

<sup>5</sup> Laron Z. Klinefelter's syndrome: early diagnosis and social aspects. *Hospital Practice* 1972; 7: 135-9.

<sup>6</sup> Topper E, Dickerman Z, Prager-Lewin R, Kaufman H, Maimon Z, Laron Z. Puberty in 24 patients with Klinefelter's syndrome. *Eur J Pediatr* 1982; in press.

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Dr Ratcliffe and co-workers comment:

The single case with a sperm count of  $30 \times 10^6$  per ml (and who fathered 2 children) confirms our statement that a note of caution should be introduced in the prognosis of future sterility. It would have been of interest to know how many of the 24 boys with Klinefelter's syndrome that they have seen have developed gynaecomastia as this feature, for both patients and parents, would greatly affect a benign image of the condition. Furthermore, if cases are ascertained from an endocrine clinic, selection may exclude those presenting with educational or psychiatric problems, each of which we have encountered in our follow-up of 20 cases identified in the 1967-79 newborn survey in Edinburgh.<sup>1</sup>

#### Reference

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## Oral rehydration in acute infantile diarrhoea

Sir,

Sandhu *et al.*<sup>1</sup> reported a significant rise in serum sodium concentration in 4 of 7 infants treated with an oral rehydration solution containing 125 g/l of glucose-polymers (which yields 730 mmol/l free glucose on hydrolysis) and 90 mmol/l of sodium. One patient developed severe hypernatraemia with this solution (serum sodium 162 mmol/l). The authors suggest that such hypernatraemia could be secondary to (1) the high sodium content in the oral rehydration solution; (2) the low sodium diarrhoea caused by infections secondary to agents such as rotavirus; (3) the malabsorption of sugar with resultant water loss secondary to the infectious process. (The glucose-polymer was implicated by the authors in the one patient with severe hypernatraemia).

From these assumptions, Sandhu *et al.* recommended that the sodium concentration in oral rehydration solutions be reduced to as low as 25 mmol/l, particularly in temperate climates.

Several studies have demonstrated the effectiveness of the WHO/UNICEF solution (sodium 90 mmol/l, glucose 20 g/l) in treating diarrhoeas of multiple aetiologies, including rotavirus.<sup>2</sup> We have successfully used the WHO/UNICEF solution, both for children in

hospital and for ambulatory patients in the the USA without inducing hypernatraemia.<sup>3,4</sup> The glucose concentration of oral rehydration solutions should be maintained between 56 and 140 mmol/l (10 and 25 g/l) to obtain optimal absorption of water and sodium.<sup>5</sup> Increasing this concentration beyond this range could potentially aggravate the diarrhoea by osmotic mechanisms, as seen in this study, leading to the increased loss of diarrhoeal stool with a low sodium content. Unfortunately no stool electrolyte studies were carried out.

Sandhu *et al.* recommended the high glucose-polymer concentration, instead of the WHO/UNICEF recommended monomer glucose, to improve the nutritional benefit of oral rehydration. This can be achieved more appropriately by introducing food as soon as rehydration is completed and appetite has been restored, generally within the first few hours.<sup>3,6</sup> They also suggest that the metabolic responses of patients in temperate climates (implying well-nourished patients) may be different from those of endemically undernourished children, although our studies<sup>3,4</sup> do not support this nor are we aware of any that do.

The WHO/UNICEF solution, containing 90 mmol/l sodium and 20 g/l glucose has been shown to be safe and efficacious, provided the solution is used appropriately. It is important that free water be allowed after the initial rehydration period.

We disagree with the suggestion that a solution with a lower sodium content should be used to prevent hypernatraemia. The WHO/UNICEF solution can be used safely in both well-nourished and undernourished populations. The study of Sandhu *et al.* only confirms the predicted results when oral electrolyte solutions containing a marked excess of osmotically-active carbohydrates are used.

#### References

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- 3 Santosham M, Daum R S, Dillman L, *et al.* Oral rehydration therapy of infantile diarrhea. A controlled study of well-nourished children hospitalized in the United States and Panama. *N Engl J Med* 1982; 306: 1070-6.
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