-care system and other resources. Though children are often the face of disaster relief, the disparate needs of children can fall through the cracks during disaster response. Many training programs for disaster responders do not give pediatric concerns and issues the appropriate attention they deserve. Pediatric disaster medicine is often minimally addressed in emergency medicine residencies and prehospital provider training. Furthermore, pediatric disaster supplies and protocols are often lacking and insufficient to meet the needs of children during and after disasters.

Method: This is a modified Delphi study. An initial set of pediatric disaster medicine competencies from a systematic review of PubMed, EMBase and the gray literature will be presented to an initial group of Subject Matter Experts (SMEs) comment, additions, and edits. This modified set of competencies will then be distributed to a large group of providers with experience in the field. Through a series of surveys, each competency in the curriculum will be rated. Those competencies which achieve a high overall rating will be reported.

Results: Data collection and analysis expected to be completed by April 2023.

Conclusion: This modified Delphi study will establish and prioritize a set of core competencies for pediatric disaster response based on expert recommendations. The use of such gold standard core competencies to develop discipline-role-specific pediatric disaster training can increase pediatric disaster workforce capacity and competency critically needed to improve pediatric disaster response.

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Disaster Medical Responder's Course for Training of Field Medical Teams in Singapore

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