

Current topics

Perinatal mortality

PAMELA A DAVIES

Department of Paediatrics and Neonatal Medicine, Hammersmith Hospital, London

There are 20 conclusions and 152 recommendations in the recently published House of Commons Report on Perinatal and Neonatal Mortality.¹ The Social Services Committee responsible was chaired by Mrs Renée Short. It took evidence from organisations and individuals connected with the perinatal services; and heard many of them when visiting the two regions in England and Wales with the worst rates—West Midlands and Northern. Three specialist advisers helped throughout the enquiry and with drafting. The parliamentarians listened to many facts and many strongly held opinions, and have produced a report that asks for certain immediate actions and a special allocation of funds. The factors causing perinatal and neonatal mortality were divided into two broad categories—socioeconomic and medical. The precise attributes of poverty which are so damaging have never been clearly defined but the Short Committee expressed its firm belief that 'well-directed interventions' could overcome much social disadvantage. Their recommendations were grouped into three classes: those costing little or nothing which should be implemented immediately, those also requiring immediate action but costing money, and the remainder.

They started with antenatal care, and urged that every possible means should be used to get mothers to present themselves to antenatal clinics in the early weeks of pregnancy. Health visitors, community midwives, and social workers should have the major responsibility for this and a special group from the primary care team established in each district to find, counsel, and follow the high-risk mothers. Each woman should be seen at least twice during her pregnancy by a consultant obstetrician. Proof that the much vaunted French financial incentives had played a major role in reducing perinatal mortality in that country was thought to be unconvincing and the Committee did not favour their introduction here. They recommend however that pregnancy supplements should be paid routinely to women receiving supplementary benefits, or to families on

low wages. Education of mothers (and prospective mothers) in schools, work places, and practitioners' surgeries should proceed apace and include intensification of the Health Education Council's campaign to underline the advantages of early antenatal care and the dangers of smoking and of alcohol in pregnancy. The Trades Union Council was seen as a major potential force in urging employers to make special provision for pregnant working women, as one or two pioneering companies have already done.

Home delivery and isolated general practitioner units should be phased out, selection for smaller consultant units improved, and the majority of women delivered in large units. Continuous recording of the fetal heart in labour and the availability of a 24-hour epidural service was recommended for all. Every delivery suite should have a consultant obstetrician whose main responsibility was the supervision of its practice; and 24-hour anaesthetic, obstetric and paediatric cover, immediate access to a suitable operating theatre, and proper facilities for the early care of sick babies were essential adjuncts.

The provision of neonatal intensive care cots was found to be woefully inadequate and by no means all of the regional centres had yet been designated; subregional centres, carefully sited geographically, should also be given the facilities and staff for short-term intensive care. An immediate increase to 400 intensive care cots from the present situation of under 200 was necessary, although the final number eventually needed to take account of the rising birth rate would be nearer 700. Neonatal surgical facilities should be concentrated in regional units. Back-up facilities available throughout the 24 hours from such supporting services as radiology, bacteriology, and haematology must be considered a *sine qua non* for the regional units. Full-time perinatal pathologists, at least one to each region, should have appointments in the regional centres and supervise the regional services for perinatal pathology.

The Sheldon report² advocated some years ago a

ratio of 3 nurses to every intensive care cot and 1 to every special care cot, but that level of staffing has never been implemented in many nurseries. The Short Committee nevertheless felt this was an essential minimum to be put into immediate effect, and heard evidence from the South-east Thames Region that the provision should be increased to 5.5 nurses (two-thirds experienced) and 1.5 nurses respectively, partly because of the shorter working week. The House of Commons Committee recommended that infants with minor problems should, if possible, be nursed alongside their mothers on postnatal wards; and there should be no visiting restrictions imposed on the parents, siblings and, when appropriate, other family members of infants in special and intensive care nurseries. Sophisticated modern technology and surgery should not, it was advised, 'be used for the salvage of severely malformed or brain-damaged infants unless there are overwhelming reasons for doing so'; and the parents should be involved in discussions about these matters. Psychiatric and social worker support should be available for the parents of babies in these nurseries, and mothers should be able to live in before the infants' discharge home. The Committee felt some clinical medical officers and practitioners could help with routine examination of the healthy newborn.

There were many other facets of the perinatal and neonatal services touched on by the Committee. Thus a defined speciality of perinatal medicine did not seem really practicable; but neonatal paediatrics should be fully recognised as a paediatric subspecialty. A minimum of 50 consultant neonatal paediatricians should be appointed in the next 2 years, while the consultant paediatrician establishment should be increased urgently to the number (746) recommended by the Court report.³ The Committee agreed that much of the hospital work done at present by junior staff should be done by the seniors. New committees and working parties were recommended: a maternity services committee to unify general practitioner and obstetric services, monitor district maternity practices, and carry out regular audit of perinatal deaths; regional perinatal working parties to monitor obstetric and neonatal work in each region and to rationalise their services; and a DHSS body to be called the Maternity Services Advisory Committee to represent the interests of obstetricians, neonatal paediatricians, practitioner-obstetricians, and midwives. Research, teaching, and the standardised collection of data were to be greatly encouraged. Genetic services appropriate to the current state of knowledge must be established.

Nearly two-thirds of the 152 recommendations fall

into the category requiring little or no extra expenditure, and just over one-quarter require money—by far the largest portion of it for doctors' salaries, the rest for extra nursing staff, for an extended midwifery training, for equipment, and for the services supporting the regional perinatal units. A special allocation of funds is recommended, giving the greatest share to those areas of social deprivation which have the highest perinatal and neonatal mortality.

This Committee was convened, although several others (Sheldon,² Court,³ Peel,⁴ Oppé⁵) had already investigated the needs of the perinatal and neonatal services, 'because of mounting public concern that babies were unnecessarily dying or suffering permanent damage during the latter part of pregnancy and the earliest part of infancy' . . . because 'mortality rates in England and Wales were falling more slowly than in any other developed countries' . . . and because 'there was such inequality there of rates in different socioeconomic groups and areas.'

There is no doubt about the last; perinatal mortality in social class 5 is double that of social class 1⁶ and the disparity has been underlined in successive national surveys.⁷⁻⁹ The relative situation between different areas of the country has changed little since Sir Dugald Baird¹⁰ displayed them in his Ingleby Lectures 20 years ago. Regarding perinatal mortality, first-week mortality, and neonatal mortality in different countries, the report presents graphs showing that in recent years England and Wales have been overtaken by France and Japan for perinatal mortality, retain their place for first-week mortality figures relative to four other countries, and have been overtaken by France and Denmark for neonatal mortality. In addition, the neonatal mortality rate of Northern Ireland has been bettered by Eire and Belgium, and that of Scotland by Eire and France. There are well-known differences of definition for perinatal mortality between countries, making exact comparisons difficult, but if one presumes they remain consistent over the years, then comparison of trends has validity.

Low birthweight infants (<2500 g) are responsible for over two-thirds of first-week deaths and it is the low birthweight rate that is mainly responsible for regional and international mortality differences. In England and Wales it has consistently remained between 6 and 7% of births since 1953 when accurate figures first became available (E Alberman, 1980, personal communication).¹¹ Sweden, where fetal heart monitoring is only variably used, fetal scalp blood sampling rarely practised, and ultrasound still a novelty,¹² has the lowest perinatal, first-week and first-month mortality rates, with only 4 to 5% of low birthweight infants.¹³ However, Alberman¹⁴

pointed out that even allowing for the high frequency of congenital malformations, neonatal deaths in the UK for infants of >2500 g were 69% higher than for Sweden, applying 1978 birthweight specific rates. In that country though, 'about 99% of pregnant women attend for all planned visits from the beginning of pregnancy until the infant is 4 years old. There is no reward, no compulsion; it is just done.'¹² This suggests an educated consumer satisfaction very different from things here where in certain areas at least one-fifth of pregnant women may not present themselves for antenatal care before 20 weeks' gestation,¹⁵ and where attendance at child health clinics is missed by those who most need the supervision.¹⁶ When we hear that Swedish clinics are within easy reach of everyone, that the relationship between nurse and local population is close, that the clinics provide uniform recommendations for certain circumstances, and doctors work to a pattern¹² it is easy to understand why, although naturally such homogeneity is much easier to impose in a prosperous country of just over 8 million people than in Britain. Those mothers of low socioeconomic class in this country who eschew antenatal care often do so for entirely understandable reasons, and it is thought the great majority of them know very well the responsibility they carry for their children's health.¹⁷ The component parts of antenatal care that are so beneficial are not understood. Indeed its productivity where prediction or detection of obstetric problems is concerned is surprisingly low.¹⁸ Chalmers *et al.*¹⁹ are probably right to re-emphasise Ballantyne's original dictum that its primary object was to remove anxiety and dread from what after all should be a normal part of life. Thus humanising the system and abolishing cattle market conditions (the Select Committee's own phrases) must surely be accorded every priority.

The contention that babies are dying unnecessarily or suffering permanent damage as a result of inadequate care was undoubtedly the strongest motivating force behind this report. The first—that there are preventable deaths—is certainly true; such deaths surely occur to some extent at all ages in a hospital service, and are no less regretted. The simple analysis of perinatal deaths by birthweight and major pathological subgroups suggested by Wigglesworth²⁰ would go much further towards pointing out the avoidable factors to obstetricians and paediatricians than the Committee's proposed confidential (and cumbersome) enquiries. The Committee was repeatedly advised that improved perinatal services would result in a lower tally of handicap. Detailed figures were submitted regarding screening programmes for neural tube defects and Down's syndrome. The cost of a prenatal diagnosis and

pregnancy termination programme for neural tube defects carried out *in a high-risk area such as South Wales* (writer's italics) would be exceeded in its second and every following year by the savings made in removing the need for care of severely handicapped survivors.¹ A similar programme for Down's syndrome would be cost effective if applied to mothers of 40 years or more, *but not for those aged 35–39 years*¹ (writer's italics).

The bulk of severe disabling handicap in childhood is not caused by perinatal factors,^{21–23} but it is doubtful if this was sufficiently emphasised to the Committee. It realised that if the handicap rate remained unchanged, the expected rise in birth rate during the 1980s would mean a large additional financial burden for the country to bear. But calculations were made which purported to show that improved perinatal care would lead to a saving of £152 000 000 over a 10-year period. This figure was arrived at by assuming that the perinatal mortality rate would fall by 1/1000 total births yearly, and that improved perinatal services would lead to a fall in the severely handicapped of 0·1/1000 per year, or over 3500 such children using the projected birth figures for the period. There is unfortunately no firm evidence on which to base the latter supposition, and some which could be interpreted as suggesting a different state of affairs. The Swedish cerebral palsy survey²⁴ certainly showed a continuing decline in the total incidence of all forms of cerebral palsy in one geographically defined area between 1954 and 1970. The nearly 50% reduction was largely due to a significant drop in cases of spastic/ataxic diplegia among low birthweight children, and not to any pronounced reduction among normal weight infants who must comprise as we have seen 95% of births in that country. The data have recently been extended from 1971 to 1974 and now show a slight increase in mild diplegic cases, mainly among infants weighing between 1000 and 1500 g.²⁵ Evidence from Western Australia²⁶ suggested that low birthweight and small-for-gestational-age infants with neonatal illness treated in neonatal intensive care units had significantly increased their contribution to cerebral palsy cases between 1968 and 1975, a time of falling mortality. A decrease among normal weight infants was thought to be associated more with a more favourable birthweight and maternal age distribution than with improving care.²⁷ Cerebral palsy cases in the Southern Health Board area of Eire showed no significant change between 1966–70 and 1971–5, a period of falling perinatal mortality.²⁸ This subject is discussed in greater detail by Macfarlane and details of the Oxford cerebral palsy survey added.²⁹ Such population surveys should carry more weight than

reports from individual small neonatal units; nevertheless such evidence as there is from them does not suggest a decrease in handicap with increasing complexity of care.³⁰⁻³² Thus it has to be said that frequently repeated statements that modern methods of perinatal intensive care are leading to a striking reduction in handicap must at present be considered uncritical, and almost certainly untrue. If the projected rise in births occurs, the number of handicapped children requiring support is also likely to rise.

The parlous plight of the country's economy is common knowledge, and it seems likely that the special allocation of funds asked for by the Select Committee will not be forthcoming. The most obviously preventable of the perinatal deaths still occurring are those due to asphyxia in labour; and it is there that the experienced supervision of the mother envisaged by the Committee, together with prompt resuscitation of the infant and conservation of his body temperature at birth, would pay greatest dividends. If the extra staff asked for cannot be made available and if anything is to be achieved, obstetricians and paediatricians, together with anaesthetists, must be willing to redeploy their services to see that 24-hour care of this kind is maintained everywhere in the country. It should be possible in many places. Prevention of preterm labour, a topic of much active research at present, would of course also lead to a reduction in neonatal mortality.³³ But preterm labour and low birthweight are to a large extent part of the basic problem—poverty. Townsend³⁴ has calculated that by the state's own definition, between 15 and 17½ million of our population of some 55½ million were in or near poverty in the 1970s. Stacey³⁵ has pointed out that doctors have failed to act as a pressure group to alleviate the causes of the large social class differences in mortality and morbidity in the UK, trained as they are to deal with disease. It is also they alone who regulate the technical intensity at which medicine is practised,³⁶ and hence its ever increasing costs. With finite resources, paediatricians responsible for newborn care have to decide on their course of action. Either they go on grabbing whatever available money there is to keep or set up their regional empires, many of which spend a large proportion of their time keeping ever smaller and more immature infants alive (for a future of uncertain quality sometimes); or they urge with all the force at their disposal that available resources should be used where they can do most for the health of all children—by improving supporting health services for mothers and infants within *easy and inexpensive reach of all*, by improving the environment for children particularly in inner cities, and by improving education.

References

- Short R, chairman. *Perinatal and neonatal mortality. Second Report from the Social Services Committee 1979-80*. London: HMSO, 1980.
- Department of Health and Social Security. *Report of the expert group on special care for babies*. London: HMSO, 1971.
- Court C D M, chairman. *Fit for the future. Report of the Committee on Child Health Services*. London: HMSO, 1976.
- Department of Health and Social Security. Welsh Office Standing Maternity and Midwifery Advisory Committee. *Report of the subcommittee on domiciliary midwifery and maternity bed needs*. London: HMSO, 1970.
- Department of Health and Social Security. *Report of the Working Party on the Prevention of Early Neonatal Mortality and Morbidity*. Health Circular HC(76)40. London: HMSO, 1976.
- Morris J N. Social inequalities undiminished. *Lancet* 1979; i: 87-90.
- Royal College of Obstetricians and Gynaecologists and the Population Investigation Committee. *Maternity in Great Britain*. London: Oxford University Press, 1948.
- Butler N R, Bonham D G. *Perinatal mortality*. Edinburgh: Livingstone, 1963.
- Chamberlain R, Chamberlain G, Howlett B, Claireaux A. *British births 1970*. London: Heinemann, 1975.
- Baird D. The evolution of modern obstetrics. *Lancet* 1960; ii: 557-64.
- Alberman E. Stillbirths and neonatal mortality in England and Wales by birthweight 1953-71. *Health Trends* 1974; 6: 14-7.
- Rooth G. Sweden. *Lancet* 1979; ii: 1170-2.
- Wallace H M, Goldstein H. The status of infant mortality in Sweden and the United States. *J Pediatr* 1975; 87: 995-1000.
- Alberman E. Prospects for better perinatal health. *Lancet* 1980; i: 189-92.
- Simpson H, Walker G. When do pregnant women attend for antenatal care? *Br Med J* 1980; 281: 104-7.
- Zinkin P M, Cox C A. Child health clinics and inverse care laws: evidence from longitudinal study of 1878 pre-school children. *Br Med J* 1976; ii: 411-3.
- Graham H. Prevention and health: every mother's business. A comment on child health policies in the 1970s. In: Harris C C, ed. *Sociology of the family: new directions for Britain*. Sociological Review Monograph No 28. University of Keele, 1979.
- Hall M H, Chng P K, MacGillivray I. Is routine antenatal care worthwhile? *Lancet* 1980; ii: 78-80.
- Chalmers I, Oakley A, Macfarlane A. Perinatal health services: an immodest proposal. *Br Med J* 1980; 280: 842-5.
- Wigglesworth J S. Monitoring perinatal mortality. A pathophysiological approach. *Lancet* 1980; ii: 684-6.
- Rutter M, Tizard J, Whitmore K. *Education, health, and behaviour*. London: Longman, 1979; 285-96.
- Alberman E. Main causes of major mental handicap: prevalence and epidemiology. In: Elliott K, O'Connor M, eds. *Major mental handicap: methods and cost of prevention*. Ciba Foundation Symposium 59 (new series). Amsterdam: Elsevier, North-Holland, 1978; 3-16.
- Brimblecombe F S W, Rubissow J, Edelsten A D, Jones J. A review of infant handicap and neonatal mortality in relation to the use of a special-care unit. In: Brimblecombe F S W, Richards M P M, Robertson N R C, eds. *Separation and special care baby units*. Clinics in Developmental Medicine No 68. London: Heinemann, 1978: 69-81.

- ²⁴ Hagberg B, Hagberg G, Olow I. The changing panorama of cerebral palsy in Sweden 1954–1970. I. Analysis of the general changes. *Acta Paediatr Scand* 1975; **64**: 187–92.
- ²⁵ Hagberg B. Epidemiological and preventive aspects of cerebral palsy and severe mental retardation in Sweden. *Eur J Pediatr* 1979; **130**: 71–8.
- ²⁶ Dale A, Stanley F J. An epidemiological study of cerebral palsy in Western Australia 1956–1975. II. Spastic cerebral palsy and perinatal factors. *Dev Med Child Neurol* 1980; **22**: 13–25.
- ²⁷ Stanley F J. An epidemiological study of cerebral palsy in Western Australia 1956–1975. I. Changes in total incidence of cerebral palsy and associated factors. *Dev Med Child Neurol* 1979; **21**: 701–13.
- ²⁸ Cussen G H, Barry J E, Moloney A M, Buckley N M, Crowley M, Daly C. Cerebral palsy: a regional study. *J Ir Med Assoc* 1978; **71**: 568–72.
- ²⁹ Macfarlane J A. Studies of cerebral palsy. In: Chalmers I, McIlwaine G, eds. *Perinatal audit and surveillance*. London: Royal College of Obstetricians and Gynaecologists, 1980.
- ³⁰ Stewart A, Turcan D, Rawlings G, Hart S, Gregory S. Outcome for infants at high risk of major handicap. In: Elliott K, O'Connor M, eds. *Major mental handicap: methods and costs of prevention*. Ciba Foundation Symposium 59 (new series). Amsterdam: Elsevier, North-Holland, 1978: 151–71.
- ³¹ Jones R A K, Cummins M, Davies P A. Infants of very low birthweight. A 15-year analysis. *Lancet* 1979; **i**: 1332–5.
- ³² Kitchen W H, Rickards A, Ryan M M, *et al*. A Longitudinal study of very low-birthweight infants. II. Results of controlled trial of intensive care and incidence of handicaps. *Dev Med Child Neurol* 1979; **21**: 582–9.
- ³³ Rush R W, Keirse M J N C, Howat P, Baum J D, Anderson A B M, Turnbull A C. Contribution of preterm delivery to perinatal mortality. *Br Med J* 1976; **ii**: 965–8.
- ³⁴ Townsend P. *Poverty in the United Kingdom. A survey of household resources and standards of living*. London: Penguin, 1979: 895.
- ³⁵ Stacey M. Realities for change in child health care: existing patterns and future possibilities. *Br Med J* 1980; **280**: 1512–5.
- ³⁶ Anonymous. The other crisis of health care. *Br Med J* 1978; **i**: 939–40.

Correspondence to Dr Pamela A Davies, Department of Paediatrics and Neonatal Medicine, Hammersmith Hospital, Du Cane Road, London W12 0HS.

Received 5 September 1980