primary retrieval of major trauma patients using a physician-paramedic team in London (UK). Major trauma represents <1% of all emergency calls received by LAS and a robust dispatch policy is necessary to target this valuable resource accurately. HEMS is dispatched by 3 means:

1. Immediate Dispatch: Aircraft dispatched immediately on mechanism alone. These criteria (summarised in figure 1) are modified from the American College of Surgeons Committee on Trauma guidelines for activation of an in-hospital trauma team and are based on 19 years local experience but have never been locally validated.
2. Interrogation: Dispatch after interrogation of emergency caller by HEMS dispatcher.
3. Crew request: Dispatch at the request of an ambulance crew already attending the patient.

This study was conducted to locally validate the immediate dispatch criteria.

Methods: A retrospective database search was performed of cases attended between 01/01/07 and 31/07/07. The three categories of dispatch were compared using the outcome measures of survival to discharge, Injury Severity Score (ISS), Revised Trauma Score (RTS), calculated probability of survival, number of ICU days, number of ward days and length of hospital stay. Survival data were available for all cases, other outcome data only for those retrieved to our base hospital.

Results: In total, 805 cases were attended during the study period, of whom 335 were retrieved to the base hospital. 22% were immediates, 57% interrogations and 21% crew requests. The 3 groups were well-matched for age and sex. The immediate group consisted predominantly of falls, "one unders" and pedestrians trapped under vehicles. Outcomes did not vary significantly between these sub-groups.

Compared with the other two groups the immediate dispatch group had a significantly greater mortality, ISS, ITU days, ward days and overall length of stay and the lowest RTS and probability of survival (see table).

Conclusions: In major trauma some mechanism based out-of-hospital dispatch criteria reliably predict cases with greater injury load, physiological burden, utilisation of hospital resources and mortality. This study confirms that established dispatch criteria can be locally modified and validated to produce an effective EMS tool. In our system these criteria effectively target a scarce resource to those who need it most.

Box 1. London HEMS immediate dispatch criteria

- Falls >20 ft or 2 storeys
- Person hit by train ("one-unders")
- Pedestrian or motorcyclist in RTC trapped under a vehicle
- Traumatic amputation above the wrist or ankle
- RTC with associated fatality of occupant
- RTC with ejection of occupant from vehicle

	Mortality (%)	PS (%)[1]	ISS[2]	RTS[2]	ICU Days[1]	Ward Days[1]	Hospital Days[1]
Immediate	38	71.5 ± 7.2	18.5 (10, 33)	6.0 (4.2, 7.8)	3.5 ± 0.8	21.3 ± 4.0	24.7 ± 4.6
Interrogation	22	91.7 ± 1.7	10 (1,17)	7.8 (6.3, 7.8)	1.6 ± 0.3	8.7 ± 1.1	10.4 ± 1.2
Crew Request	9	91.7 ± 3.3	9.5 (4.3, 23.8)	7.6 (5.7, 7.8)	1.7 ± 0.6	10.8 ± 2.2	12.5 ± 2.7
P-Value	<0.0001*	0.0002†	0.0032†	0.0091†	0.1073‡	0.0005‡	0.0007‡

Values of continuous data are presented as [1]mean ± sem or [2]median (IQR)
p-value *from chi-squared test, †from Kruskal-Wallis Test, ‡from ANOVA

14 Implementation of the 2005 Cardiopulmonary Resuscitation Guidelines and Use of an Impedance Threshold Device Improve Survival From Inhospital Cardiac Arrest

Thigpen K, Simmons L, Hatten K/St. Dominic's Hospital, Jackson, MS

Study Objective: The 2005 American Heart Association guidelines recommended many new interventions during cardiopulmonary resuscitation (CPR), including a Level IIa recommendation for an impedance threshold device (ITD), which is intended to further optimize circulation during CPR. To date, all data published supporting use of an ITD have been following out-of-hospital cardiac arrest. This study's objective was to determine the effect that implementing new CPR guidelines, which included use of an ITD, would have on survival to hospital discharge following inhospital cardiac arrest.

Methods: Quality assurance data from adult patients (≥ 18 years) experiencing an inhospital cardiac arrest at a 571-bed, acute care hospital were analyzed. Survival rates from a historical (control) period (01/2006 - 09/2006) were compared to matched patients in a prospective period (10/2006 - 08/2007) during which the new CPR guidelines and use of an ITD (ResQPOD®, Advanced Circulatory Systems; Minneapolis, Minnesota) were implemented. Per hospital protocol, the ITD was used on both a facemask and/or endotracheal tube in patients regardless of cardiac arrest etiology, unless specifically overridden by physician.

Results: In both study populations, patients, on average, were 67 years and 49% were male. The results were as follows:

Table: Survival Following Inhospital Cardiac Arrest

	Historical (n=157)	Prospective (n=136)	Odds Ratio	95% Confidence Intervals	Fischer's Exact Test
Return of Spontaneous Circulation	52/157 (33.1%)	79/136 (58.1%)	2.80	1.69, 4.64	p<0.001
Survival to Hospital Discharge	27/157 (17.2%)	38/136 (27.9%)	1.87	1.03, 3.41	P=0.034

Conclusion: Adoption of the new CPR guidelines and an ITD resulted in a 75% increase in initial arrest survival rates and a 62% increase in survival to hospital discharge rates. This first known reporting of data demonstrating the impact of new CPR plus and an ITD following inhospital cardiac arrest represent a currently optimized sequence of therapeutic interventions and support widespread adoption of these therapies.

15 Aeromedical Evacuation Coordination: Are There Decision Criteria?

Duchateau FX, Verner L, Cha O/Mondial Assistance, Paris, France

Study Objectives: Primary objective was to characterize international aeromedical evacuation. Secondary objective was to determine predictive factors of urgent evacuation.

Methods: We retrospectively studied all consecutive overseas repatriations over 1 year (August 2006-July 2007) performed by our medical assistance company providing wordwide medical assistance for international travelers and expatriates. Following specific criteria have been recorded: age of the patient, location, developed countries' sanitary standards (or not) according to World Health Organization, existence of a high standard structure in the country (internal world wide program of medical facilities evaluation), direct medical contact with attending physician, French speaking area, main diagnosis, urgent treatment required, initial local transfer to another hospital for better medical facilities, modalities of aeromedical evacuation. Patients were allocated to 2 groups: decision of immediate aeromedical evacuation with air-ambulance or later repatriation. Data were compared between the 2 groups. Data were expressed as mean ± SD and percentage of patients. Statistical analysis was performed by ANOVA for quantitative data and a Chi-square test for qualitative data. A multivariate analysis was also done. A $p < 0.05$ was considered the threshold for significance. We used statistical package Stat-View 5 ® (Abacus Concept, Berkeley, CA, USA).

Results: Four-hundred three international aeromedical evacuations were performed during the study period. Location was North-Africa for 29% of patients, sub Saharan Africa for 14% of patients, Asia for 13% of patients, America and Caraibs for 9% of patients and Europe for 35% of patients. Sanitary standards were not developed countries' standards in 42% of cases. Patients were considered as requiring urgent treatment in 50% of cases. A local transfer to another hospital was initiated by the physician on duty in the coordination center in 23% of cases. Main pathologies encountered were: trauma (40%), cardiac diseases (17%), neurological disorders (14%), respiratory diseases (8%). Fifty percent of patients required urgent therapeutic measures: mostly a surgical intervention (27%). Evacuations were done aboard air-ambulances with advanced life support facilities for 26% of patients, otherwise aboard commercial aircrafts. Oxygen was required for 27% of patients. Age < 15 (Odds-ratio (OR), 7.0; 95% CI, 1.6-30.6), absence of a high standard structure in the country (OR, 3.6; 95% CI, 1.2-11.1) and location in sub Saharan Africa (OR, 12.6; 95% CI, 2.3-71.4) were independent factors of immediate aeromedical evacuation.

Conclusion: Decision whether to evacuate or not is a challenge for physicians of aeromedical evacuation companies. Decision criteria associated with immediate aeromedical evacuation are age, local resources and location. Creation of a specific standardized scoring system based on these criteria may be very valuable.