Abstracts of Scientific Papers-WADEM Congress on Disaster and Emergency Medicine 2017

Collaborative Operations Military Surgical Team Care in Civilian Hospitals during Russia's Hybrid War against Ukraine: Injury Patterns and Care Practices

Oleksandr Garashchuk[1], Oleksandr Galiiev[2], Roman Berezskii[3], Roman Pavchak[4], Viacheslav Zinchenko[4], Yurii Bohuslavskyi[5]

1. Medical Director, NGO "Patriot Defence", Kyiv/Ukraine
2. Icu Dept., Kyiv Municipal Hospital #17, Kyiv/Ukraine
3. Polytrauma Dept., Kyiv Municipal Hospital #17, Kyiv/Ukraine
4. Military Medical Clinical Center of Western Region, L'viv/Ukraine
5. Severodonets'k Municipal Hospital, Severodonets'k/Ukraine

Study/Objective: The armed aggression of Russian proxy forces started in April 2014 and targeted densely-populated areas of Eastern Ukraine. New hybrid warfare demands an effective response, especially in military medical care. We report on the results of a 12-month service of a Military Mobile Surgical Team (MST) in a near-frontline Local Civilian Hospital (LCH).

Background: Casualty care was provided in Military Mobile Hospitals (MMHs) deployed in the conflict zone. Intense shelling in the summer 2014, forced the MMHs to be relocated to a safe distance from the frontline, thus increasing evacuation time. Later, MSTs (a sub-divisions of MMH) were stationed in LCHs close to the war theater, cooperating with domestic personnel and utilizing existing facilities and equipment.

Methods: We reviewed case reports and outpatient records, performed by specialized MSTs of the 59th MMH and local physicians in Severodonets'k Municipal Hospital, Luhans'k region, from April 1, 2015 to April 20, 2016. MST was staffed with anesthesiologists, neurosurgeons, thoracic and vascular surgeons, and engaged LCH's general and orthopedic surgeons.

Results: In the study period 248 servicemen were presented to the trauma bay. Among them, 76 were injured due to mortar shelling and mine traps, and 7 had gunshot wounds (GSW). In total, 83 casualties required 212 surgical procedures with an average of 2.55 per case. Additionally, 165 patients were admitted with various traumas and had 73 surgeries performed. Availability of a CT-scanner has allowed 27 craniotomies (12 due to penetrating brain injuries, 15 to trauma). There were 17 patients who received transfusions in total; of 18 175 ml of FFP and 17 515 ml of pRBCs. The in-hospital mortality was 2.82%. Ambulatory trauma care was provided to 513 servicemen.

Conclusion: Cooperation of MSTs with LCHs in non-occupied Eastern Ukraine is effective for providing specialized medical care to Ukrainian servicemen. Deployment of MSTs in frontline LCHs shortens time for casualties to reach surgical care, thus essentially influencing outcomes.

Prehosp Disaster Med 2017;32(Suppl. 1):s11
doi:10.1017/S1049023X17000541

Outcome for Patients with Extremity Wound Infection Following War-Associated Injuries

Andreas Ålgå[1], Måns Muhrbeck[2], Harald Veen[3], Peter Andersson[4], Johan Von Schreeb[1], Jonas Malmstedt[5]

1. Department Of Public Health Sciences, Karolinska Institutet, Solna/Sweden
2. Department Of Surgery, Vrinnevi Hospital, Norrköping/Sweden
3. International Committee of the Red Cross, Geneva/Switzerland
4. Centre for Teaching and Research in Disaster Medicine and Traumatology, Linköping/Sweden
5. Department Of Clinical Science And Education, Södersjukhuset, Karolinska Instiutet, Stockholm/Sweden

Study/Objective: To assess whether 'wound infection' is an independent risk factor for amputation or death.

Background: Data on the epidemiology of wound infection in patients with war-associated injuries is limited and mainly describes military combatants. It is unknown to what extent wound infection itself is a factor contributing to serious complications. This is an analysis of data containing both civilians and combatants of both sexes and all ages, originating from an International Committee of the Red Cross Hospital in Peshawar, Pakistan.

Methods: We included consecutive patients treated between September 27, 2010 and May 9, 2012 that presented with extremity injuries within two weeks after injury. Wounds with pus discharge were defined as infected. To adjust for trauma severity Revised Trauma Score (RTSc) was calculated by using systolic blood pressure, respiratory rate and Glasgow coma scale. We used binary logistic regression models to evaluate the independent effect of wound infection on outcome. P-values < 0.05 were considered significant.

Results: Wounds were infected in 108/1,033 (10.5%) patients treated during the study period. Of patients with wound infection 15/108 (13.9%) died, compared to 24/925 (2.6%) of patients without infection, crude relative risk (RR) = 5.4; $p < 0.001$. Amputation frequency was 16/108 (14.8%) in patients with infection, and 79/925 (8.5%) in patients without infection, RR = 1.7; $p = 0.037$. RTSc was missing for 31 patients. Mean RTSc was similar in patients with (7.74; 95% CI 7.72-7.76), and without infection (7.68; 95% CI 7.58-7.79). Wound infection was associated with death and amputation after adjustment for age, sex and RTSc, odds ratio = 9.23; (95% CI 4.17-20.44), $p < 0.001$ and 1.90; (95% CI 1.03-3.52), $p = 0.040$ respectively.

Conclusion: Extremity wound infection following war-associated extremity injuries seems to be associated with an increased risk of amputation and death, even after adjusting for sex, age and RTSc. We aim to develop models to

identify vulnerable patient groups and risk factors for wound infection.

Prehosp Disaster Med 2017;32(Suppl. 1):s11–s12
doi:10.1017/S1049023X17000553

Military and Civilian Collaboration within Medical First Responders - the Israeli Experience

Eyal Furman[1], *Gil Moshkowitz*[2]
1. Medical Department, Israel Defense Forces Home Front Command, KFAR MONASH/Israel
2. Deputy Director General, Head Of Operations, Magen David Adom (Israeli EMS), TEL AVIV/Israel

Study/Objective: The two major medical first responding organizations in Israel are the Medical Corps, Israel Defence Forces (IDF) Home Front Command (HFC), and the National Israeli EMS provider, Magen David Adom (MDA). We will describe some of the main, unique, and specific areas of cooperation between MDA and the IDF.
Background: The Magen David Adom (MDA) Law, an Israeli Parliament Law from 1950, defines MDA as an operative assistance organization to the IDF Home Front Command (HFC) in case of emergencies and during war time. Cooperation, by law, in preparedness, training, and emergency cases has led to collaboration in day-to-day activity and routine emergencies.
Methods: 1. Human Resources - support between IDF and MDA medical teams in various medical events. IDF funding of MDA volunteer course. MDA operates the National Blood Bank, the IDF as the main blood donor. Military blood services unit to assist MDA. IDF recruits the MDA medical personnel. IDF supplies medical personnel to MDA ambulances. Cooperation of medical teams in humanitarian missions. 2. Training - combined training and exercises between IDF and MDA. Interagency cooperation in training (IDF, MDA, MOH, hospitals), mass toxicological events, CBRN drills. Military paramedic course conducted by MDA experts. MDA management goes through senior IDF courses. 3. Command control and coordination - independent organizations are routine, there is information replaced in any event. MDA works under IDF HFC coordination during emergency events. 4. Doctrine and regulation sharing and supervising. 5. Equipment - both logistic departments work together. Mutual influence leading to advanced, up-to-date medical equipment. 6. Scene response - organizations, medical teams can be activated by both. Coordination between IDF Air Force and MDA and IDF HFC.
Results: There is a better medical response for civilian and military personnel with collaboration and creating synergism
Conclusion: The major keys for success will be described.

Prehosp Disaster Med 2017;32(Suppl. 1):s12
doi:10.1017/S1049023X17000565

Military and Civilian Experience in Providing Medical Care to Pediatric Patients in Disasters and Mass Casualty Incidents - What Can We Learn from Each Other?

Katarzyna Dlugosz
The Department Of Disaster Medicine And Emergency Care, Jagiellonian University Medical College, Kraków/Poland

Study/Objective: The main purpose of this work is to find common areas of combat medicine and civilian medical rescue in mass casualty incidents and disasters were children are the victims. The results of this study provide the basis for the creation of common solutions that will improve the chance for survival of children in disasters and mass casualty incidents.
Background: Mass casualty incidents and disasters involving children are difficult situations for medical emergency responders. Rescuing of patients and providing medical emergency care in these types of events is similar to combat medicine. Exchange of experiences, dilemmas and issues in military medical services is the way to improve operation during mass casualty incidents and disasters that involve pediatric patients.
Methods: In this research we invited Polish soldiers who are paramedics, and when they were on a military mission, they provided emergency medical care to pediatric victims. A second research group are former civilian medical rescuers, who have provided medical care to pediatric patients of disasters or mass events. Participants were asked questions about difficulties, dilemmas, ways of providing medical care for children, evacuation and transport of pediatric patients from the scene to the hospital.
Results: Dilemmas and difficulties in providing medical emergency care to pediatric victims in mass casualty incidents and disasters, are similar to those in combat medicine when the military paramedics save children's lives. The common areas include ethical dilemmas, regarding providing emergency medical care, opportunities and access to resources, rescuers, medical equipment and pediatric patient transport. The biggest challenge in both groups were stress and emotional reactions of children and rescuers.
Conclusion: All common areas should be well developed, discussed and have joint trainings. This cooperation could give an opportunity to develop the best solutions to save children in mass casualty incidents and disasters.

Prehosp Disaster Med 2017;32(Suppl. 1):s12
doi:10.1017/S1049023X17000577

Development of New Triage and Scene Management Techniques to Provide a More Effective Response to Active Shooter Situations

Brad Keating
Medical Division, Colorado Springs Fire Department, Colorado Springs/CO/United States of America

Study/Objective: This paper will discuss the needs for response in an active shooter incident, including the use of a cold, warm, and hot zones by all responding agencies. Additionally, building upon techniques learned while training in Israel, numerous tactical medical operations, and responding to incidents abroad, a new triage technique will be proposed that evaluates a casualty based only on their ability to follow commands and assessment of a radial pulse. The new method also eliminates the yellow category and labels patients only as