

paediatric transfer by non-specialists,<sup>3</sup> surely they are too non-specific to assess the performance of a specialist team. A study by Edge *et al*,<sup>4</sup> in which a specialist retrieval team did not seem to reduce physiological deterioration during transfer as assessed by these criteria, may be criticised on the grounds that the two groups were not comparable. The patients transferred by a non-specialist team were significantly older and included a higher proportion of victims of trauma. The diagnoses in the patients transferred by a specialist team were not stated. Also, although physiological deterioration occurred in 11% of the patients transferred by the specialist teams and 12% of the patients transferred by the non-specialist teams, the data from the two groups were pooled together, making further analysis impossible.

It would be interesting if Britto and colleagues' study was repeated, with more sensitive criteria being used to assess morbidity during transfer, perhaps by the inclusion of a specified percentage deterioration in physiological variables before transfer.

ANDREA KELLEHER  
Senior registrar in anaesthesia

LINDA MURDOCH  
Director of paediatric intensive care

St George's Hospital,  
London SW17

- 1 Britto J, Nadel S, Maconochie I, Levin M, Habibi P. Morbidity and severity of illness during interhospital transfer: impact of a specialised paediatric retrieval team. *BMJ* 1995;311:836-9. [With commentary by S Logan.] (30 September.)
- 2 British Paediatric Association. *The care of critically ill children. Report of the multidisciplinary working party on paediatric intensive care.* London: BPA, 1993.
- 3 Kanter RK, Tomkins JM. Adverse events during interhospital transport: physiologic deterioration associated with pre-transfer severity of illness. *Pediatrics* 1989;84:43-8.
- 4 Edge WE, Kanter RK, Weigle CGM, Walsh RF. Reduction in morbidity in interhospital transport by specialized pediatric staff. *Crit Care Med* 1994;22:1186-91.

### Intensive care provided by local hospitals should be improved

EDITOR,—Joseph Britto and colleagues give a convincing argument for the further development of retrieval teams for critically ill children.<sup>1</sup> But what of the quality of intensive care provided locally? The main interventions performed by the retrieval team were maintaining an airway (57%), ventilation (26%), and obtaining vascular access (86%). These interventions, however, should have been performed at the local hospital by suitably trained paediatricians and anaesthetists.

Surely the question that needs to be asked is why these essentials of advanced life support are not being provided locally. This is particularly pertinent when the diagnostic groups are looked at closely. Bronchiolitis accounted for a quarter of the patients studied, and these patients formed the group with the biggest change in the score obtained with the therapeutic intervention scoring system. Meningococcal disease (47% of patients) is a devastating disease with rapid deterioration requiring prompt intervention.

As Stuart Logan says in his commentary on the paper, centralisation of paediatric intensive care will be driven by public and professional opinion despite little evidence to support this move. As a consequence the quality of intensive care provided locally will continue to deteriorate unless those responsible for training and accreditation acknowledge the contribution that local services can, and must, make. Local units must recognise, and be recognised for, their role in contributing to the advances being made in paediatric intensive care by the tertiary units.

Britto and colleagues should ensure that those local hospitals that seem to provide a deficient service are alerted; they should be encouraged to provide appropriate training—for example, in paediatric advanced life support. This is preferable to the more obvious conclusion reached by the

authors—that transfer of sick children is so safe that more is better.

A RAFFLES  
Consultant paediatrician

East Hertfordshire NHS Trust,  
Queen Elizabeth II Hospital,  
Welwyn Garden City,  
Hertfordshire AL7 4HQ

- 1 Britto J, Nadel S, Maconochie I, Levin M, Habibi P. Morbidity and severity of illness during interhospital transfer: impact of a specialised paediatric retrieval team. *BMJ* 1995;311:836-9. [With commentary by S Logan.] (30 September.)

### Transfers within hospitals can be as risky as those between hospitals

EDITOR,—As an anaesthetist frequently involved in the transfer of critically ill patients, I agree with the findings of Joseph Britto and colleagues, which show the importance of resuscitating and stabilising paediatric patients before beginning transfers between hospitals.<sup>1</sup> Similar advice has been published for the transfer of patients with severe head injuries.<sup>2</sup> It is important to remember that transfers within hospitals—for example, for computed tomography—can be just as risky. Comprehensive monitoring with robust equipment with a long battery life is important to reduce morbidity. Hospitals should make the necessary investment to ensure that resuscitation rooms have the appropriate equipment to achieve these standards.

R M COOPER  
Registrar in anaesthesia and intensive care

Tameside General Hospital,  
Ashton under Lyne,  
Lancashire OL6 9RW

- 1 Britto J, Nadel S, Maconochie I, Levin M, Habibi P. Morbidity and severity of illness during interhospital transfer: impact of a specialised paediatric retrieval team. *BMJ* 1995;311:836-9. [With commentary by S Logan.] (30 September.)
- 2 Gentleman D, Dearden M, Midgeley S, Maclean D. Guidelines for resuscitation and transfer of patients with severe head injury. *BMJ* 1993;307:547-52.

### London group's findings supported by study in Leeds

EDITOR,—I was interested to read the paper describing the experience of the paediatric retrieval team at St Mary's Hospital in London,<sup>1</sup> having recently reported a similar study of the paediatric retrieval service based at Leeds General Infirmary.<sup>2</sup> Our study of 50 children referred for transfer by a specialist retrieval team over six months used two scores derived from the paediatric risk of mortality and the therapeutic intervention scoring system to assess the severity of illness and the need for therapeutic interventions during transfer. Critically ill children were transferred by a team consisting of a paediatric intensivist and a nurse from the paediatric intensive care unit; there was no deterioration in their clinical condition, and there were no adverse events related to equipment.

Most (32) requests for transfer were made outside normal weekly working hours. The median time from the request to the arrival of the team at the referring hospital was 105 minutes. The commonest diagnoses were respiratory failure, neurological disease, and meningococcal septicaemia. The median time taken to stabilise the child before transfer was 73 minutes (range 20 to 360). The retrieval team often needed to perform major therapeutic interventions before transfer: it intubated or reintubated 25 children and inserted 15 arterial, 14 central, and 28 peripheral venous lines. Forty four children underwent mechanical ventilation during transfer.

If paediatric retrieval teams with experienced medical staff are to develop in Britain then the costs and benefits of providing this level of care will need to be addressed directly. Good quality data will help establish priorities, and scoring systems

are useful for comparing results. As Joseph Britto and colleagues note,<sup>1</sup> reliable data for scoring systems such as the paediatric risk of mortality may prove difficult to collect in this setting, and a simpler system tailored to the paediatric age group is therefore required.<sup>3</sup> The major therapeutic interventions that had to be performed by the retrieval teams studied indicate a need for better resuscitation by staff at the referring hospital. Advice on management from the paediatric intensive care unit before the arrival of the retrieval team, and the early involvement of senior paediatric and anaesthetic staff at the referring hospital, should improve this situation.

STEVEN H CRAY  
Senior registrar in anaesthesia

Department of Anaesthesia,  
Newcastle General Hospital,  
Newcastle upon Tyne NE4 6BE

- 1 Britto J, Nadel S, Maconochie I, Levin M, Habibi P. Morbidity and severity of illness during interhospital transfer: impact of a specialised paediatric retrieval team. *BMJ* 1995;311:836-9. [With commentary by S Logan.] (30 September.)
- 2 Cray SH, Heard CMB. Transport for paediatric intensive care. Measuring the performance of a specialist transport service. *Paediatric Anaesthesia* 1995;5:287-92.
- 3 Rhee KJ, MacKenzie JR, Burney RE, Willits NH, O'Malley RJ, Reid N, *et al*. Rapid acute physiology scoring in transport systems. *Crit Care Med* 1990;18:1119-23.

### Children are still transferred by non-specialist teams

EDITOR,—Joseph Britto and colleagues suggest that specialist teams reduce the risks of secondary insults during the transfer of critically ill children from the referring hospital to a tertiary paediatric intensive care unit.<sup>1</sup> As Stuart Logan points out in his commentary on the paper, however, debate remains about the effectiveness of specialist transfer services. We prospectively audited external admissions to a tertiary paediatric intensive care unit without its own transfer team. The dataset will permit the introduction of a dedicated, specialist transfer service to be evaluated.

On the child's admission to the paediatric intensive care unit the demographic details, monitoring carried out during the transfer, and accompanying staff were recorded. The immediate management and condition of the child were documented. The transfer was assessed with a modified version of the paediatric risk of mortality score and against standards for the transfer of critically ill children.<sup>2</sup>

During the eight month audit 143 children were transferred, 89 outside working hours; 75 were aged under 2. In 46 cases minimal monitoring was used,<sup>3</sup> but in 19 monitoring was by hand and eye only. Thirty transfer teams were led by a consultant, and 27 teams consisted of more than three people. Critical incidents or serious events occurred in a third of all transfers (table).

Altogether 101 children were intubated before transfer, 89 of them orally. In many (31), however, the endotracheal tube was the wrong size or length. Of the 42 children who were not intubated before transfer, 21 required intubation either immedi-

### Critical or serious incidents that occurred during transfer

	No
<b>Physiological incidents</b>	
Desaturation (arterial saturation <90%)	17
Hypotension	8
Cardiac arrest	4
Arrhythmia	2
Neurological deterioration	3
<b>Mechanical problems</b>	
Blocked endotracheal tube	2
Accidental extubation	2
Loss of battery supply	3
Exhaustion of oxygen supply	1
Problems with ventilator	1
Loss of intravenous access	5