

# Recovery after acute brain injury: function in hospital; dysfunction at home

From studies within the USA, Israel, Norway and France, it has been estimated that the incidence of brain injury in children up to 14 years of age is 180 out of 100 000 per annum<sup>1</sup>. Between 40 and 50% of children dying from acute traumatic injuries in the USA during 1991 had brain injury as part of their diagnosis<sup>2</sup> and this proportion has been born out by other reports<sup>3</sup>. However, death rates of children admitted for brain injury from whatever cause, which range from 2–3%<sup>4</sup> to 14%<sup>5–6</sup>, are not very helpful as the aetiology and admission criteria can vary widely.

In England and Wales, around 13 000 children every year are admitted to hospital with a diagnosis of head injury (ICD-10 codes 500 to 509). But many of these children would have been discharged without any adverse effects. There is evidence to suggest that the number of deaths from head injury is falling; that there has been a marked improvement in the past 15 years in acute care; and that relatively more children are surviving severe injury<sup>7</sup> (which may, of course, increase the need for rehabilitation). A minority are profoundly disabled but a significant number, although disabled, have a much better recovery. The possibility of a fulfilled life begins to open up for them, but not quite fully; areas of cerebral function, taken for granted by the rest of us, do not work correctly or at all. Skills may return gradually, but quite often do not. This can begin to dominate the rehabilitation and style of life available.

Worldwide, health service provision of dedicated units for children's rehabilitation following recent brain injury were established possibly not more than 20 years ago. Perhaps for this reason, after the acute life-threatening phase, the typical aim can still be to discharge home rather than to specialist rehabilitation. In my experience, efforts are more usually concentrated on supporting the family, so that they can cope with an irremediable, long-term tragedy. Evans<sup>8</sup> has observed how, for adults, these specialized units have developed rather different aims and methods from those of a normal hospital rehabilitation team. And it is for this reason that at a recent conference on 'The Management of Behavioural Problems in Disabled Children' at the Royal Society of Medicine, Stephane Duckett of the Children's Trust highlighted the need for more dedicated units for children, and, unwittingly, became the stimulus for this editorial. Much can be done for these children, but they do need a specialized service.

A number of studies investigate outcome for children's head injury and the effectiveness of individual treatments but no published studies examine global outcome for children who have had specialist post-acute rehabilitation following head injury. This is in marked contrast to the many excellent adult reports which have been thoroughly reviewed by Evans<sup>8</sup>.

One group of children who cause particular concern are

those who, having made an excellent motor recovery, still present with cognitive problems that can lead to changes in personality. While in hospital, these children may appear to have made a good recovery and the depth of their difficulties can easily be underestimated. As Brown et al.<sup>9</sup> have noted, they risk developing profound psychiatric problems following difficulties in adjustment resulting from their failure upon return to school and the community.

Experience in specialist centres has shown that much can be done to enable these children to regain control of their environment and to further their successful return to school. This takes time and commitment and although thankfully they will remain a minority, provision must be made for them.

Those who work in the community know that many of the children fail; but how many? However small the current demand for this extra stepping stone may be, there are children whose need is great; and I hope that this short editorial will stimulate those who work with them to write for us and those who are responsible for such a child to look beyond clinical recovery of function and towards day-to-day function.

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## References

1. Kraus JF. (1995) Epidemiological features of brain injury in children: occurrence, children at risk, causes and manner of injury, severity, and outcomes. In: Broman SH, Michel ME, editors. *Traumatic Head Injury in Children*. Oxford: Oxford University Press.
2. Hoyert DL, Hudson BL. (1993) Advance report of final mortality statistics, 1991. *Monthly Vital Statistics and Report*. Vol. 42. Hyattsville, MD: Public Health Service.
3. Turet L, Hausherr E, Thicoipe M, Garros B, Maurette P, Castel JP, Hatton F. (1990) The epidemiology of head trauma in Aquitaine (France) 1986: a community-based study of hospital admissions and deaths. *International Journal of Epidemiology* 19: 133–1407.
4. Luerssen TG, Klauber MR, Marshall LF. (1988) Outcome from head injury related to a patient's age: a longitudinal prospective study of adult and paediatric head injury. *Journal of Neurosurgery* 68: 409–16.
5. Wagstyl J, Sutcliffe AJ, Alpar EK. (1987) Early prediction of outcome following head injury in children. *Journal of Paediatric Surgery* 22: 127–9.
6. Mayer T, Walker ML, Johnson DG, Matlak ME. (1981) Causes of morbidity and mortality in severe paediatric trauma. *JAMA* 245: 719–21.
7. Eyre J. (1997) Managing head injury: do we know enough? *Paper presented at the Managing the Head-Injured Child and Adolescent Conference, Royal Free Hospital, London, 20th January, 1997*.
8. Evans R. (1997) Post acute neurorehabilitation: roles and responsibilities within a national information system. *Archives of Physical Medicine Rehabilitation* 78: (Suppl.)
9. Brown G, Chadwick O, Shaffer D, Rutter M, Traub M. (1981) A prospective study of children with head injuries: III psychiatric sequelae. *Psychological Medicine* 11: 65–78.