Figure Neonatal mortality rates 1970-73, excluding babies with fatal congenital malformations.

iceberg, we see only a proportion of the ill results, the deaths. But we must not forget the submerged and larger fraction, the near deaths and the harm which they cause—the long-term handicaps. As to the cost-benefit of prevention, our admittedly amateur calculations suggest that the provision of good newborn care is likely to pay for itself at the very least 20 times over and perhaps 100 times or more.

In conclusion, we should like to make the following points: (1) We warmly support Dr Hughes-Davies's emphasis on the importance of the fundamental principles of keeping small sick infants warm and fed, of nursing them prone, and of handling them as little as possible. (2) We deplore and reject his denial of the benefits of modern intensive monitoring and therapy for infants that require such support. (3) We have some sympathy with his view that a great deal of intensive care as currently practised with inadequate staff and facilities may be counterproductive—although we have even more sympathy with the nurses and doctors who struggle on in spite of the difficulties. (4) Finally, we would agree with Dr Hughes-Davies when he stresses the critical importance of good antenatal and intrapartum care in reducing perinatal mortality.

P. M. DUNN AND B. D. SPEIDEL
Department of Child Health,
Southmead Hospital,
Bristol BS10 5NB

Dr Hughes-Davies comments:

The letter from Dr Dunn and Dr Speidel raises some interesting points.

The comparison of very small babies was, as stated, with those born in University College Hospital. I excluded those transferred because we do not know from what population they came. Paradoxically the figures suggest that the transferred babies did at least twice as well as those born on the spot, presumably because the tiny and the weak died before they could be moved; and it may be that this effect favours Southmead too. London has many more immigrants than Salisbury, and some of these babies are likely to be more mature for a given weight than ours; hence the breakdown by gestation in Table 4. I still think the comparison is valid enough to make the point that we have far to go in helping babies of <1000 g.

The Wessex neighbours were Basingstoke, Bournemouth, Dorchester, Portsmouth, Southampton, and Winchester. The first-week figures were not collected by me, but I was allowed to use the totals. Salisbury compared favourably with the others individually, and I am not sure why the comparison is rejected.

I had available only the 4-week national figures sufficiently broken down by weight, and I expected that the table would be read in conjunction with the text. If our monthly figures had been included there would have been little difference, although some babies may

well have died at home or elsewhere without our knowledge. Those of <2500 g who died in the 2nd–4th weeks were: a 2400 g mongol with Dandy-Walker syndrome (at 4 weeks), a 2400 g baby with congenital viral pneumonia (in the 2nd week), a cot death of a 1420 g baby at home (in the 3rd week), and a quadruplet weighing 900 g who died from *Klebsiella pneumoniae* (at 3 weeks).

Despite Dr Dunn and Dr Speidel's warning, the Southmead figures fail to distinguish between babies born there and elsewhere (or so I infer from the mention of problems from afar which is otherwise irrelevant). I agree with their submission that this invalidates further comparison, but I shall continue. The category 500–1500 g contains a mixture of babies, some with an excellent chance of survival and others with none, and without further breakdown it is meaningless. If their distribution matches that of Salisbury in 1974–76, there can have been no undeformed death > 750 g in 1978. Is this so? Or do they have more babies of 1400 g and fewer of 500 g because of transfer from outside? The advantage of selection to the receiving hospital is, of course, offset by a worsening of the figures in the referring hospital, unless both claim the baby in which case the regional figures will show a spurious improvement. A similar error of selection is produced by counting babies at the nursery door instead of at birth.

Even if figures are properly derived and presented raw by number, year, weight, and origin, they provide no basis for comparison unless the state of the babies coming into care is the same. This depends on the pattern of motherhood which perhaps changes uniformly throughout a wide region, and of obstetric care which shows much local variation and can change abruptly as doctors move and methods (whether alcohol drips or caesarean delay times) alter. Both Salisbury and Bristol show a similar decline in mortality over the years—the Salisbury figures corresponding to the lower University of Bristol line of the Southmead chart are 5.6, 8.9, 9.5, 7.4, 3.7, 4.2, 2.7, and 2.2 respectively for the years 1969–76. In Bristol the trend may be due to the institution of intensive care in 1970; but in Salisbury, where paediatric care has been held constant, the steady improvement over the years must be due to better mothers or to better care before birth. Incidentally this makes the pooling of figures over the years unreasonable. Even in 1976 it is likely that Salisbury which lacks senior registrars, had no convenient theatre or nearby outpatient clinics, and has insufficient fetal monitors, was handicapped compared with Bristol; but if comparison is to be made, it should be with the later years. I have already dealt with the likely bias among Southmead's lighter babies; for those from 2000–2500 g where transfers are less likely, our figures match (Southmead 8.0, Salisbury 9.5 per thousand for 1974–76, a statistically insignificant difference of about one baby in 7 years).

Perhaps a better approach is to look at the individual babies and ask why they died. This I attempted to do for babies over 1000 g in Table 3 by excluding those we could not or would not wish to save by reason of lethal uncorrectable deformity, tentorial tear proved at necropsy, or severe intrapartum asphyxia suggested by prolonged apnoea at birth. Again looking at 1974–76, there were

5 such deaths, one after operation elsewhere, and 2 in babies delivered far away without help and admitted moribund. This gives a paediatrically preventable NMR of 0.9/1000 which is not of course fairly comparable with Southmead's preventable NMR of 1.7 in 1978.

An administrator doomed to view the world through marks on paper, might estimate from the Southmead graph that, spread over the country, their methods would have killed 5000 babies in 1970–73. Having a profound distrust of vicarious statistics, and recognising Bristol's long record of distinction in the care of children, I know that this would be nonsense, as are most such computations. So much for the numbers game, by which we need set no great store.

Like modern rock climbing, intensive care has developed awesome techniques, which although sometimes of use to the scrambler, threaten to become an end in themselves, so that the best way to take a baby up Eiger appears to be by the north face. It is no longer entirely facetious to suggest that a patient with a heart attack sometimes needs intensive care to survive the effects of intensive care, and that those who succumb to this may more or less balance those who would have died if they had stayed quietly at home under skilled supervision after initial resuscitation. Whether this is true of newborn babies I do not know. Neither do Dr Dunn and Dr Speidel, but I hope they will take the opportunity to find out by subjecting some of their babies to the Salisbury usage (having first read my paper a second time to correct their inadequate summary of the method). In the meantime we should remember that truth does not come out of the mouth of a committee, and that the safest response to uncertainty is diversity. As Dr Dunn and Dr Speidel so kindly say, we have a lot in common, and of course research must continue, although perhaps it should not be mimicked too soon or too widely. But all nurseries really should divulge their results in proper form, if necessary in confidence, perhaps to Sir Cyril Clarke and Professor Neville Butler to whom our babies owe so much. And perhaps too they should end their day with a Litany—'From gastric oxygen, streptomycin, delayed feeding, and arterial thrombosis, Good Lord Deliver Us'—it will be a long one, and there is no reason to think it is not lengthening. I may even join it myself.

T. H. HUGHES-DAVIES
Central Hospital,
Honiara,
Solomon Islands

Sir,

I should like to make some comments on the paper by Hughes-Davies (*Archives*, 1979, 54, 59). I think there are several points that need to be made, in view of his allegations that neonatal intensive care is of little benefit.

Firstly, his figures are not as good as he would like to make them. For infants of birthweights 1001–1500 g, apart from one very good year in 1976 which all units get periodically, his figures are considerably worse than those quoted currently from neonatal intensive care units in the UK. Furthermore his figures for 1500–2000 g report a neonatal mortality which is again two to three times