Conclusion: The study is ongoing. Preliminary data suggest that a significant proportion of RTA victims do not arrive by EMS. We hope to review the data to determine if EMS transport confers advantage to crash victims and advise changes to improve EMS-based outcomes.

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Prehospital Care of Spinal Cord Injuries in India

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Study/Objective: Prehospital Care of Spinal Cord Injuries in India.

Background: Injury is an increasing burden in Low and Middle Income Countries (LMICs) including in India. Prehospital care refers to the initial medical care given to a patient following injury, and before they present to a hospital. As in several developing countries, India lacks an established prehospital care system. Appropriate prehospital care is especially pertinent for a patient with a suspected Spinal Cord Injury (SCI), as effective immobilization and transportation is vital to avoid secondary injury.

Methods: Interviews were conducted at the 145-bed tertiary-level hospital, Indian Spinal Injuries Center in New Delhi, between March 10, 2016 and October 10, 2016 using a pre-designed questionnaire. Inclusion criteria was any patient >16 years who had suffered a SCI in India. Patients <16 years and who had suffered their injury outside of India, were excluded from the study. Interviews were conducted in the Rehabilitation Department with inpatients and outpatients attending for physiotherapy.

Results: Overall, 53.33% of SCI was caused by road traffic accidents and 26.67% were due to a fall from height; 50.00% of patients were transported to hospital by ambulance, with a median transfer time of 2.5 hours. The remaining 50% of patients were transported by private car (26.67%), auto-rickshaw (6.67%), police car (6.67%), taxi (3.33%) or bus (3.33%). Further, 33.33% of patients transported by ambulance received pain relief, and 26.67% were transported with a neck collar or on a back board. Overall 16.67% of patients received pre-hospital care.

Conclusion: As the burden of injuries, in particular those caused by road traffic accidents rises, India is increasingly in need of a country-wide, established prehospital care system. In the last decade, ambulance use has increased, but there are huge inconsistencies in the care ambulance staff provide. In addition, awareness of the identification and management of SCI needs to raised among both health care professionals and lay persons.

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Cardiac Arrest, Are Two ALS Providers Better than One?

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Study/Objective: To determine if, in our geographic area of the US, the use of a duel paramedic Emergency Medical Service (EMS) system is a factor in improving cardiac arrest prehospital care, or should a single paramedic system be adapted.

Background: Among many urban EMS systems, there exists a paradigm of belief regarding dual ALS provider ambulances, that more advanced training must equal better care. Though much research has focused on the benefits of Advanced Life Support (ALS) versus Basic Life Support (BLS), far fewer studies have been devoted to whether there is any true benefit of dual ALS ambulances. Since 1966 and the publishing of Accidental Death and Disability: The Neglected Disease of Modern Society by the National Academy of Sciences, prehospital care has been in transition. Early research correlated survival with paramedic response, thus many systems quickly transitioned to a service with increasing number of ALS ambulances.

Methods: The Institutional Review Board (IRB) approved retrospective chart review of 14 EMS provider agencies in the Dallas County area (population > 2,300,000) for a year, from November 2012 - October 2013, looking at cardiac arrest and the success of Return of Spontaneous Circulation (ROSC) in this population.

Results: We analyzed 11,700 cardiac arrest calls during the time period, with 1,620 having a ROSC. Comparing BLS only vs single paramedic vs duel paramedic systems, 13.9% of dual systems had ROSC, 13.3% had ROSC that were single paramedic, with 0% having ROSC with a BLS only system.

Conclusion: ALS is important for ROSC during cardiac arrest; however, it is unclear if having two or more paramedic providers are necessary to achieve ROSC. If truly equivalent, then the cost savings of only having a single paramedic provider system might be worth looking into.

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Prehospital Monitoring of Vital Parameters Using a Novel Device - RespiHeart

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Study/Objective: The study aims at validating a novel device (RespiHeart) for monitoring vital parameters in traumatically injured patients.

Background: There is a need for a simple-to-use method for monitoring of vital parameters in the prehospital setting. RespiHeart is a small medical device that is attached to the sternum. It sends light of defined wavelengths into the underlying vasculature, and measures the reflected light. The resulting signals are then treated using proprietary algorithms to obtain heart rate and respiratory rate. The device has the capability to also measure oxygen saturation, temperature and movement.

Methods: The device was tested during training sessions for medical personnel, where various traumatic wounds were inflicted on anesthetized pigs. The training was primarily

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focused on teaching acute lifesaving interventions. The Respi-Heart device was applied to the animal and used to monitor vital parameters throughout the training session. A total of 22 animals were included in the study. The data gathered from Respiheart were compared to results from a pulse oximeter and ventilator connected to the animal. Statistical comparison were performed using linear regression and Bland-Altman plots to analyze agreement of methods.
Results: The heart rate as measured by the pulse oximeter was correlated to the rate reported by RespiHeart. The R^2 was 0.9946 with a p-value of less than 0.0001. Bland-Altman analysis of heart rate revealed a bias of -0.06127 (95% CI -2.219-2.097). The respiratory rate as set on the ventilator was correlated to the rate reported by RespiHeart. The R^2 was 0.9978 with a p-value of less than 0.0001. Bland-Altman analysis of respiratory rate revealed a bias of -0.008584 (95% CI -0.42-0.4028).
Conclusion: The results obtained in this study demonstrate a high degree of correlation between the data obtained from RespiHeart and the pulse oximeter and ventilator. This renders RespiHeart as a promising device for prehospital use.
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Alert Function of Emergency Medical Information System: Securing Sufficient Time and Medical Resources in Mass Casualty Incidents

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Study/Objective: To evaluate the efficacy of alert function for mass casualty incidents in which prompt information can be provided from fire departments to hospitals.
Background: In mass casualty incidents, securing sufficient time and resources for medical action/response is key. In 2003, Emergency Medical Information System in Hyogo Prefecture (EMISHP) was innovated with a special alert function, through which fire departments can simultaneously alert medical institutions about mass casualty incidents in local man-made disasters.
Methods: Retrospective analysis of mass casualty incidents/disasters in which the alert function was activated from 2003 to 2015. Number of casualties, destination hospitals to which the injured were transported, duration from emergency call to activation of alert function (activation time), time of search and rescue activity at the scene (S/R time), etc., were evaluated.
Results: In 13 years, the alert function was activated in 143 mass casualty incidents. These included motor vehicle accidents, fire/explosion, chemical spill, etc. The casualty count ranged from 0 to 662 (median value = 5). Activation time ranged from 1 to 89 minutes (median value = 12). S/R time ranged from 13 minutes to 23 hours 23 minutes (median value = 70 minutes). The number of destination hospitals ranged from 0 to 54 (median value = 3). In all cases, Emergency Medical Coordinators (EMCs) at Hyogo Emergency Medical Center, a principal hub hospital for disasters, directly or indirectly assisted, by providing prompt first aid at the hospitals, dispatching doctor-attending cars or helicopters and DMATs (Disaster Medical Assistance Teams) to the scene if requested, and coordinating activities across medical teams and fire departments.
Conclusion: By sharing up-to-date information with hospitals and fire departments, the alert function of EMISHP, along with the EMCs' coordination, enables smoother patient transport to hospitals and improved medical activities at the scene. This alert function contributes much in securing sufficient time and resources for medical response in mass casualty incidents.
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So You Need to Suddenly Evacuate Hundreds of Hospital Patients - Without Power

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Study/Objective: This case study will discuss events during, after, and lessons learned from one of the largest 'entire' hospital evacuations to date in United States History.
Background: Between 1971 and 1999 there were about 275 reported hospital incidents involving hospital evacuations. Of these, a majority occurred because of an event that originated within the hospital. Whether natural disaster or not, hospitals are an easy target to become victims of sudden catastrophic events. In the summer of 2016, a lightning strike and fire forced the evacuation of a multi-story hospital of hundreds of patients without power.
Methods: After lightning struck a Florida Hospital, a fire then ensued that destroyed both the power and the backup power for the entire hospital, despite the fire itself spreading. This led to more than 70 ambulances from over 175 miles away, three ambulance Mass Casualty Incident (MCI) buses, multiple engine companies, emergency management response, a couple EMS physicians, and multiple sheriff's units evacuating over 200 patients, both ambulatory and Intensive Care Unit (ICU) intubated and ventilated patients, to various hospitals in the region.
Results: No deaths were reported, and no further injuries initially reported among rescuers during the approximately six hour operation.
Conclusion: While a large number of various agencies and hospitals had an impressively successful outcome, many lessons can be learned for other facilities as well as improvements for an even better response in the future, and hopefully disaster mitigation.
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EMS Preparedness to Arson Terror

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Study/Objective: Research characteristics of arson terror and the differences between wildfires that occur naturally and those by arson, to learn the necessary preparedness concepts and reduce response times while improving response quality to such events.

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