

### Lightning Strikes in the Polish Tatras

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**Introduction:** Between 1993 and 2008, 26 persons (eight women (31%), 18 men (69%)) were struck by lightning in the Polish Tatras. Eighteen of the strikes occurred on the mountain ridges, six on descent, and two in the valleys.

**Methods:** The authors analyzed the strike mechanism (direct strike, splash, ground strike) and correlated it with the occurrence of circulatory arrest, thermal trauma, and avulsion fracture. Further analysis included secondary trauma caused by falls.

**Results:** Seven (27%) of the strike victims suffered from circulatory arrest, although spontaneous circulation was restored in two patients. One died in the hospital, the other was released in good condition without any neurological damage. Twenty-one persons transported to the hospital suffered from heart arrhythmia, burns with Lichtenberg figures, and/or fractures of extremities.

All five persons (19%) struck directly died immediately.

Two subject-to-ground strike also suffered from circulatory arrest, 22 (84%) experienced serious burns, and Lichtenberg figures, and 10 (38%) had fractured bones.

Twenty-two persons (84%) were rescued by a helicopter, thus, greatly reducing the duration of the rescue mission (32 minutes).

**Conclusions:** During the summer in the mountains, lightning is most likely to strike one on the ridges. The fatality rate in the examined group amounted to 23%. Thermal trauma caused by lightning strike was suffered by 85% of the injured.

**Keywords:** emergency medical services; Lichtenberg figures; lightning strikes; Polish Tatras; thermal trauma

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### Patient Opinion is Equal to Clinical Examination Regarding Fracture Prediction

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**Introduction:** Clinical examination is notoriously inaccurate for fracture prediction. In most cases, clinical findings are supplemented by radiographic imaging in order to rule out a fracture. The aim of this study is to define the accuracy of clinical examination performed by a junior doctor and compare this to the accuracy of patient opinion regarding the presence of a fracture.

**Methods:** A total of 103 male and 59 female patients with an average age of 27 years (range, 2–85) were recruited prospectively into the study. All patients self-presented with minor limb trauma to the emergency department between August and December 2008. All patients were assessed prospectively by the author. After clinical examination, patient and author opinion regarding the presence or absence of a fracture was documented and analyzed after radiography. Radiographs were interpreted by the author and independent radiographer for the presence of a fracture.

**Results:** Fifty of 162 patients had identifiable fractures (31%). Patient judgment as to the presence of a fracture demonstrated a sensitivity of 67% and specificity of 72%. Clinical history and examination by the author demonstrated a sensitivity of 76% and specificity of 71% regarding diagnostic accuracy for fracture prediction. These differences failed to reach statistical significance using Fisher's exact test.

**Conclusions:** Using clinical examination to rule out a fracture in cases of minor trauma is no better than a patient's "best guess". This study supports the current trend toward blanket radiography to effectively rule out fractures in patients with minor trauma due to the inaccuracy of clinical history and examination.

**Keywords:** assessment; clinical examination; fracture; patient opinion; prediction

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### Fear, Familiarity, and the Perception of Risk: A Quantitative Analysis of Disaster-Specific Concerns of Paramedics

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**Introduction:** Paramedics play an integral role in the response to and management of disasters and public health emergencies. Providing a core component of "frontline" response, paramedics potentially risk exposure to a variety of health and safety risks, including physical injury, death, communicable disease, and psychological effects. The health and safety risks to emergency service personnel have been highlighted by the death of firefighters, paramedics, and police during the 11 September 2001 terrorist attacks, and the infection, illness, and death of paramedics and emergency healthcare staff during the severe acute respiratory syndrome (SARS) outbreak in 2003. Given that a willing and able prehospital workforce will be a vital component of any successful response to a disaster or public health emergency, this study provides a unique and innovative exploration of paramedic's perception of risk and willingness to work, with a specific focus on identifying which type of events paramedics associate with greater levels of fear and unfamiliarity.

**Methods:** Guided by the psychometric approach to risk perception, a survey tool was designed to investigate which disasters paramedics were most concerned about responding to by conducting a factor analysis of the concepts "fear" and "familiarity".

**Results:** A total of 175 paramedics completed the survey, 70% (123) were male, the average age of respondents was 32 years (range: 21–59), and the average length of service was nine years (range: 1–16). Paramedics ranked nuclear and radiological events, and outbreaks of new and highly infectious diseases highest for fear and unfamiliarity. The top three disasters that paramedics were most concerned about responding to were nuclear events, whether caused by terrorism, war, or accidental mechanisms. The only non-chemical, biological, radiological, or nuclear event that ranked among the highest for fear and unfamiliarity was a building explosion due to terrorism.

**Conclusions:** These results have important implications for prehospital disaster preparedness, specifically, for paramedic education and training.

**Keywords:** emergency medical services; fear; paramedic; response; risk perception

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### A New Platform to Enhance the Transportation Safety Aspects of Emergency Medical Services

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**Introduction:** Historically, emergency medical services has focused on and been driven by acute and emergency health care, and its expertise and oversight are based in these areas. The issues of transportation systems safety engineering have had minimal focus. Identification of a transportation platform to address the research and technology aspects of EMS transportation in the United States is described.

**Methods:** The need for an independent, national transportation and automotive platform with interdisciplinary involvement, an interest in EMS, the scope for development of a research agenda and funding opportunities, and the need to address the goal of improving patient, provider, and public safety transportation systems engineering, was identified, and a pathway to address this need was implemented.

**Results:** The Transportation Research Board (TRB) of the National Academies is a comprehensive, independent, multidisciplinary infrastructure that is highly skilled and equipped to provide a platform to bring together necessary expertise to address transportation safety systems issues relates to EMS. The TRB annual meeting included submissions and presentations of key issues impacting EMS transportation safety. This facilitated recognition of EMS transportation safety needs. The EMS Transport Safety Subcommittee was established in 2007, and commenced determining EMS focus areas. In 2008, it held an inaugural interdisciplinary Ambulance Transportation Safety Summit, attracting 49 on-site attendees and <100 electronic participants. Development of an EMS transportation Safety research agenda currently is underway.

**Conclusions:** The establishment of a nationally focused Subcommittee addressing EMS transportation safety within the National Academies Transportation Research Board has been achieved, and demonstrated that such a platform has a role in enhancing EMS transportation safety development.

**Keywords:** ambulance; emergency medical services; issues; safety; transportation

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### First Aid and Harm Minimization for Victims of Road Trauma

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**Introduction:** This project investigated the use of first aid by bystanders at road traffic crashes (RTCs). The project was performed in recognition of the significant impact of early first aid intervention on the mortality and morbidity of RTCs.

**Objective:** The aims of this project were to investigate the: (1) prevalence of first aid training; (2) incidence of being a bystander and providing first aid; (3) range of first aid skill being used; (4) motivation to intervene; and (5) perceived impact of first aid training.

**Methods:** An Internet-based survey was distributed to a population of 12,500 road users and 773 responded. Statistical and thematic analyses of data were completed.

**Results:** A total of 77% of participants had first aid training at some stage, 28% held a current first aid qualification, 11% had provided first aid at a RTC, and 75.3% who had provided first aid were traveling in a vehicle. First aid training and age increased the likelihood of intervention, as did owning a first aid kit or pocket mask. The most commonly used first aid skills were changing posture, opening an airway and providing comfort and reassurance. Key concerns for first aiders included feeling a lack of follow-up, or opportunity to debrief.

**Conclusions:** First aid training is an enabler for providing care at RTCs. Strategies to increase training, improve support, and increase confidence of first responders are discussed.

**Keywords:** bystander; emergency care; first aid; road traffic crash; skills

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### The Changing Nature of Emergency Medical Services Delivery: Potential Models for the Future!

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**Introduction:** Internationally, emergency medical services (EMS) are under pressure from increasing demand. Australian demand for EMS is increasing 8–16% per year, with similar trends occurring internationally. Increasingly, policy makers are exploring alternative models to the long-standing service delivery philosophy traditionally based on, “if we get called we go, if we go we transport, if we transport we transport to the nearest public hospital facility”. The aim of this presentation is to stimulate discussion on a range of potential models to contextualize contemporary thinking on future EMS delivery.

**Methods:** A literature review identifying new and emerging models for EMS delivery was conducted.

**Results:** The following models have been identified: (1) current EMS model; (2) public sector model; (3) private sector model; (4) mixed public/private sector model; (5) chain of survival model; (6) public safety model; (7) public health model; (8) social support/welfare model; (9) primary care model; (10) continuity of care model; shared care model;