LETTERS TO THE EDITOR

Desmopressin for bedwetting

SIR,—The article by Evans and Meadow cast further light on the ongoing controversy over the causes of nocturnal enuresis in children.¹ While some stress the importance of small bladder capacity² and others the importance of nocturnal polyuria caused by deficient arginine vasopressin (AVP) secretion,³ many take the compromise of both factors playing their part.⁴ In this paper, enuretics responsive to desmopressin had higher nocturnal volumes (345 ml) and lower nocturnal urinary AVP concentrations (0.9) compared with non-responders (265 and 2.8 respectively). While these differences were insignificant for the small numbers of children involved (eight and 10 respectively) the authors rightly point out that there did appear to be 'a trend towards desmopressin responsive enuretics having lower AVP concentrations and larger volumes of dilute urine at night'. It could well be that significant differences are found with larger numbers of children. It was also interesting that the age of desmopressin responders who appeared to produce more dilute urine was 12 compared with only 9 in the others. This supports our own feeling that the cause of nocturnal enuresis is more likely to be lack of nocturnal AVP secretion in older children and adults and smaller function bladder capacity in those younger. A lot of the work identifying nocturnal enuretics who are AVP deficient was done on older children and adults.^{2,5} There was therefore no real support for Evans and Meadows suggestion that 'It is possible that the diurnal variations in AVP are less well developed in younger children'.

Recently we did a short study of nocturnal enuresis in 5 year olds to see if the enuretics produced more dilute urine overnight. At the routine medical on joining school, children were asked to bring along the first urine specimen of the day for measurement of osmolality. (This study was passed by our local ethics committee.) Fifty five children produced samples: 46 who were virtually dry and nine who wet the bed most nights. Mean (SD) osmolality of those who were dry was 801 (180) and of the enuretics 760 (264) mmol/kg (not significant). While it is possible that early morning osmolality may not be fully representative of total overnight urine production if the child has previously wet the bed, we feel this study does indicate that enuresis in young children is unlikely to be due to nocturnal polyuria. This type of developmental nocturnal enuresis is probably mainly due to low functional bladder capacity at night. In studies of nocturnal enuresis a firm distinction should be made between such children with developmental enuresis and older children and adults.

RICHARD E MORTON
MYRTLE DANIELS
Derbyshire Children's
Hospital,
North Street,
Derby DE1 3BA

1 Evans JHC, Meadow SR. Desmopressin for bed wetting: length of treatment, vasopressin secretion, and response. *Arch Dis Child* 1992;67: 184-8.

- 2 Starfield B. Functional bladder capacity in the enuretic and non enuretic child. *J Pediatr* 1967;70:777-81.
- 3 Rittings K, Nudsen UB, Norgaard JP. Abnormal diurnal rhythm of plasma vasopressin and urinary output in patients with enuresis. *J Physiol* 1969;256:664-71.
- 4 Readett DRJ, Morris J, Serjeant GR. Determinants of nocturnal enuresis in homozygous sickle cell disease. *Arch Dis Child* 1990;65: 615-8.
- 5 Norgaard JP, Rittings, Djurhuus JC. Nocturnal enuresis; an approach to treatment based on pathogenesis. *J Pediatr* 1989;114:705-10.

SIR,—We read with interest the report by Evans and Meadow on use of intranasal desmopressin for bedwetting.¹ These authors did not find any statistically significant difference in nocturnal urine volume, osmolality, or arginine vasopressin (AVP) concentration between responders, non-responders, and controls. We believe that one explanation for the observed lack of statistical significance may be that these authors examined a heterogeneous group of patients. Evans and Meadow included patients with diurnal symptoms, behavioural problems, and adverse family or social factors. They also included children who were only intermittently enuretic. Only 15 of 28 children treated for one month and 17 of 27 treated for three months were dry $\leq$ 2 nights per week before treatment.

Evans and Meadow acknowledge the presence of a trend towards lower AVP concentrations and larger volumes of dilute urine in responders. We believe that statistical significance may have been achieved with either a larger group of patients or a more homogeneous patient population. Our experience suggests that desmopressin is most efficacious in children with primary nocturnal enuresis who do not have diurnal symptoms or possible adverse behavioural or social circumstances and who are consistently rather than intermittently wet at night.²

Wm LANE M ROBSON
ALEXANDER K C LEUNG
Department of Pediatrics,
University of Calgary,
Alberta Children's Hospital,
#300, 10601 Southport Road SW,
Calgary, Alberta, Canada T2W 3M6

- 1 Evans JHC, Meadow SR. Desmopressin for bed wetting: length of treatment, vasopressin secretion, and response. *Arch Dis Child* 1992;67: 184-8.
- 2 Robson WLM, Leung AKC. Children with primary nocturnal enuresis. *Contemporary Pediatrics* 1990;1:19-25.

Dr Evans comments:

Drs Morton and Daniels raise the interesting hypothesis that enuretic children can be divided into two groups: children who suffer from maternal polyuria secondary to vasopressin deficiency and younger children who have smaller function bladder capacities. Certainly our desmopressin responsive patients were older and other authors have made the same observation.¹ However such a clear cut distinction is unlikely in clinical practice as the majority of these older children will have been enuretic when younger. It seems unlikely that this group and the other secondary onset enuretic children would have the same underlying physiological abnormality.

Drs Robson and Leung find that desmopressin is most efficacious in children with primary nocturnal enuresis without diurnal symptoms or adverse behavioural or social circumstances. It is likely that most treatments for enuresis would be more effective in such a group of children. Their observation that children who have consistently rather than

intermittently responded better is interesting and contrasts with our experience that children who wet the bed every night responded extremely poorly to desmopressin. In our experience on an unselected group of children attending a local enuresis clinic and in other authors' experience^{2,3} desmopressin results in a minority of children becoming dry while on treatment and even fewer remaining dry when treatment is withdrawn.

- 1 Post EM, Richmas RA, Blackett PR, Duncan KP, Miller K. Desmopressin response of enuretic children. Effects of age and frequency. *Am J Dis Child* 1983;137:962-3.
- 2 Birkasova M, Birkas O, Flynn MJ, Court JH. Desmopressin in management of nocturnal enuresis in children: a double blind study. *Pediatrics* 1978;62:970-4.
- 3 Terho P, Kekomaki M. Management of nocturnal enuresis with a vasopressin analogue. *J Urol* 1984;131:925-7.

Comparison of BCG vaccination at birth and at third month of life

SIR,—I read with interest the paper by Ildirim *et al.*¹ The authors recommend that practice be changed in those countries in which BCG is given to newborn infants, and that the vaccine be given at the end of the third month instead. I would be concerned that the uptake and consequent coverage of vaccination at 3 months of age will be considerably lower than when given in the neonatal period when the babies are in effect a 'captive' population. In the study reported, at the end of the first year 7% of those immunised in the neonatal period did not have a BCG scar as against 0.6% of those immunised at 3 months.¹ I would suggest that even in this country, if BCG was planned to be given at 3 months the number of children not immunised would far exceed 7%, and that as a result although the immunisation itself was more effective, the protection from tuberculosis itself will be less powerful. The risk of serious complications after immunisation (lymphadenopathy with fistulisation) was not significantly different between the groups.

It would, therefore, seem hasty to change any immunisation programme until further evaluation had taken place.

PAUL GORHAM
Department of Community Child Health,
South Warwickshire Health Authority,
Cape Road Clinic,
Warwick CV34 4JP

- 1 Ildirim I, Sapan N, Cavusoglu B. Comparison of BCG vaccination at birth and at third month of life. *Arch Dis Child* 1992;67:80-2.

Dr Ildirim and colleagues comment:

We read with interest the letter of Dr Gorham and are pleased to learn that Dr Gorham accepts that immunisation is more effective at the end of the third month.

We do not agree that the number of children coming for vaccination will be fewer at the third month. As more than half of deliveries are not performed at maternity hospitals in developing countries, to reach the newborn for BCG vaccination will be more difficult in those countries. Instead every developing country has a vaccination programme (diphtheria, pertussis, tetanus, and polio) for children, starting in the second