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Correspondence now closed.

Management of children with head injuries in district general hospitals

Sir,

In his paper on the 'management of children with head injuries in district general hospitals' Mr Hayward expresses the view that the primary responsibility for children with head injury should be undertaken by paediatricians.¹ We agree with this opinion but would like to highlight that this does not appear to be current practice.

We have just completed a survey of all children who were admitted with or who died from a head injury in the Northern Region between the years 1979 and 1987. In this period there were 25 152 such children of whom 258 (1%) died. Thirty three children died at the site of the accident and a further 106 died on their way to hospital.

Altogether 25 009 children were admitted to hospital; 10 561 (42%) of these children were admitted under the care of specialists other than a paediatrician or neurosurgeon. The number of children admitted to a regional hospital with expertise in both paediatrics and neurosurgery was 7179, and 6246 (87%) of these children were cared for by either a paediatrician or a neurosurgeon or there was shared care. The number of children admitted to a district general hospital was 17 830, of whom 8202 (46%) were cared for by a paediatrician; 9628 (54%) of the children admitted to the district general hospitals were cared for by other specialists, primarily general or orthopaedic surgeons.

Of the 116 children admitted to hospital and who subsequently died, 33 (28%) died at a district general hospital. Twenty seven of these 33 children died under the

care of a general or orthopaedic surgeon. Twenty four of these 33 children survived more than six hours and could therefore have been transferred to a specialist centre.

Head injury is the most common cause of death and acquired disability in childhood, yet there is no general agreement as to the most effective approach to either acute management or to rehabilitation. The relative paucity of research into specific aspects of the management of children with head injury may in part reflect the present wide spread dispersal of the care of these children among different specialties.

We agree with Mr Hayward that the high incidence of learning and behavioural difficulties which may follow even mild head injury² emphasises the importance of paediatric involvement in the acute and long term care of all head injured children even those with mild head injury.

We believe that there is an urgent need for paediatricians to revise the facilities offered to children with head injury to ensure that they receive the highest standard of care. Furthermore, research is needed in both the acute management of children after head injury and their rehabilitation in an attempt to reduce the high mortality and morbidity.

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Tight nuchal cord and neonatal hypovolaemic shock

Sir,

Dr Vanhaesebrouck and his colleagues do well to warn of the danger of the hypovolaemic shock that may follow clamping and division of a nuchal umbilical cord.¹ During studies in Bristol (1963-5), it was observed that there was normally a shift in blood volume from the fetus to the placenta during the second stage of labour. This 'feto-placental transfusion' was attributed to the more ready compression of the soft walled, low pressure umbilical vein than the firm, high pressure umbilical arteries, between the body of the fetus and the wall of the birth canal. When the umbilical cord was clamped at the moment of birth, as much as 30-40% of the normal fetal blood volume might be trapped within the placental vasculature rendering the placental congested, tense, bulky, and more likely to be retained.

On the other hand the newly born infant often exhibited transient signs of hypovolaemic shock with hypotension, tachycardia, and pallor due to peripheral vasoconstriction. While this insult was tolerated remarkably well by most healthy term infants, it was capable of causing resuscitative and adaptive problems among those that were preterm,

depressed or sick. These observations were first reported in 1966–8² and have been reiterated many times since.³ This hazard of immediate cord clamping, however, which may be largely obviated by a delay of 20–30 seconds, has been largely ignored by modern obstetric practice which is too often more interested in obtaining samples of umbilical arterial and venous blood between triple clamps than in understanding and preserving the normal physiology of childbirth.⁴ There is more excuse for division of a tight nuchal cord but when possible this is best avoided by unlooping the cord over the baby's head.

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Top up transfusions in neonates

Sir,

The article by Robertson on 'Top up transfusion in neonates' was both stimulating and provocative.¹ Comments about lack of cooperation of pathology services in neonatal intensive care units are common and highlight a growing problem which needs to be addressed.

At present there are clear technical limits to reducing the quantity of blood required for most procedures. The idea that appropriate ultra microscopic methods are likely to be available in the near future appears to be rather optimistic but much can still be done and the requirement for blood transfusion, with its known and unknown dangers, can be limited. Dr Robertson did indeed refer to the problem of infants receiving blood infected with HIV in another Brisbane Hospital before the disease was recognised. The Royal Women's Hospital in Brisbane which has approximately the same number of neonatal intensive care patients has a lower rate of blood transfusion and a similar epidemic did not occur here. The reasons for the lower transfusion rate are not precisely known but include the following factors:

- (1) A conservative requesting policy.
- (2) A dedicated phlebotomy service. This ensures that the quality of the blood sampled is consistently high and repeat sampling is minimised.

(3) A dedicated neonatal laboratory service which allows close liaison with laboratory staff. Collection problems can be discussed easily.

(4) Use of manual methods which reduce the volumes required—for example, by predilution. The quality of staff training must be of a high standard to maintain high quality assurance.

Therefore even without a major technological advance, progress can be made to reduce the size of blood samples and limit the need for transfusion.

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Whole blood assay of theophylline concentrations using immunochromatographic stick

Sir,

Elias-Jones and colleagues have shown that in 77 pairs of samples the mean difference between theophylline concentrations measured by a new method and a standard method was small.¹ They have not, however, presented their raw data or the standard deviation (SD) of the mean differences. Provided differences within the range mean difference +2 SD to mean difference –2 SD would not be clinically important the two measurements could be used interchangeably, and so it is important to know that the SD is not unacceptably large. Bland and Altman have recently outlined a simple method for assessing agreement between two methods of clinical measurement and have demonstrated how this can be presented.²

It is also important to know how many comparisons were made at the upper and lower limits of the therapeutic range. The clinician not only needs to know how well the new method of assay of theophylline concentrations agrees with the standard method when concentrations are within the therapeutic range but also how well they agree in the potentially toxic and subtherapeutic ranges. Does the scatter of differences increase as the values increase, especially when values are >100 mmol/l? This information needs to be available before the new method of assay of theophylline concentrations can be substituted for a standard method.

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