are not. Because of the lack of findings, the development in the previously described system now will concentrate on primary care interventions with specific advanced procedures, allowing the use of ALS (paramedic) providers only in a specific system design application. Again, the objective will be to reduce response and emergency department interactions.

Ambulance and equipment ergonomics were discussed. Conclusive data were provided on different ambulance structural components, pieces of equipment, and safety practices that should lead to the systemic redesign and reengineering of the transfer for the patient. Latest technologies, including wireless communications, are not being implemented, and adaptation from other industries is needed. The projected result is more awareness of the human risk factors and fewer personnel injuries.

The common theme emerged that much research remains to be done to provide an evidence base for emergency medical services. Challenges of research design, data gathering, and controlling the external environment, while difficult, must be recognized and addressed to provide solutions to the complex issues that will continue to increase over the next decade.

Prehospital Disast Med 2008;23(4):s79–s80

Aeromedical Transport in EMS (Including Helicopter Emergency Medical Services)

Chair: Andrew K. Mardsen
Correspondence: andrew.marsden@shs.csa.scot.nhs.uk

Rotary wing services are but one of the alternatives for EMS transportation systems. Systems design must take into account the requirements of the community to be served—the environment, journeys over sea, and the locations of and distance to travel to specialist services. Any analysis of speed and efficiency must consider the total prehospital or total transfer time that must include time for loading or unloading and (where applicable) secondary transport to and from landing sites. The higher risks of nighttime flying must be analyzed against the lesser need for nighttime journeys.

The patient's condition must be considered when analyzing the extent and components of a "HEMS" service—those that will benefit the most are those with critical injuries (especially brain injury), but these patients will need drug-assisted intubation and ventilation. Though HEMS crews may come from different backgrounds (doctors, nurses, paramedics), it is essential that they are equally competent in all of the skills required for safely providing the service. At the end of the day, economic considerations will influence the sophistication and extent of the service.

Prehospital Disast Med 2008;23(4):s80

System Developments—New Horizons and Evaluation

Chairs: Darren Walter; D. Wulterkens
Correspondence: darren.walter@manchester.ac.uk

The levels of medical training in the Fire Service in the United Kingdom, where emergency medical services (EMS) are provided entirely by a third emergency "ambulance service" were reviewed. The UK Fire Service is not expected to provide patient care, but because of its response performance, it often is on the scene of an emergency before EMS arrive. Firefighters do provide initial assessment and assistance, and the study showed that most brigades provided three to four days of basic training for this role. The skill level achieved in this timeframe generally exceeded the minimum set by statute; however, the scope of the training was highly variable. It was felt that there was a clear case for standardization of emergency healthcare training across the UK fire services.

A team of experienced Dutch anesthetists performed a study demonstrating that inductions of anesthesia in a standard anesthetic room and at a prehospital incident scene were similar in terms of the technical difficulty of intubation and success rate and when difficulties developed effective application of the "Dutch Difficult Airway Algorithm" was achievable in both environments.

During an incident, a tangle of monitoring wires around a patient invariably occurs, and there are practical difficulties in terms of maintaining close supervision of the patient and their vital signs during extrication and transport. A new technological solution was presented using wireless biosensors to transmit their information to a local base station; allowing the caregiver to be a little more remote, but maintain close oversight. The potential for this system to be used in a mass-casualty incident during which a single healthcare provider might oversee a number of patients at the same time was explored. While this uses readily available technology in a novel application, there were some operational issues to be worked through for a multiple-casualty situation. The system has potential for the future.

The oft-neglected subject of EMS health and safety was discussed. The issue with respect to vehicle operations was brought into focus, demonstrating that there is no consistent approach around the world. In terms of safety, Europe and Australasia have statutory standards with which employers must comply with respect to vehicle design, while in the US, there is very little regulation. Even driver training showed vast variation, from almost nothing beyond a classroom briefing to a three-month, dedicated driver-training program. Surely, there is room for the setting of a minimum safety standard for key issues across global EMS systems.

Modern technology has great potential, and there was a demonstration of a number of potential safety developments in ambulances. The examples highlighted how far EMS is lagging behind current automotive and ergonomic safety developments and standards. We must engage with vehicle

https://doi.org/10.1017/S1049023X00021336 Published online by Cambridge University Press

designers and manufacturers to reap the benefit of such things as intelligent vehicle technology and driver auto-feedback. These are well-established initiatives in the automotive literature and future EMS vehicle design must take advantage of them to improve the safety of our environment.
Prehospital Disast Med 2008;23(4):s80–s81

Resuscitation

Chairs: Darren Walter; R. Koster
Correspondence: darren.walter@manchester.ac.uk

An overview of the dangers inherent in urban search-and-rescue operations was provided and highlighted the danger of rescuers putting themselves at significant risk of injury in an attempt to save lives—the so called "red mist" effect. It is recognized that there is a "chain of survival" in an event such as a building collapse; it includes self-rescue followed by first responder assistance, local emergency service rescue, and finally, the arrival of specialist urban search-and-rescue teams. In addition, team-working, systematic, operating procedures and a sufficient supporting medical infrastructure must be designed into a response to provide the best chance of a successful outcome. These top-line specialist assets are in short supply, and must be able to collaborate and work effectively together for an optimal response. There is a need for standardized training and concepts of operations across the urban search and rescue field.

Broadening the scope, an outline of a broader system development in Canada involved the design of a series of specialist teams to cover a wider range of risk areas, beginning with the urban search-and-rescue function, but also creating teams ready and prepared to work in a hazardous CBRN environment or in a tactical firearms situation. The benefits of multi-agency training with other key responding agencies and regular exercising of their function have maintained the interest and enthusiasm of a highly motivated group of personnel. The presenters believe that this approach has limited the inevitable risk in such specialist situations and created an efficient and professional EMS response.

Finally, a major incident case study was presented from Poland. In January 2006, a disaster occurred at an exhibition where the hall roof collapsed under the weight of heavy snow and ice, trapping >350 participants within the structure and its debris. Rescue by urban search-and-rescue teams ensured that the last surviving casualty was extricated within five and one-half hours. Sixty-five persons died, and a further 173 were injured. The significant medical issue was the change in ambient temperature at the point of building collapse where the inside hall temperature of 20°C fell to the outside -19°C. This complicated the medical care of the injured with 15 suffering from severe hypothermia and 90 suffering from mild hypothermia. Treatment strategies were described, including heating equipment in the casualty tents and the provision of warm fluids and gel packs. Post-mortem review showed that none of those who died succumbed from hypothermia. A phenomenal job was done in extreme weather circumstances!
Prehospital Disast Med 2008;23(4):s81

Public Health

Chair: Samuel J. Stratton
Correspondence: sstratton@ochca.com

Four oral presentations were made during the first of three public health sessions. The papers presented were focused toward emergency public health preparedness and emergency medical care. The session was well attended with >30 participants representing communities throughout the world.

The initial presentation of the session described outsourcing public health emergency drills and exercises. This presentation and the discussions examined outside contracting for exercise development and evaluation by local health departments. A number of solid points were made concerning the contracting process. First was a discussion of when should a local agency consider contracting such services. It was mentioned that the development and evaluation of performance for all types of exercises to test response plans and preparedness have become a science in itself; a process that often is labor-intensive and beyond the resources available within over-extended local health departments. Discussion centered on the need for exercises to be based on long-term improvement with measurable goals. Outside contracts should be comprehensive and include references for previous work and expertise in the development and evaluation of exercises. A local health agency should be ready to monitor deliverables and modify contracts as needed to accomplish the goal of effective, measurable exercises that can develop and improve performance.

Another session presentation described the importance of coordinated emergency medical services (EMS) and public health response in community preparedness and responses to emergencies. In many communities, public health and EMS is a natural partnership because the EMS is administered by health departments. The discussion focused on the ability of EMS personnel to help in public health emergencies with surveillance and disease recognition in a community. This seldom explored area for coordination of EMS and public health has great potential for impact in the setting of large-scale disease outbreaks and public health emergencies. It also was noted that EMS can provide critical functions in times of public health emergencies, such as vaccine administration and mass evacuation.

An innovative approach to emergency preparedness in small islands and archipelagos using Delphi techniques was described for developing consensus on minimum standards. Using local experience and experts in relatively isolated communities is an effective method for identify public health emergency priorities and resource utilization. Participants discussed and explored expanded use of the Delphi technique to further public health emergency research.

Self-presenting patients to an emergency department in the United Kingdom were discussed. Of interest was that 24% of persons presenting to the emergency department had been referred there after contact with another health provider. Only 64% of the persons presenting received medical interventions and 34% could have had primary care treatment. The problems illustrated seem to be univer-

https://doi.org/10.1017/S1049023X00021336 Published online by Cambridge University Press