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### A Universal Method for Evaluating the Assessment of Incoming Calls to EMS Systems

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**Objective:** To develop an evaluation method for comparing the performance of emergency medical services (EMS) systems in telephone assessment.

**Methods:** An analysis of the telephone assessment task reveals three functional sub-tasks which may or may not be present in any EMS system: 1) "triage," or deciding whether or not to send EMS vehicle(s); 2) "prioritization," or deciding about the optimal delay of intervention; and 3) choice of the level of intervention. Each of these sub-tasks may generate false positive and false negative errors of various magnitudes ("costs"). With a sufficient sample of cases for which the "ideal" decisions are known, the sensitivity and specificity of each sub-task can be measured as well as the average costs of errors per call. EMS systems often differ between countries, and even within the same country, in their implementation of the three sub-tasks and in their local context (health care system, social values, etc.). A matrix (real decisions x ideal decisions) of the values ("costs") of all possible types of errors can be established locally by consensus for each particular EMS system. Using the same range of values for these matrices, the performance of EMS systems in telephone assessment can be compared based on the average cost of errors per call. Longitudinal and individual measurements also may be used locally for quality improvement within each EMS system.

**Results:** This method has been applied successfully at the Montreal EMS system, Urgences Sante (detailed results will be presented in another paper by the same authors). Interested participants at the Congress will be encouraged to join in an international study.

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### Analysis of Refusal of Transport Cases in an Urban Prehospital System

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**Objective:** The aim of the study was to analyze refusal of prehospital transport (RPT) cases in order to identify potential risk management problems and identify any features of RPT cases that predict the chance of refusal.

**Design:** Prospective study of prehospital run reports as part of an ongoing quality assurance (QA) program.

**Setting:** An urban basic and advanced life-support (ALS) ser-

vice in the northeastern United States with more than 700 dispatches per month.

**Participants:** All RPT cases from June through November 1992.

**Interventions:** Demographic data, chief complaint, aspects of prehospital assessment, use of on-line [direct] medical command, and disposition were recorded.

**Results:** A total of 227 refusal of prehospital transport cases occurred during the study period.

*On-scene times:* Refusal of prehospital transport cases:

11.8 ±9.3 minutes; transport cases: 16.5 ±8.2 minutes.

*Chief complaint type:* Trauma 43.6%; None 18.9%;

Seizures 5.7%; Other 20%.

*Patient age (years):* 37 ±23.

*Percent Male:* 48.9.

*Vital signs recorded:* 30%.

*Physical exam recorded:* 52%.

*Glasgow Coma Scale recorded:* 72.7%.

*Mental status described:* 43.2%.

*Medical command contacted:* 0.9%.

*Use of alcohol recorded:* 10.6%.

*Disposition:* non-transport 90.3%; family physician 4.0%; private vehicle 4.8%; police transport 0.9%.

**Conclusion:** Refusal of prehospital transport cases constituted 9.5% of all dispatched runs in this urban ALS system. This study identified deficiencies in documentation of mental status, vital signs, and physical exam, which subsequently have been addressed in risk-management education for the crews. On-line [direct] medical command and transport to hospital by police could be utilized much more frequently for "difficult" refusal cases. Transport refusal could not be predicted by demographic features known at the time of dispatch.

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### Use of a Modified Trauma Score in the Prehospital Assessment of Disaster Victims

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**Introduction:** A method to determine the utility of an advanced trauma life support (ATLS) system in the wake of a disaster would be to predict victims' potential outcome with a revised trauma score (RTS). Comparison of predicted to actual outcome would give a crude measure of the number of lives that might be saved by an ATLS system. However, gathering such information during a disaster is difficult. Therefore, the trauma score was modified for retrospective use. These experiences are presented with this score following earthquakes in Costa Rica (CR) and Turkey (T).

**Methods:** Eyewitnesses were asked multiple-choice questions (MCQ) about the status of specific victims on first sight. No answer was recorded if the respondent was unsure. The RTS