

transports. The purpose of this presentation is to highlight the difficulties involved in rapid preparation of an airplane usually not utilized for medical transport.

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#### Correlation of RAPS and RTS in Rotor-Wing Air Medical Transport

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**Introduction:** The revised Acute Physiology Score (RAPS) has been applied to patients transported by air, but not correlated with known indices.

**Objective:** To determine the correlation between the RAPS and Revised Trauma Score (RTS), a standard for evaluation of the trauma victim. Correlations between RAPS and RTS in patients with non-trauma illnesses also were investigated.

**Methods:** Retrospective evaluation of 845 consecutive patients transported by helicopter was conducted. Demographics, origin of transport, nature of illness, RTS, and RAPS were recorded. RTS vs RAPS scores were graphed using the sunflower technique, and correlation calculated using Pearson correlation coefficients (PCC). The *p*-value was set at .05.

**Results:** Sunflower plots revealed wide ranges of RAPS at like RTS values in less severe patients for all subgroups. PCC analysis revealed:

	N	PCC	<i>p</i> -value
Overall	845	-0.90	.0001
Prehospital trauma	276	-0.93	.0001
Prehospital medical	123	-0.88	.0001
Interfacility trauma	95	-0.49	.0001
Interfacility medical	351	-0.85	.0001

**Conclusions:** The RTS and RAPS scores generally exhibit good, significant correlation. The wide range of RAPS scores at like RTS values suggests that RAPS may be a more sensitive indicator of physiologic status in patients transported by air.

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#### Response to Major Air Disasters in Shetland, United Kingdom

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Two recent air disasters in Shetland [UK] demonstrated that the unpredictability of the type of incident, available resources, and condition of survivors mandate flexible contingency plans. This need is demonstrated by comparing the two incidents.

On 31 July 1979, a Dan-Air HS748 crashed into the sea. Survivors were rescued by small boats and helicopters, and were examined by a local general practitioner at the airport terminal. Most had minor injuries. More could have survived, but helicopter rotor downdraft pushed some under the water. Deficits in airport disaster plans revealed by this experience were subsequently corrected.

On 6 November 1986, a Chinook helicopter plunged into the sea. Two victims were rescued by a Coast Guard helicopter. Operations were limited to recovery of bodies, identification, and certification of death. The revised disaster plan encouraged optimal resource mobilization and a predictable sequence of events.

Despite geographical isolation and limited resources, response to air disasters in Shetland can be extremely efficient. Multidisciplinary disaster planning, involving utilization of fixed-wing and rotor-wing aircraft, small boats, and local public service and medical resources, helps to ensure prompt and efficient care of victims.

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#### SAMU Mondial

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The SAMU Mondial is the coordinating body of the international activities of the French SAMU. It allows the mobilization of multidisciplinary teams from the regional and departmental SAMU network. The SAMU Mondial can be activated by the Emergency Unit of the Ministry of Foreign Affairs in cases of natural or technological disasters and in cases of social unrest, especially civil war. Specialists, medical field teams, or reinforcements for the health and sanitation structures of the affected country can be placed in the field. An important logistic infrastructure, including mobile operation units, is at its disposal.

SAMU Mondial has been in action on numerous occasions, e.g., the earthquakes in Mexico and El Salvador, a volcanic eruption in Colombia, and civil wars in Rwanda and Chad.

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#### Earth Summit '92 at Rio de Janeiro: The Medical Assistance

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The information, experience, and knowledge imparted during the 1992 Earth Summit, under the guidance of the World Health Organization, Brazil's federal government, and the city of Rio de Janeiro government, served as an organized,

well-prepared contribution to the field of medicine. The Summit brought presidents, kings, ecologists, and politicians from 142 countries to Rio, along with 10,000 official international participants, and 28,000 people from non-governmental organizations.

**Description:** Medical assistance was available on a 24-hour basis and was provided in three locations: 1) at meeting sites; 2) designated hotels; and 3) hospitals (two public trauma centers and six private hospitals). Medical providers included 400 doctors, nurses, paramedics, and administrative personnel, all contributing to an efficient operation. A total of 2,840 medical reports emerged over a period of 10 days. Three patients with heart attacks were diagnosed early and treated at the scene; the patients were stabilized and returned home after protocols were completed.

**Presentation:** This paper will present world-wide pathologies, trauma education, and some peculiarities that occurred within the meetings.

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#### 26 Years of Motor Racing Trackside Rescue

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The author first attended a motor racing circuit as a medical officer in 1964. The facilities were rudimentary to the extreme. Medical officers were handed a small sandwich box containing a triangular bandage, an ampoule of morphine, and a lunch ticket. The ambulances were old and for the most part decrepit with no oxygen and often no petrol. The medical ethos of the time was to load-and-go; indeed, many senior medical colleagues believed that delay at the scene of the accident, for resuscitation to take place, was detrimental to the patients' overall survival.

This paper outlines the development of a medical service that has been copied around the world, much of which is now mandatory for Formula-1 racing: the Grand Prix Mobile Medical Operating Unit of 1965, the world's first motor racing rescue unit of 1968, the first small medical intervention car of 1973, and the high-speed Jaguars equipped with pulse oximetry and full resuscitation equipment.

It is difficult to believe in this high-tech era that such simple principles as on-site resuscitation have taken well over a decade before becoming generally accepted.

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#### Medical Reponse in High-Rise Buildings

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Singapore is a highly urbanized city. More than 80% of its population live in high-rise flats. This poses special problems to ambulance teams, especially when patients have to be evacuated to the hospital. A three-week study on emergency ambulance runs was conducted. A total of 2,930 runs were analyzed. The results are as follows:

Story	No. of Cases	%	Ambulance Location to Patient (mean time minutes)	Patient to Ambulance Location (mean time minutes)
1st	1,656	53.1	2.24	6.79
2nd-5th	604	20.6	2.79	8.60
6th-10th	511	17.4	2.86	10.20
11th-20th	242	8.3	2.96	10.34
21st-30th	17	0.6	3.53	12.30

The amount of time required to locate and evacuate patients increased in relation to the height of the story on which the patient was located. Factors contributing to this included distance, the presence of elevators on only certain floors, elevators stopping at multiple levels, and narrow staircases causing increased difficulty in carrying patients. This delay affects the care given by the ambulance team and has medical repercussions, especially in patients with cardiac arrest and major trauma. Public education and modifications to buildings, e.g., having lifts that will stop on every floor, have been suggested to reduce medical response times in high-rise buildings.

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#### What is the Proper Role of Physicians and Nurses at the Scene of a Disaster? Lack of Benefit with On-Scene Triage

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**Objective:** To review the performance and benefit of hospital medical teams who responded to two disasters.

**Methods:** A retrospective analysis was undertaken to review the roles of all medical personnel involved in the rescue efforts after two airline crashes, Delta 191 and Delta 1141.

**Results:** The initial response to both airliner crashes was made by fire/rescue, police, and paramedic personnel stationed at the airport. Paramedics from neighboring cities responded quickly. Initial search and rescue was begun. Hospital medical teams arrived 45 to 54 minutes after the crash. In both crashes, all but five survivors had been transported to the hospitals. The remaining survivors had undergone triage and were treated prior to the arrival of the medical teams. Statistics are in Table 1.

**Table 1**

Statistics of Crashes	Delta 191	Delta 1141
Persons on aircraft	163	108
Dead at scene	134	14
Serious injuries	29	26
Minor injuries	0	68
Crash to hospital notice (min)	14	5
Crash to hospital team arrival	54	45

Of the 10 survivors examined by hospital teams, no changes were made in the treatment of the victims. Hospital medical