

**Background:** Rotor wing medevac operations are common worldwide in military and civilian systems. They potentially allow rapid on-scene arrival of medical personnel and evacuation, especially in remote locations or in cases of difficult land access. Until 2012, the only available rotor wing scene evacuation service for the southern part of the country was provided by the air force medevac unit. The south of Israel only has a level one trauma center, the Soroka hospital located in the city of Beer-Sheva. It receives all airborne evacuations from the region and most of the ground evacuations.

**Methods:** Data on evacuation times and injury severity, were collected from the Soroka trauma unit, Airborne Evacuation unit reports and from the national EMS archives. Air transports were matched with actual ground cases when available, or with computer extrapolated times, when matching ground transports were unavailable.

**Results:** In the three-year study period, 263 airborne scene to Soroka hospital evacuations were identified and matched to ground evacuations for each location. Airborne evacuations were shorter in 67.7% of the cases. The average evacuation time reduction was fifteen minutes; 73 of air-evacuated patients (27.7%), had an ISS score of 16 and above.

**Conclusion:** According to worldwide studies and guidelines, airborne evacuations should be reserved for severely injured where the time to ALS treatment and definitive care in a trauma center can be life-saving. Such evacuations may also be justified for less severe injuries in very remote or limited access locations. Our findings show that although helicopter evacuation allowed a mild reduction in evacuation time, this reduction was probably insignificant for the majority of evacuees who suffered only mild/moderate injuries.

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### Prehospital Blood Product Administration Opportunities in Ground Transport ALS EMS Services - A Descriptive Study

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**Study/Objective:** The purpose of this study was to determine whether opportunities for blood product transfusion by ground EMS services exist, and to compare them with HEMS.

**Background:** Hemorrhage remains the major cause of preventable death after traumatic injury. Recent data suggests that earlier blood product administration may improve outcomes. Helicopter EMS (HEMS) units are increasingly fielding blood products.

**Methods:** Single EMS agency retrospective study of ground and air transport between 1/1/2011–12/31/2015, for adult trauma patients transported from the scene of injury, who met predetermined hemodynamic parameters for potential transfusion (heart rate > 120 and/or systolic blood pressure < 90).

**Results:** There were 7,900 scene trauma ground transports that occurred during the study period, of which 843 were classified as emergent dispatch. Of the 420 (49.8%) patients meeting hemodynamic criteria for transfusion, only 53 (12.6%) had a significant mechanism of injury. Outcome data were available for 51 patients; 17 received blood products during their ED resuscitation. The percentage of patients receiving blood products based upon hemodynamic variables ranged from 1.0% (HR) to 5.9% (SBP) to 38.1% (HR + SBP). 27.3% of penetrating trauma patients were transfused, compared with 35.0% of blunt trauma patients ( $P = 1.0$ ). Three prehospital traumatic arrests occurred; all were transfused and none survived. Of 333 HEMS transports, 74 met hemodynamic criteria for blood transfusion, and 28 received prehospital blood transfusion ( $P < .0001$  compared with ground ED transfusion). No difference in transport times was noted between air and ground patients ( $32.53 \pm 13.65$  vs  $27.63 \pm 10.21$ ;  $P = .26$ ).

**Conclusion:** In our study population, hemodynamic parameters alone do not predict need for ED blood product administration. Despite similar transport times, only one-third of HEMS patients meeting hemodynamic criteria for blood administration received prehospital transfusion. Given complex logistical issues involved in prehospital blood product administration, opportunities for ground administration appear limited.

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### Are Two Always Better than One? Is a Double Paramedic Prehospital System Necessary and Worth the Cost?

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**Study/Objective:** To determine if, in our geographic area of the US, the use of a dual paramedic EMS (Emergency Medical Service) system is an important factor in improving prehospital care.

**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. Although seemingly valid on the surface, the foundation for this thinking has rarely been studied and little literature has emerged in support of dual ALS ambulances.

**Methods:** IRB approved retrospective chart review of 14 EMS provider agencies in the Dallas county area (population >2,300,000) for a year from October 2012–October 2013 looking at ALS calls and their complexity. We looked at a three month sample from October through December 2012 to assess for medical complexity to begin to assess which calls might have needed two or more ALS providers.

**Results:** 2731 of ALS charts spanning three months were reviewed for complexity with only five procedures or pharmaceutical interventions deemed complex. This resulted in 30 (1.1%)

instances of use that after review would be deemed complicated and possibly needing greater than one ALS provider.

**Conclusion:** ALS is an important component for a small percentage of prehospital emergencies, but its widespread promotion and use might not be a fiscally sound option.

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## A Survey of 200 National Collegiate Emergency Medical Service Organizations

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**Study/Objective:** Our objective is to look at data collected by the National Collegiate EMS Foundation (NCEMSF) to present an updated statistical summary of the Collegiate-Based Emergency Medical Service (CBEMS) organizations.

**Background:** University campuses are unique, typically self-contained environments. In North America over the past twenty years, CBEMS organizations have proliferated on campuses. Today, hundreds of university-funded, student-run organizations perform prehospital medical care for the campus population of our universities.

**Methods:** We performed a retrospective observational study of 200 CBEMS organizations in North America. The NCEMSF has aggregated data from 1993 to 2015 from an annual survey of all CBEMS organizations. Of those, 329 organizations self-identified themselves to the NCEMSF and completed the survey. We excluded 129 organizations who were either not operational or who had not completed significant portions of the survey.

**Results:** In North America, the mean response time for CBEMS organizations is 3.09 minutes. The mean annual budget reported is \$38,333. The mean annual call volume is 516 calls, while the mean number of total vehicles per organization is 3.8. Looking at the level of service provided by the CBEMS organization, 15.50% (31/200) are classified as first responder only organizations, 69.50% (139/200) are basic life support (BLS) capable, 3% (6/200) provide intermediate level of care, 8.5% (17/200) provide Advanced Life Support (ALS) care, while the remaining 3.5% (7/200) were classified as 'other'. For the type of response provided, 10.5% (21/200) provide 'event only' coverage, 54.5% (109/200) provide quick response services (QRS) only, 23% (46/200) provide ambulance response, 5.5% (11/200) provide a response type classified as 'other', while the remaining 6.5% (13/200) provide non-emergent response (see Table 1).

**Conclusion:** Collegiate EMS organizations are diverse, with the majority being urban Basic Life Support (BLS) Quality Rescue Services (QRS) services. CBEMS organizations are a relatively recent development in the history of EMS, paralleling other specialty EMS agencies, such as wilderness and tactical medicine.

Variable	N Size	Mean Or %	Std. Dev
School Type [Private = 0, Public = 1]	200		
Private	103	52%	
Public	97	48.50%	
Campus Type [Rural = 0, Urban = 1, Suburban = 2]	200		
Rural	47	23.50%	
Urban	140	70.00%	
Suburban	13	6.50%	
Mean Number of Total Students	196	13515	13935.33
Mean Number of Students Living on Campus	81	6053.35	4558.12
Level of Service [First Responder = 0, BLS = 1, Intermediate = 2, ALS = 3, Other = 4]	200		
First Responder	31	15.50%	
Basic Life Support (BLS)	139	69.50%	
Intermediate	6	3.00%	
Advanced Life Support (ALS)	17	8.50%	
Other	7	3.50%	
Type of Response [Event Only = 0, QRS = 1, Ambulance = 2, Other = 3, Non-Emergent = 4]	200		
Event Only	21	10.04%	
Quick Response Vehicle (QRS)	109	54.50%	
Ambulance	46	23.00%	
Other	11	5.50%	
Non-Emergent	13	6.50%	
Years of Existence	192	22.05	13.79
Volunteer Members	161	44.97	29.15
Paid Administrator [No Paid = 0, Paid = 1, Part-Time Paid = 2]	200		
No Paid	135	67.50%	
Paid	27	13.50%	
Part Time Paid	38	19.00%	
Portable Automated External Defibrillator (AED)	156	3.01	2.33
Coverage Area (Campus Only = 0, Campus + surround Area = 1, Events Only = 2)	200		
Campus Only	127	64.80%	
Campus + Surrounding Areas	49	25.00%	
Events Only	20	10.20%	
Number of Vehicles			
Number of Ambulances	46	1.89	1.3
Number of Gas Vehicles	60	1.65	1.25

Table 1. Descriptive Results of Survey Data (continued)