

This edition of *EMJ* highlights many projects across the whole system of emergency care and confirms the enthusiasm for change.

Emergency care networks are now being established in the UK, bringing together all organisations involved in emergency care in one locality. Their aim should be to look at issues across the whole system. In the past, such groups looked at contingencies for when the system was overloaded. This needs to change to looking at how the system can be changed to improve care at all times. By undertaking patient tracking, networks can rapidly discover where the system faults lie. Personal observation has shown how often the faults lie in organisations working independently without appropriate mutual respect and trust. I believe there should be a lay person on each network group, perhaps chairing it, so that vested interests and perverse incentives are overruled in favour of quality of care.

But performance indicators can also deceive. A patient may get their ambulance in eight minutes and be through A&E in less than four hours and still have a poor experience of emergency care. Often too much effort is focused on

improving the figures not the care. At worst, this is demonstrated by the time invested in defining, interpreting, and manipulating the figures rather than investing it in patient care improvement. Examples that I have witnessed include hospitals not allowing ambulances to unload as they believe A&E time starts when the patient is unloaded from the ambulance trolley, or declaring certain areas of A&E as a ward so the patient is considered to have been admitted. Fortunately clinical staff still act as the champions of quality care and highlight these problems, but we need to ensure their voices are heard and acted upon. More commonly the effort to improve a performance indicator has focused on establishing new systems simply to improve the performance indicators results, for example moving patients direct to coronary care unit when A&E is delivering better door to needle times than the coronary care unit. The goal is not improved performance indicators, it is improved care. The best judge of care is the patient. Why do we not have patient representatives on our emergency care management groups? Why do we not use patients to monitor the performance indicators and the patient experience?

Emergency care is a complex component of health care. If I could change one thing to help emergency care, it would be to include a user and a junior member of nursing and medical staff on every committee that talks about emergency care. In my experience of visiting many emergency care communities, they know the problems and, very often, the solutions.

*Emerg Med J* 2003;20:113–114

#### Author's affiliations

**M W Cooke**, Senior Lecturer in Emergency Care, University of Warwick, UK

Competing interests: the author is also A&E Advisor to the Department of Health.

Correspondence to: Dr M W Cooke; matthew.cooke@doh.gsi.gov.uk

#### REFERENCES

- 1 **Audit Commission.** *Acute hospital portfolio: review of national findings—accident and emergency.* London: Audit commission 2001. (<http://www.audit-commission.gov.uk/publications/aande.shtml>)
- 2 **Department of Health.** *NHS Plan. A plan for investment. A plan for reform.* London: HMSO, 2000.
- 3 **Department of Health.** *Reforming emergency care.* London: Department of Health, 2001.
- 4 **Bagust A, Place M, Posnett JW.** Dynamics of bed use in accommodating emergency admissions: stochastic simulation model. *BMJ* 1999;319:155–15.

#### Prehospital care

## The advances and evidence base for prehospital care

**C MacFarlane**

### Validation is needed to determine the true effectiveness of perhospital care

**P**rehospital care is a developing and exciting area of emergency practice.

It comprises a variety of emergency care domains, including ambulance and emergency medical services (EMS) practice, medical rescue, prehospital physician response and medical direction, retrieval medicine, (including aircraft and sea-borne activities), dispatch and communications, telemedicine, disaster medicine. Increasingly, there is greater interaction between various emergency authorities, including fire service, police, civil defence, military authorities. Greater interaction with hospital emergency departments is also being encouraged.

The major problem has been auditing the effectiveness of prehospital care and whether it is cost effective, or even worth

the effort at all! Strong emotions and forcible opinions exist among both supporters and detractors.

The fundamental problem has been the lack of evidence based assessment of prehospital practice. The paucity of prehospital care in Cochrane reviews is evidence of this. A fundamental part of the problem has been the lack of reliable indicators to measure effectiveness, commonly because of the large variety of variables operative in this area. Attempts have been made to develop indicators, mainly in North America,<sup>1–3</sup> but there has not been general acceptance of appropriate indicators. In many EMS systems response times and on scene times are used as standards of system effectiveness.<sup>4 5</sup>

As a result of all this, there have been reports questioning the effectiveness of

prehospital care.<sup>6–9</sup> Other reports, supporting the value of prehospital care, especially Advanced Life Support, have emerged.<sup>10–12</sup> Commonly prehospital care providers see their end point as the delivery of a live patient to a hospital. There is often little attention paid to the final outcome of the patient, and whether or how prehospital care influenced this. Much work needs to be done still on the development of accurate indicators for prehospital emergency care, and the development of these is, surely, fundamental to the evolution (and indeed, survival) of prehospital care systems. Attention to this is one of the most important activities in which prehospital care providers can engage.

Another problem is the tendency to consider prehospital care to be a homogeneous entity. It certainly is not! However, important papers by eminent personalities in large North American trauma centres of international repute are being regarded by many as “the law” as regards prehospital care. The edicts emanating from these excellent institutions may well be correct and appropriate in such well equipped centres, served by first class EMS, with short prehospital times. They may, equally, not be valid in rural practice, in small community hospitals, in developing countries, or in systems not modelled on North American

practice. Care must be taken, therefore, in interpreting such edicts. Equivalent research work needs to be undertaken in some of these other areas.

Despite all the difficulties, however, advances have taken place in prehospital care. The realisation that, particularly in the case of trauma, the less the prehospital time, the better the outcome, has resulted in the shortening of on scene times, reduction in time consuming on scene procedures, and rapid transport, utilising in transit resuscitation. Fundamentals are being re-visited; for example, immediate and more effective on scene and in transit haemostasis, rather than attempted high volume fluid replacement. A potential better utilisation of advanced paramedics is the utilisation of their Advanced Life Support skills as part of a resuscitation team in lesser resourced peripheral hospital emergency departments, rather than at the roadside.

A more logical use of spinal immobilisation techniques is evolving, due to international studies.<sup>13</sup> The "on again/off again" use of pneumatic anti-shock garments has now passed the stage of raw emotion, and the device is now being used much less, but more logically. A current controversy is the use of rapid sequence induction by non-physician personnel in the prehospital environment. This remains at the stage of high emotion, and the jury is still out on this. With regard to prehospital thrombolysis for myocardial infarction, this has been reasonably well accepted in Europe,<sup>14-17</sup> but there remains a reluctance to its use in the USA.<sup>18</sup>

It is hard to pick up a prehospital or trauma journal in which there is not yet another review of what intravenous fluids should be used, and how much. This must, surely, be one of the most talked about areas of prehospital care, and yet true consensus evades us. Serious efforts are, however, being made to resolve this, and, encouragingly, the Faculty of Pre-hospital Care of the Royal College of Surgeons of Edinburgh has embarked upon, hopefully, the definitive study on the use of hypertonic saline in the prehospital environment.

Work from Los Angeles has cautioned us with regard to unnecessary intubation of patients with head injuries in the urban environment,<sup>9</sup> but, as mentioned above, this may not necessarily be the case in other scenarios. The vigorous use of hyperventilation in head injuries has been modified.

In addition to clinical advances, work has been done in other areas. Medical dispatch is being improved, protocols are being modified and improved software is assisting. Medical dispatch is evolving into a separate career option. More logical use of expensive resources such as helicopters is occurring, the exuberant reactions of some of the flight crews being tempered by clinical outcome recognition and financial realities, but more (non-emotional) audit is needed in this area. The utilisation and training of prehospital doctors is becoming more standardised, and the necessity of appropriately trained and experienced physicians as medical directors of prehospital and EMS activities recognised. The Diploma, and now the Fellowship in Immediate Medical Care of the Royal College of Surgeons of Edinburgh is playing a most important part in this in the United Kingdom.

The continuing involvement of the Faculty of Pre-hospital Care and the Faculty of Accident and Emergency Medicine in prehospital care is fundamental to this evolving branch of emergency care, and bodes well for the future. The development of appropriate indicators for the accurate assessment of the effectiveness of prehospital care should be a priority for both, so that true evidence based recommendations can be developed for prehospital care.

*Emerg Med J* 2003;**20**:114-115

.....  
**Author's affiliations**

**C MacFarlane**, Gauteng Provincial Government, South Africa

Correspondence to: Dr C MacFarlane, White Gables, 29 Athlone Road, Parkview, Johannesburg, 2193, South Africa; wmdmac@mweb.co.za

**REFERENCES**

- 1 **Spaite DW**, Valenzuela TD, Meislin HW, *et al*. Prospective validation of a new model for evaluating emergency medical services systems by in-field observation of specific time intervals in pre-hospital care. *Ann Emerg Med* 1993;**22**:638-45.
- 2 **Spaite D**, Benoit R, Brown D, *et al*. Uniform pre-hospital data elements and definitions: a report from the uniform prehospital emergency medical services data conference. *Ann Emerg Med* 1995;**25**:525-34.
- 3 **Callahan M**. Quantifying the scanty science of prehospital emergency care. *Ann Emerg Med* 1997;**30**:785-90.
- 4 **Blackwell TH**, Kaufman JS. Response time effectiveness: comparison of response time and survival in an urban emergency medical services system. *Acad Emerg Med* 2002;**9**:288-95.
- 5 **Sampalis JS**, Lavoie A, Salas M, *et al*. Determinants of on-scene time in injured patients treated by physicians at the site. *Pre-hosp Disaster Med* 1994;**9**:178-88.
- 6 **Sampalis JS**, Lavoie A, Williams JI, *et al*. Impact of on-site care, prehospital time, and level of in-hospital care on survival in severely injured patients. *J Trauma* 1993;**34**:252-61.
- 7 **Liberian M**, Mulder D, Sampalis J. Advanced or basic life support for trauma: meta-analysis and critical review of the literature. *J Trauma* 2000;**49**:584-99.
- 8 **Demetriades D**, Chan L, Cornwell E, *et al*. Paramedic vs private transportation of trauma patients. Effect on outcome. *Arch Surg* 1996;**131**:133-8.
- 9 **Murray JA**, Demetriades D, Berne TV. Prehospital intubation in patients with severe head injury. *J Trauma* 2000;**49**:1065-70.
- 10 **Jacobs LM**, Sinclair A, Beiser A, *et al*. Prehospital advanced life support: benefits in trauma. *J Trauma* 1984;**24**:8-13.
- 11 **Potter D**, Goldstein G, Fung SC, *et al*. A controlled trial of prehospital advanced life support in trauma. *Ann Emerg Med* 1988;**17**:582-8.
- 12 **Shuster M**, Shannon HS. Differential prehospital benefit from paramedic care. *Ann Emerg Med* 1994;**23**:1014-21.
- 13 **Barkana Y**, Stein M, Scope A, *et al*. Pre-hospital stabilization of the cervical spine for penetrating injuries of the neck - is it necessary? *Injury* 2000;**31**:305-9.
- 14 **Stern R**, Arntz HR. Prehospital thrombolysis in acute myocardial infarction. *Eur J Emerg Med* 1998;**5**:471-9.
- 15 **Lamfers EJ**, Hooghoudt TE, Uppelschoten A, *et al*. Effect of prehospital thrombolysis on aborting acute myocardial infarction. *Am J Cardiol* 1999;**84**:928-30.
- 16 **Arntz HR**. Prehospital thrombolysis in acute myocardial infarction. *Thromb Res* 2001;**103**:591-6.
- 17 **Pitt K**. Prehospital selection of patients for thrombolysis by paramedics. *Emerg Med J* 2002;**19**:260-3.
- 18 **Bass RR**. Current state of the art in the management of patients with acute myocardial infarction and ischemia within the Maryland Emergency Medical Service system. *Md Med J* 1997; (suppl):59-63.