

# Paediatric prehospital care: postal survey of paramedic training managers

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## Abstract

**Background**—The process of prehospital care continues to develop in the UK.

**Aims**—To evaluate the availability of important paediatric resuscitation equipment in emergency ambulances and the extent of paramedic training in paediatric emergency medicine.

**Methods**—Postal survey of paramedic training managers.

**Results**—Completed questionnaires were returned by 41 (93%) training managers. No trust provided all of the equipment listed. Facemasks and self inflating bags (of appropriate sizes for all children) are provided by 32% and 42% of trusts respectively. Less than one third carry paediatric oximeter probes. Of the respondents, 16 (39%) trusts provide less than eight hours training in paediatric emergency medicine and five (12%) offer no training at all. Ongoing education varies from none to regular yearly updates.

**Conclusions**—Paramedics seem ill prepared to deal with paediatric emergencies. Important deficiencies in the provision of equipment and training are noted. The results of this survey provide information against which improvements can be measured.

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Keywords: paramedic; paediatric; prehospital care

There are many reasons why paramedics should be prepared to deal with paediatric emergencies. Trauma is common among this age group and remains the single biggest killer of children after the first year of life.<sup>1</sup> For example, the reported paediatric mortality rate following trauma for south east Scotland (1985–1995) was 8.5 per 100 000 children per year.<sup>2</sup> For many injured children a significant portion of what is termed the “golden hour” is spent in the prehospital environment. The UK government document, *The health of the nation*, has targeted a 33% reduction in paediatric injury deaths by the year 2005, to no more than 4.5 per 100 000.<sup>3</sup> Approximately 11% of paediatric cases presenting at our accident and emergency department arrive by emergency ambulance (more than 2500 cases per year). Many have potentially serious acute medical problems. Issues relating to size and differing anatomy, physiology, and psychology dictate that children need to be managed differently from adults. Most health care professionals would agree that paediatric emergencies are among the most trying and stressful they deal

with during their working lives. Paramedic exposure to paediatric major trauma can be infrequent, however. Data from the major trauma outcome study (MTOS) register at our institution indicate that for 1997, only seven of 520 patients entered were aged 15 or less.

On the surface, at least, prehospital care in the UK has improved greatly in the last 20–30 years. These improvements have focused on the needs of adults and have largely ignored the needs of important subgroups, including children. The purpose of this study is to estimate the availability of desirable paediatric equipment in emergency ambulances and quantify (in terms of hours) paramedic training (including continuing education) in paediatric emergency medicine.

## Methods

We developed a questionnaire in consultation with emergency physicians, paediatricians, and senior paramedics. This was posted to the training managers of all NHS ambulance trusts providing an emergency service during September 1999. A reminder was sent to non-responders after six weeks. There were two parts to the questionnaire. Part 1 related to the provision of equipment we considered important for paediatric advanced life support and employed a closed response format (“yes” or “no”). We deemed a positive response as meaning that all emergency ambulances operated by that trust carried that particular piece of equipment. Part 2 looked at training issues. An open response format was employed here, allowing responders more scope to develop their replies free from restrictions.

## Results

Following reminders 41 (93%) training managers responded. No trust provided all the equipment listed on all of their emergency vehicles. Table 1 presents data relating to the provision of equipment important for the assessment and management of seriously ill or injured children. Figure 1 illustrates an important trend. The data illustrated relate to blood pressure cuffs, endotracheal (ET) tubes, and face masks, but the trend also applies to other vital pieces of equipment including intravenous cannulae, self inflating bags, oral airways, and rigid cervical collars.

The results in relation to training issues were also poor. The average time devoted to paediatric issues during paramedic training is only 5.78 hours (range 0–40 hours). Five (12%) trusts provided no specific training in paediatric emergency medicine during their paramedic training course. In total 16 (39%)

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Table 1 Percentage of ambulance trusts providing a particular piece of equipment

Equipment	%
<i>Airway</i>	
Oral airways*	32
ET tubes*	29
Yankauer suction	17
Straight blade laryngoscope	39
Magill's forceps	15
Flexible suction	90
<i>Breathing</i>	
Face masks*	32
Self inflating bags*	42
Paediatric oximeter probe	29
Paediatric nebuliser mask	85
Paediatric reservoir bag	76
<i>Circulation</i>	
22/24G cannulae*	25
Burette	44
Paediatric defibrillation paddles	46
Umbilical cord clamp	95
Intraosseous needle	29
50 ml syringe	27
ECG electrodes	39
Adrenaline 1/10000	88
BP cuffs*	13
<i>Miscellaneous</i>	
Stiff neck collars*	32
Broselow tape	22
Paediatric spinal board	17
Drug dose cards	63

\*Equipment of varied sizes appropriate to children of all ages.

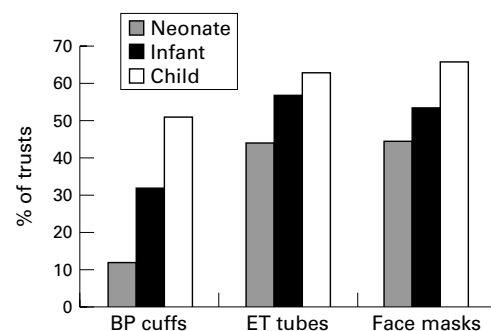


Figure 1 Percentage of ambulance trusts providing specific equipment of appropriate sizes.

provided less than eight hours training in this area. Annual updates are provided by 19 (44%) trusts with the average time devoted 1.7 hours. Twenty three (56%) trusts provide no annual updates in paediatric emergency medicine and only four of these provide refresher training on a less frequent basis. The use of intraosseous needles is taught by 29%. Six (15%) trusts are beginning to introduce paediatric prehospital life support courses and a minority of paramedics within each of these trusts has been trained to provider level.

## Discussion

The high response rate to this questionnaire indicates that the results are likely to represent the true situation throughout the UK and presumably reflect the interest of training managers. The results point to significant deficiencies in paediatric emergency medicine training and in the provision of equipment for paediatric resuscitation. We consider paramedics are generally ill prepared to deal with paediatric emergencies, particularly those involving smaller children (fig 1). In the USA paramedic training is often part of a three year course with major

emphasis on paediatric issues, including tuition in paediatric advanced life support and advanced trauma life support. This is in contrast to the situation in the UK, where paramedic training incorporates an initial 10 weeks (six weeks in a training school and four weeks in a hospital) followed by six months supervised practice in the field. The average time devoted to paediatric emergency medicine during UK paramedic training (5.78 hours) further highlights this contrast.

Low exposure rates to paediatric trauma cases will create problems for paramedics' skill maintenance. Ongoing education may help to correct this problem, but we found few reports of this. We conclude that paramedics could soon forget the small amount taught during their training. A positive feature that we found is the exposure of a minority of paramedics to paediatric prehospital life support courses.

Deficiencies in the provision of equipment are not unique to the UK. In a statewide survey in North Carolina, it was found that paediatric sized bag-valve mask devices and appropriately sized blood pressure cuffs were not available in up to 20% of emergency vehicles.<sup>4</sup> Such deficiencies occur despite the relatively low costs involved.<sup>5</sup>

Paramedic training in the UK falls under the jurisdiction of IHCD Health and Care Limited. A new paramedic training syllabus (ambulance service paramedic training manual) has recently been introduced across the country in an effort to address training deficiencies. The main change to the old syllabus is found in the sections on paediatrics and obstetrics, which have both been extended. While more training in paediatric emergency medicine will be welcomed, it will be difficult to use new skills unless appropriate equipment is provided. Local paramedic steering groups determine the extent to which paramedics are allowed to practice.

Our study has limitations. We cannot be certain that the intended respondent actually completed the questionnaire. The use of an open format in the section on training can generate replies that are difficult to interpret. We did not investigate other important aspects of paediatric prehospital care, such as helping distressed parents and the "scoop and run" versus "stay and play" debate. Nonetheless, our results provide important baseline information against which improvements can be measured.

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- 1 Child Accident Prevention Trust. *Basic principles of child accident prevention*. London: Child Accident Prevention Trust, 1989.
- 2 Wyatt JP, McLeod L, Beard D, Busuttill A, Beattie TF, Robertson CE. Timing of paediatric deaths after trauma. *BMJ* 1997;314:68.
- 3 Secretaries of State for Health. *The health of the nation*. London: HMSO, 1992:102-15.
- 4 Zaritsky A, French JP, Schafermeyer R, Morton D. A statewide evaluation of pediatric prehospital and hospital emergency services. *Arch Pediatr Adolesc Med* 1994;148:76-81.
- 5 Cooper A. Costs of equipping and training emergency personnel for pediatric resuscitation. *Pediatr Emerg Care* 1991; 7:385.

website  
extra

The questionnaire  
appears on the  
ADC website

www.archdischild.com