

PostScript

LETTERS

If you have a burning desire to respond to a paper published in *ADC* or *F&N*, why not make use of our "rapid response" option? Log onto our website (www.archdischild.com), find the paper that interests you, and send your response via email by clicking on the "eLetters" option in the box at the top right hand corner.

Providing it isn't libellous or obscene, it will be posted within seven days. You can retrieve it by clicking on "read eLetters" on our homepage.

The editors will decide as before whether to also publish it in a future paper issue.

Hugh Downman and smallpox inoculation

Professor Dunn quotes Downman's approval of Lady Mary Montagu in his fascinating account of the Exeter physician. Her contemporaries, however, were often less generous. This beautiful and literary lady contracted smallpox in 1715 and probably knew of the Turkish practice of "engrafting" or "variolation" against the disease from her own doctors. As Fellows of the Royal Society they may well have heard an account of it passed on from Timonius of Constantinople.¹ The following year she had the opportunity of travelling to Turkey with her husband who had been appointed ambassador to the Ottoman Empire. Receptive towards Islamic culture she was struck by the relative absence of smallpox and learned that this was attributable to the deliberate infecting of subjects with material from smallpox victims.

In March 1718 she summoned the nurse who was Constantinople's "general surgeon" for inoculation. The nurse pricked the wrist of Lady Mary's young son with a needle, laid a tiny droplet of smallpox matter on the skin and mixed it with a drop of blood from the puncture. Some eight days later he became febrile and developed about 100 spots on his body. These quickly resolved without leaving scars.

Subsequently, the chequered success of variolation in the hands of English physicians, careless of the finer details of Turkish practice emphasised by Lady Mary, contributed to lifelong controversy. Most cruelly, her former friend Alexander Pope implied in one of his satires that she left people "pox'd by her love",² quite deliberately a defamatory double entendre as well as an attack on the safety of variolation.

J W Puntis

The General Infirmary at Leeds, Belmont Grove, Leeds LS2 9NS, UK; john.puntis@leedsth.nhs.uk

References

- 1 Grundy I. *Lady Mary Wortley Montagu*. Oxford: Oxford University Press, 1999:102.
- 2 Grundy I. *Lady Mary Wortley Montagu*. Oxford: Oxford University Press, 1999:334.

Infant to staff ratios and risk of mortality in very low birth weight infants

We were very interested to read the article by Callaghan and colleagues.¹ They report a decline in mortality with less nurses caring for high risk infants over the first three days of life. This is a surprising finding, which is counter-intuitive to established neonatal wisdom. Indeed the authors quote a smaller study by Hamilton and colleagues,² which found an increase in mortality with a reduced ratio of nurses to infants. Callaghan and colleagues' findings may be true, with the most likely explanation of the deaths being excessive handling. Clearly, if this finding is replicated, then establishing the optimum number of nurses could lead to improved outcomes for high risk infants. It certainly warrants further study within the NHS and the United Kingdom.

It is widely assumed that increased numbers of nurses in the UK will improve the outcome of neonatal intensive care. Currently, in the National Health Service there is difficulty in maintaining adequate numbers of neonatal nurses, with many units having nurse staffing levels substantially below those recommended by the British Association of Perinatal Medicine.³ Unfortunately, this recommendation for more staff is not based on a great deal of evidence, and the authors are to be praised for studying this topic.

Their results should, however be interpreted with caution. The health systems of the UK and Australia are different, most particularly in the proportion of centralised care and the ratio of nurses to infants. Callaghan *et al* make the point that the UK has a ratio of two very low birth weight (VLBW) infants to one nurse, whereas in Australia the ratio is approximately one to one. The UK Neonatal Staffing Study has recently looked at 13 500 infants from 54 randomly selected units throughout the UK.⁴ This study did not show a clear relation between staff establishment and outcome, although it did show a linear relation between mortality and occupancy rates and a trend to increased risk of mortality with a lower nurse:infant ratio.

Callaghan *et al* discuss some of the weaknesses of their own study. There are also two factors that we wish to highlight. The first is that the authors have not looked in detail at the quality and abilities of the nursing staff. There is a wide variation in the abilities of staff, particularly when nursing agencies are used to provide nurses. As these staff may not work full-time or have much experience of the individual unit, they may be less efficient or able when compared to those full-time staff based on the unit.

The second factor is the method of determining nurse workload. Measuring the ratio of babies to staff is not an accurate assessment of nurse activity; a large number of well babies often need less care than a small number of sicker babies. It is not clear from the paper how the authors dealt with the term infants, and whether these are included in calculating the ratio. Did the authors use

the number of nurses per VLBW infant or per all babies in the unit? In addition, large babies can also generate a substantial workload if they are very unwell (for example, babies with persistent pulmonary hypertension of the newborn or congenital diaphragmatic hernia). Further studies measuring the true overall workload may give a better indication of the relation with outcomes.

J S Dorling, J S Ahluwalia

Neonatal Intensive Care Unit, Addenbrooke's Hospital, Cambridge, UK; jondorling@supanet.com

References

- 1 Callaghan LA, Cartwright DW, O'Rourke P, *et al*. Infant to staff ratios and risk of mortality in very low birthweight infants. *Arch Dis Child Fetal Neonatal Ed* 2003;88:F94-7.
- 2 Hamilton K, Gould C, Tarnow-Mordi W, *et al*. Hospital mortality in relation to staffing levels in the first three days of neonatal care. *Proceedings of the 4th Annual Congress of the Perinatal Society of Australia and New Zealand* 2000. Brisbane, Sydney, Australia: PSANZ, 2000:109.
- 3 BAPM. *Standards for hospitals providing neonatal intensive and high dependency care*, 2nd edn. London: British Association of Perinatal Medicine, 2001.
- 4 The UK Neonatal Staffing Study Group. Patient volume, staffing, and workload in relation to risk-adjusted outcomes in a random stratified sample of UK neonatal intensive care units: a prospective evaluation. *Lancet* 2002;359:99-107.

The use of sodium resonium in pseudohypoaldosteronism

We describe the use of sodium resonium in a patient with pseudohypoaldosteronism (PHA). PHA is a rare but serious abnormality characterised by raised plasma aldosterone, but mineralocorticoid resistance causing hyperkalaemia and hyponatraemia. Severe recessive type 1 PHA is due to defective epithelial amiloride sensitive sodium channels (ENaC).¹

Our patient presented aged 14 days with hyponatraemia (130 mmol/l) and hyperkalaemia (9.4 mmol/l). He made no response to hydrocortisone or fludrocortisone. His plasma aldosterone level during crisis was extremely high (3820 pmol/l), confirming a diagnosis of PHA. Our patient's sibling died neonatally with a presumptive diagnosis of PHA, suggesting autosomal recessive inheritance compatible with an ENaC defect.

Our patient was managed on intermittent rectal calcium resonium when hyperkalaemic, and daily solution G (a preparation containing high levels of sodium (1.3 mmol/ml)). The sodium requirement was 45 mmol/kg/day. Due to its unpalatability, solution G was given via gastrostomy. Despite this he had episodes of sudden collapse, precipitated by minor infections, with hyponatraemia and life threatening hyperkalaemia, including a cardiac arrest. Discharge proved impossible.

After 18 months we changed his treatment to sodium resonium 0.25 g/kg twice daily via gastrostomy on advice from Professor Dillon (Great Ormond Street Hospital). Our patient