Letters to the editor

Neonatal respiratory distress syndrome

EDITOR,—Professor Southall and colleagues1 question the comments of the working group on the management of neonatal respiratory distress syndrome regarding parameters of oxygenation.2 We write in support of the provisional and practical suggestion of an arterial oxygen saturation (SaO₂) range of 85–93% and suggest that much of the data quoted by Southall et al is not applicable to this clinical setting.

Professor Southall and colleagues suggest an upper limit for SaO₂ of 96% and quote four studies in support of this choice. In two of these papers,1,2 the majority of the patients were neonatal units able to maintain the SaO₂ for other conditions, mainly congenital heart disease. These infants constitute a very different population from those suffering from respiratory distress syndrome. Our own studies in 477 infants—made in clinical practice using Ohmeda Biox oximeters on a population under 33 weeks' gestation found that if the saturation value was 93% or below the arterial oxygen tension (PaO₂) was never greater than 12 kPa.3 To maintain the PaO₂ below 10 kPa, which is the upper limit suggested by the working party, requires a saturation of 92% or less. Certainly, when using an Ohmeda oximeter, an upper limit of 93% seems very reasonable.

When discussing a lower limit for SaO₂, Professor Southall recommends 95%, based on a study of well preterm infants.4 These infants bear little relation to the sick, low birthweight infants who, until very recently had experienced a physiological, umbilical venous oxygen tension (Po₂) of approximately 4.5–6.0 kPa.

With regard to the adverse effects of hypoxaemia, there is no firm evidence which defines the optimal range for any of the indices of oxygenation. There are almost no modern data relating levels of oxygenation to outcome; the data quoted by Professor Southall regarding hypoxaemia describe physiological responses to lower levels of oxygenation and not outcome.

Limited by the lack of scientific data, the working party have had to make reasonable and, equally important, practical recommendations. We feel that there is little evidence to support a range of 94 to 96% and in addition would be surprised to find any neonatal unit able to maintain SaO₂ within such narrow limits. With the marked fluctuations in oxygenation seen in preterm infants receiving intensive care, it would be difficult to make sufficiently frequent adjustments to meet these limits. Based on our own data we currently employ the range 86 to 94%, similar to that mentioned in the working party report and we look forward to further studies to give us more guidance on this difficult question.

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Sexual orientation and blood volume in preterm infants

EDITOR,—We read with interest the article by Bauer et al on blood volume and blood pressure in preterm infants.1 We have looked at a very similar group of infants and assessed the blood volume but with different results.

In 31 infants the mean arterial blood pressure (MABP) was measured by invasive arterial methods. Blood volume was assessed using an indocyanin green dye dilution method described previously in this age group.2 The infants had a median gestational age of 26 weeks (range 25–31 weeks) and a median birth weight of 900 g (range 580–1380 g). Readings were all obtained in the first three days of life.

The median blood volume observed in our infants was 85 ml/kg (range 46–131 ml/kg), very similar to both the 83 ml/kg of Bauer et al and to previously published results from a median MABP of 36 mm Hg (range 18–47). We found no significant relationship, on regression analysis, between observed blood volume and MABP, p=0.42 (figure).

Thus, we have not confirmed the third order polynomial relationship described by Bauer et al. This may be for a number of reasons, but it may be of note that the majority of the infants in this study were from Bauer’s group were by a non-invasive method, that has been previously criticised in the sick very low birthweight infant.3 We would agree with the conclusion of Bauer et al that blood pressure assessment alone is a poor measure of absolute hypovolaemia in very low birthweight infants. It is important that more than one cardiovascular parameter is considered in the assessment of the hypovolaemic infant so that different expansions and inotropes are used appropriately in this age group.

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