

**Background:** Although the incidence of Out-of-Hospital Cardiac Arrest (OHCA) is increasing, mortality is decreasing due to, in large part, early recognition and initiation of the chain of survival including prompt CPR and defibrillation, followed by advanced cardiac life support and transport to an appropriate cardiac center. Israel is an ethnically varied society with a large proportion of the population spread between urban centers and rural areas. Magen David Adom (MDA) is the Israeli national EMS organization with first responders, EMTs and Paramedics as providers. In contrast with most EMS dispatch centers which follow algorithms to provide instructions, MDA employs EMTs and Paramedics who answer emergency calls and provide CPR instructions to lay first responders in cases of OHCA.

**Methods:** Retrospective analysis of emergency-call recordings during the first half of each month in a 6-month duration. Efficacy was measured by time to cardiac arrest diagnosis, time to initiation of compressions, absence of barriers and cooperation, and spontaneous return of consciousness/circulation.

**Results:** Preliminary analysis of the results shows a significant inverse relationship, between average time to recognition of cardiac arrest and initiation of compressions, to years of experience. Nevertheless, the average time to recognition and initiation of compressions was not significantly different for Paramedics than for EMTs. Moreover, dispatchers with more years of service experienced greater cooperation from callers.

**Conclusion:** This study shows that centers with dispatchers with field experience, are able to provide high quality direction for OHCA DCPR. Years of service and overall experience correlate with higher cooperation and possibly improved patient outcome. More research and further studies are necessary to compare the efficacy in comparison to algorithm-based DCPR, as well as to determine the actual improvement in patient outcome.

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### Lessons from “Lehiwot Menor” Radio Show, and its Opportunities for Teaching Emergency Medicine to the Public in Ethiopia

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**Study/Objective:** To describe the lessons learned from the first two years of “Lehiwot Menor” (Living for Life), a radio show aimed at teaching basic emergency care principles to the general public in Ethiopia.

**Background:** In Ethiopia, despite a national initiative to standardize and strengthen prehospital and emergency care, the general public still lacks basic awareness regarding emergency care.

**Methods:** “Lehiwot Menor” is a twice weekly, one-hour radio show at Bisrat FM 101.1, broadcasting throughout Addis Ababa and neighboring cities since September 26, 2014. Founded and hosted by two nurses trained in emergency medicine and critical care. Lehiwot Menor seeks to educate the public on harm reduction and injury prevention, as well as appropriate use of prehospital ambulance and emergency services. This was a

qualitative assessment on the impact of the show through discussions, text messaging, and social media portals with a station audience.

**Results:** Weekly live radio discussions with the public have helped disseminate information about the importance of emergency care in Ethiopia. Discussions have helped debunk several harmful traditional healing practices, while building awareness regarding appropriate prehospital lay response. Several new topics previously causing significant ethical dilemmas have also been introduced (eg, brain death evaluation). Public figures including actors/actresses, legislators, and journalists continue to participate in this teaching and increase public awareness. Additionally, Lehiwot Menor has served as a means of recruiting volunteers for first aid and blood donation.

**Conclusion:** Effective emergency care frequently starts with appropriate prehospital decisions made by lay first responders. These include basic resuscitation, as well as the decision to call for ambulance support or bring patients in for acute care evaluation. Radio programs like Lehiwot Menor can play an important role in helping teach the general public about early and appropriate utilization of emergency care, in settings where basic public awareness about these services is lacking.

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### Emergency Medical Service Usage and its Effect on Outcomes in Road Traffic Accident Victims in India

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**Study/Objective:** A study of Emergency Medical Services (EMS) utilization for road traffic accidents (RTA) in southern India is proposed to determine 1) proportion of victims transported by ambulance and 2) crude morbidity and mortality rates in patients brought by ambulance versus other modalities.

**Background:** In 2005, an EMS “1-0-8 Ambulance” was launched in Hyderabad to confront absence of centralized emergency response and high mortality rates from RTA. The program expanded to 15 Indian states, with over 10,000 ambulances, but remains underdeveloped; mired by prolonged transit to definitive care sites and lack of pre-hospital EMS interventions. It is not known if EMS utilization in India improves outcomes. Further investigation is warranted to identify strengths and weaknesses of the Indian EMS system.

**Methods:** A retrospective chart review is proposed of four hospitals receiving patients from 1-0-8 services in South India. All patients presenting for emergent care following RTA in 2015-2016 will be included. Data on 1) demographics, 2) transport, 3) injury mechanism and description, 4) treatment course, and 5) outcome will be obtained from emergency department and hospital patient records using a standardized tool. Impact of EMS usage on trauma score, duration of hospital stay, ICU stay and mortality will be assessed.

**Results:** Data collection and analysis are expected to be completed by March 2017.

**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 be 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 dual 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 dual 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