

Understanding Trauma: An Intervention Model for Treating Resistant Cases of Post-Traumatic Stress Disorder

Luis Fernandez, PhD

1US Naval Hospital Naples, Italy

Psychological trauma is a significant portion of all medical casualties in combat and peacekeeping operations. Significant resources are dedicated to its prevention and treatment, and yet, rates for incidence and recovery basically have remained unchanged over the years. This is particularly evident in chronic, treatment-resistant patients. One of the major difficulties in managing post-traumatic stress disorder (PTSD) is the failure to grasp the meaning of “trauma” for the patient.

Practitioners have assumed that the trauma the wounded experiences is the direct effect of the “traumatic event” and no further inquiry is necessary or warranted. Evidence however, points to the contrary, as not all individuals exposed to a traumatic event develop PTSD, and the majority of those who develop symptoms will recover within a relatively short period of time.

But what about those who do not respond to treatment? There is no clear understanding of the reasons or conditions that adequately explain this outcome. However, it is the author’s experience, that individual factors in the context of a specific socio-cultural context set the stage from where the trauma is experienced and lived. Efforts at treatment focusing in targeting symptom relief only will have limited impact. The author will present a review of the literature, his experience treating chronic PTSD patients from various countries including Colombia, Argentina, and the US, and will argue for the need to develop a comprehensive model for its understanding and treatment.

Keywords: factors; post-traumatic stress disorder; trauma
Prehosp Disast Med 2010;25(5):s107

Hypertonic Saline to Treat Intracranial Hypertension after Traumatic Brain Injury: Why Not?

Boret; Montcriol; Ramiará; Meaudre

Sainte Anne Military Teaching Hospital

Primary lesions after traumatic brain injury (TBI) (i.e., epidural, subdural, or intra-parenchymal hematoma) evolve through parenchymal edema then intracranial hypertension (ICHT), which is particularly deleterious (death or neurological sequelae).

Before neurosurgical evacuation, osmotherapy should be used in case of clinical signs of ICHT (e.g., uni- or bilateral pupillary dilation). Even though mannitol is effective, it induces hyperdiuresis, then hypovolemia and hypotension. It requires compensation of urinary losses to avoid hemodynamics side effects. One alternative is hypertonic saline (HS) (alone or associated to hydroxyethylamidon (HEA) to prolong its effect).

An experimental study in rats indicated superiority of HS compared to mannitol on neuronal apoptosis and secondary brain damages. Clinically, efficacy of HS on ICHT is longer than mannitol. A review by the Cochrane database showed a tendency to a decreased mortality when using HS compared to mannitol in TBI. In the field, HS is

used for hemorrhagic shock (Small volume resuscitation). So, HS associated to HEA appears interesting for prehospital treatment of ICHT after TBI. It is effective and easy to transport. A study to compare effects of HS compared to mannitol on cerebral biochemical markers of ischemia and metabolic crisis in TBI will be conducted. The aim is to prove non-inferiority of HS compared to mannitol on lactate/pyruvate ratio (a marker of ischemia), and then, to promote the utilization of HS not only for hemorrhagic shock, but also for combat TBI.

Keywords: hypertonic saline; intercranial hypertension; mannitol
Prehosp Disast Med 2010;25(5):s107

Mass Accident Victims—Disaster Medicine

The Method of Blood Crisis Policy in the Czech Republic

Milos Bohonek, LtCol, MD, PhD;¹

Dana Hlavackova, MD;² Jaroslava Hejdova, Ing²

1. Central Military Hospital Prague, Czech Republic

2. Ministry of Health Czech Republic

In the Czech Republic (10,000,000 inhabitants) 450,000 Red Blood Cell (RBC) units/year are collected and transfused. The blood collection and processing are performed on 65 small blood centers.

In 2008, the Ministry of Health and Ministry of Defense was entrusted with the enforcement of the blood crisis policy. This was to guarantee sufficient and efficient blood supply during any crisis situation.

The system ensures seven state “blood crisis centers” (BCC) (one military and six civilian). The central role was designated to the military blood bank in the Central Military Hospital Prague (CMH), which houses the Central Information and Logistic Center (CILC). Each BCC is responsible for supplying blood to a defined territory. In case of the transport troubles, BCCs can ask for help from the Ministry of Health. The BCC must keep at least 200 RBCs and 200 plasma units and 2,000 g of albumin. The CILC collects daily updated information from each BCC about available blood and plasma units. Each BCC must have the emergency disposable and tests stock for 2,000–2,500 blood collection units.

A crisis may be proclaimed by central or local health care authority or government. Any crisis status is coordinated by CILC.

The first experience with the real functionality of the policy was in September 2008, when humanitarian blood was supplied to Georgia.

The method represents the unique system of joint cooperation between civilian and military health services.

Keywords: albumin; blood; plasma; policy; supply
Prehosp Disast Med 2010;25(5):s107

Some Educational Strategies for Disaster Medical Preparedness and Response

Karine Manasyan

Yerevan State University

Introduction: In the world of multiple threats, including disasters due to natural or technological hazards, preparedness is an essential premise of a successful disaster response.

This paper addresses education and training as the effective modalities that tangibly enhance disaster medical preparedness and response.

Methods: A disaster preparedness educational program designed to provide opportunities for education and training and that will increase preparedness and resilience to all types of hazards will be described in this study. This program, aimed at all students irrespective of their specialization, is presented to more than hundreds of thousands students every year throughout the country. Well-trained students are encouraged to register into organized teams prior to an emergency event.

Results: The experience shows that students involved in disaster preparedness educational program have an advantage over the others in facing disasters. They are capable of initiating immediate assistance, and providing simple but life-sustaining care until the attendance of professional healthcare personnel.

Conclusions: The presenters conclude that early involvement of well-trained students, registered through organized teams into national disaster plans, could enhance a nation's capacity to handle mass-casualty events and mitigate potential losses. This approach might be particularly useful in a future pandemic event.

Keywords: disaster medical preparedness and response; education and training

Prehosp Disast Med 2010;25(5):s107–s108

Comparison of Two Non-Invasive HbCO Portable Measurement Devices

Patrick Hertgen

Brigade de sapeurs-pompiers de Paris

Introduction: Treatment of carbon monoxide (CO) poisoning is guided by clinical signs and by carboxyhemoglobin (HbCO) level. A "classical," non-invasive portable device for HbCO measurement, using exhaled air analysis was compared to a new device based on infra-red spectrophotometry technique Masimo Rad-57, which seems to be more ergonomic. This new device was tested to see if it better answered the user's expectations.

Methods: The two non-invasive devices were used simultaneously with suspected CO poisoned patients and managed by prehospital medical teams. Fifteen users, doctors, and nurses, answered a questionnaire evaluating the new device compared to the older device, considering ergonomic, setup, handling, response time, measurement reliability, and general feeling. Proposed answers were: much lower; lower; identical; greater; and much greater.

Results: The new device (Masimo Rad-57) has been judged greater or much greater by 47% of the users for the children, by 60% for the non-cooperative patients, and by 53% for the unconscious victims. Of those surveyed, 87% consider the response time faster or much faster. All together, one-third of the responders evaluated the new device identical as the older, one-third superior, and one third much superior.

Conclusions: The new Masimo Rad-57 non-invasive HbCO measurement device based on spectrophotometric technique allows faster measurement compared to exhaled-air analysis, and give a chance to perform measurement on

non-cooperative patients, which are inaccessible to the conventional method.

Keywords: carboxyhemoglobin; detection; device

Prehosp Disast Med 2010;25(5):s108

Measurable Performance Indicators for Management in Civilian Disaster Medicine and Military Medicine

Heléne Nilsson, RN, PhD Student;

Tore Vikström, MD, PhD; Anders Rüter, MD, PhD

Center for Teaching and Research in Disaster Medicine and Traumatology

Introduction: Measurable performance indicators have proven to be a useful tool for evaluation and quality control of management in major incidents and disasters. It also is possible to apply indicators in military medicine training. The aim of this study is to demonstrate the possibilities when using a method of a structured and defined process in which the same evidence-based indicators could be used throughout the whole process.

Methods: Indicators have been developed for: (1) prehospital command and control; (2) hospital management; (3) strategic management; (4) staff procedure skills; (5) full-scale exercises; (6) pedagogic skills; and (7) military training. The same indicators were measured and studied throughout the entire process from first the pilot study via education and implementation, to the application in real incidents.

Results: Five years passed before results from real incidents could be obtained from the first pilot study. This method shows that evidence based indicators can be used throughout the entire process of education, implementation, and into real-world situations. The method is a tool for creating new knowledge which can be used for evaluation and quality control of real incidents.

Conclusions: Measurable performance indicators provide one way to systematically implement knowledge from evidence through education and training into evaluation and quality control of real incidents. This method also can be applied in military medicine.

Keywords: disaster medicine; education; implementation; performance indicators

Prehosp Disast Med 2010;25(5):s108

Assessment of the Regional Capabilities in Mass-Casualty Incidents

Karel Antoš; Bruno Ježek; Jan Vaník; Miroslav Procházka

University of Defence, Faculty of Military Health Sciences

Introduction: The preparation for mass-casualty incidents is one of the major tasks of a healthcare system. A methodology based on the utilization of GIS modeling methods to fuse infrastructure, demographic, and risk sources data with a logistic simulation based on standard operation procedures and tactics of emergency services is recommended for mass-casualty incidents.

Methods: Synthesized maps provide visualization of regional medical capabilities to cope with a mass-casualty incident with a high number of casualties. As an input, the simulation utilizes data from GIS (classified road and street network, locations of the medical facilities), and estimated types and number of casualties and available medical