treatment might prevent a comparatively large number of cases of overt infection.[3] The advantages are less obvious in a population with a low prevalence such as occurs at Northwick Park. There are, however, effects of bacteriuria on the fetus which must be considered. These include an increase in midtrimester abortion, growth retardation, and preterm delivery.[20,21] The outcome of this study suggests that the decision on whether or not it is worth while to screen pregnant women for bacteriuria depends on the characteristics of the local population, particularly on the prevalence of bacteriuria.

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Neurodevelopmental outcome in babies weighing less than 2001 g at birth

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Abstract

From 1976 to 1980, 1034 infants with birth weights of 500-2000 g were cared for in the neonatal medical unit; 724 were discharged. Twenty (2·8%) subsequently died and 654 (90·3%) were followed up at a median age of 3 years 3 months. Fifty five (7·6%) survivors had major neurodevelopmental handicaps not attributable to congenital anomalies. Increasing prevalence of major handicap was found with decreasing birth weight and gestation. Children with birth weights of less than 1251 g had a higher incidence of all major disabilities. Handicapped children with a birth weight less than 1251 g were more likely to have blindness, deafness, multiple disabilities, and more severe cerebral palsy. There were 146 (20·2%) children with minor disabilities: neurological impairments (n=11), borderline results on psychometric testing (n=18), visual impairments (n=52), hearing impairments (n=40), and speech impairments (n=71). Children weighing less than 1251 g at birth had a higher incidence of minor visual and hearing impairments. In 389 children the mean Griffiths quotient was 101·6 (SD 17·2) (range 50-147), and 158 children had a mean Wechsler preschool and primary intelligence quotient of 101·8 (13·2) (range 56-127): these quotients did not vary with birth weight or gestation but did vary with socioeconomic group, schooling, and family structure.

During the study period an improving prognosis in terms of both survival and handicap was observed in children weighing less than 1251 g at birth.

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Introduction

Neurodevelopmental follow up surveys of babies born to mothers who live in a single geographical area provide useful epidemiological information about childhood handicap. In investigations of handicap among very low birthweight infants, however, the geographical base must be large or the study prolonged to generate a sufficient number of surviving children. In addition, unless ill babies in the geographical population have been exposed to similar standards of neonatal care it is difficult to interpret the relation between shifts in mortality and neurodevelopmental outcome. Thus one hospital may contribute excess mortality but low morbidity among survivors and another may contribute low mortality but excess morbidity. Individual neonatal units report an increase in the survival of low birthweight infants associated with the introduction of neonatal intensive care. It is essential for these units to monitor changes in neurodevelopmental outcome among their survivors.[1]

Regional neonatal units can provide detailed information on large numbers of very low birthweight survivors who are exposed to a consistent and defined standard of care. Trends in mortality and neurodevelopmental outcome can thus be observed against the

evolution of care without the confounding factors noted above. We analysed neurodevelopmental outcome in a hospital based population of 724 infants who were discharged who weighed less than 2001 g at birth and were cared for during the five years immediately after neonatal intensive care was introduced and the unit established as the regional perinatal referral centre.

Patients and methods

We studied 1034 infants with birth weights of 500-2000 g born between 1 January 1976 and 31 December 1980 who were cared for in the neonatal medical unit at this hospital. The infants came from three sources: those whose mothers had been booked for delivery at this hospital (n=628), antenatal referrals (n=91), and neonatal referrals (n=315).

Neonatal care was directed by one consultant paediatrician (MLC). During the five years of the study intensive care evolved such that by 1978 there was a more aggressive policy of weaning from ventilators, using intravenous antibiotics, stopping milk feeds in babies with tachypnoea, and using transcutaneous oxygen monitoring; by 1979 aminophylline, indomethacin, and pancuronium had been introduced; and by 1980 ultrasound brain scanning was available. Most infants who were referred were critically ill with respiratory failure, and none were transferred solely because of "prematurity."

Follow up—Altogether 724 infants survived to be discharged home. Developmental follow up information was available on 674 (93·1%) at a median age of 3 years 3 months (range 2 years to 6 years 9 months); this figure included 20 children who died after discharge. The information on the children who survived was derived from four sources. (1) A total of 570 children were examined (NM) and completed a behavioural questionnaire and a psychometric test. Children under 4 years were tested with Griffiths's mental developmental scales to determine their Griffiths quotient, and older children had their intelligence quotient measured with the Wechsler preschool and primary scales of intelligence. Children with borderline results or with abnormal findings were reviewed by a paediatric neurologist (SWD'S), an ophthalmologist, or an audiologist as appropriate to confirm the findings. (2) In 22 cases follow up information was obtained from hospital records. (3) For 28 children who were no longer resident in the North Western region their mothers replied to a questionnaire and indicated that there was no medical or neurodevelopmental problem. (4) For 34 children information was obtained from community health records.

Classification of handicap—We classified neurodevelopmental outcome into three groups: major handicap, minor impairments, or normal. Major neurodevelopmental handicap comprised any of the following disabilities: cerebral palsy, developmental retardation (Griffiths quotient or intelligence quotient <71), blindness or deafness sufficient to warrant special education, and hydrocephalus. Minor neurodevelopmental impairments comprised squints, minor degrees of refractive error or hearing loss, abnormalities of muscle tone without disability, poor fine motor function (clumsiness), non-febrile fits, and borderline results of psychometric tests (Griffiths quotient or intelligence quotient 71-85).

Analysis of data and exclusions—Among the 1034 live births were 40 (3·9%) infants with lethal malformations who died shortly after birth and who for the purpose of this study were excluded from calculations of mortality and morbidity. In 10 children who survived to be discharged home major handicaps were attributable to important congenital abnormalities (table I). These children were not considered further. The ages of children at follow up were calculated from the expected date of delivery. Information obtained at follow up was combined with perinatal data extracted from the clinical records and coded on computer cards for analysis with the statistical package for the social sciences. The statistical test used for each comparison is detailed below. Comparisons of psychometric data were made with the Mann-Whitney U test unless otherwise specified.

TABLE I—*Handicap and major congenital abnormalities in 10 children who survived but were not included in study*

Case No	Birth weight (g)	Gestational age (weeks)	Sex	Presence of: Developmental delay (Griffiths quotient)	Cerebral palsy	Sensory loss	Congenital abnormality
1	1800	37	M	+(68)			Tricuspid atresia
2	1800	37	F	+(66)			Trisomy 21
3	1500	31	F	+(50)			Trisomy 21
4	1920	35	F	+(50)	+	+	?Cornelia de Lange syndrome
5	1740	38	F	+(85)		+	Congenital cytomegalovirus infection
6	1940	38	F	+(50)			Multiple dysmorphisms
7	1280	30	M	+(61)			Nephrogenic diabetes insipidus
8	1980	35	F	+(50)	+		Congenital hydrocephalus
9*	1000	28	M	+	+	+	Osteopetrosis
10*	1846	35	F	+			Trisomy 18

*Died at 35 months (case 9) and 22 months (case 10).

TABLE II—*Numbers of low birthweight (<2001 g) babies born at this centre and referred, 1976-80*

	1976	1977	1978	1979	1980
Total No of births	4141	4356	4508	4408	4391
No (%) of liveborn infants weighing:					
<2001 g	91 (2·2)	136 (3·1)	149 (3·3)	156 (3·5)	187 (4·3)
<1501 g	25 (0·6)	43 (1·0)	71 (1·6)	73 (1·7)	80 (1·8)
No of antenatal referrals	2	7	16	19	47
No of neonatal referrals	22	37	81	85	90

Results

From 1976 to 1980 the annual number of babies booked and born at this centre weighing less than 2001 g rose progressively from 71 (2·2% of live births) to 187 (4·3%) ($\chi^2=29·7$, df=4, $p<0·001$). The number weighing less than 1501 g rose from 25 (0·6%) to 80 (1·8%) ($\chi^2=34·0$, df=4, $p<0·001$). Table II shows the rising contribution of antenatal transfers to the babies born at this centre and the progressive increase in neonatal referrals. One third of the study population were referred in the neonatal period.

As expected there was a progressive increase in survival rates with increasing birth weight, ranging from 7·0% in those weighing 500-750 g to 91·5% in those weighing 1751-2000 g (table III). A similar trend was seen in the relation between survival and advancing gestation up to 36 weeks (table IV). There was no significant annual trend in survival rates among babies weighing 1251-2000 g, whereas among those weighing less than 1251 g there was a trend towards improved survival. The effect of this, coupled with the population trends outlined above, was that during the three years 1976-8, 44 babies weighing less than 1251 g survived to be discharged, whereas during the two years 1979-80, 82 survived.

MAJOR NEURODEVELOPMENTAL HANDICAP

Major neurodevelopmental handicap occurred in 55 (7·6%) of the 724 babies who were discharged home. The incidence of major handicap varied with both birth weight and gestation but was not related to sex or the proportion of infants who were small for dates (below the 10th centile) among those of less than 37 weeks' gestation. The proportion of surviving

TABLE III—*Survival and incidence of major handicap related to birth weight*

Birth weight (g)	No of live births	No with lethal malformations	No of survivors	% Survival*	No with congenital abnormality	No with major handicap	Incidence of major handicap† (%)	No of survivors without major handicap (% live births)
500-750	46	3	3	7·0		1	33·3	2 (4·3)
751-1000	117	6	43	38·7	1	9	21·4	33 (28·2)
1001-1250	148	9	79	56·8		15	19·0	64 (43·2)
1251-1500	202	5	147	74·6	2	10	6·9	135 (66·8)
1501-1750	207	9	172	86·9	1	7	4·1	164 (79·2)
1751-2000	314	8	280	91·5	6	13	4·7	261 (83·1)
All <2001 g	1034	40	724	72·8	10	55	7·7	659 (63·7)

*Corrected for number with lethal malformations.
†Corrected for number with congenital abnormality.

TABLE IV—*Survival and incidence of major handicap related to gestational age*

Gestation in weeks	No of live births	No with lethal malformations	No of survivors	% Survival*	No with congenital abnormality	No with major handicap	Incidence of major handicap† (%)	No of survivors without major handicap (% live births)
23-24	14		0	0				
25-26	84	5	26	32·9		8	30·8	18 (21·4)
27-28	151	9	68	47·9	1	10	14·9	57 (37·7)
29-30	172	2	114	67·1	1	12	10·6	101 (58·7)
31-32	223	9	175	81·8	1	13	7·5	161 (72·2)
33-34	193	7	164	88·2		6	3·7	158 (81·9)
35-36	125	4	115	95·0	3	3	2·7	109 (87·2)
37-42	72	4	62	91·2	4	3	5·2	55 (76·4)
Total	1034	40	724	72·8	10	55	7·7	659 (63·7)

*Corrected for number with lethal malformations.
†Corrected for number with congenital abnormality.

TABLE V—*Incidence of disabilities in 55 children with neurodevelopmental handicap (figures are numbers (percentages) of children)*

	Total (n=724)	Birth weight 500-1250 g (n=125)	Birth weight 1251-2000 g (n=599)	p Value*
Children with major handicap	55 (7·6)	25 (20·0)	30 (5·0)	0·0001
Disabilities:				
Blindness	7 (1·0)	6 (4·8)	1 (0·2)	0·001†
Deafness	7 (1·0)	6 (4·8)	1 (0·2)	0·001†
Griffiths quotient/IQ<70	32 (4·4)	15 (12·0)	17 (2·8)	0·001
Hydrocephalus	10 (1·4)	6 (4·8)	3 (0·5)	0·002†
Cerebral palsy	31 (4·3)	11 (8·8)	20 (3·3)	0·05
Associated impairments:				
Non-febrile fits	12	6	6	NS
Clumsiness	6	4	2	NS
Mean No of major disabilities/child	1·6	1·8	1·4	

IQ=Intelligence quotient.
*Infants weighing less than 1251 g compared with those of 1251-2000 g by χ^2 test with Yates's correction or †Fisher's exact test.

children with handicaps decreased from 30·8% among those born at 25-6 weeks' gestation to 2·7% among those born at 35-6 weeks. The incidence of handicap among live births also decreased with advancing gestational age, ranging from 9·5% at 25-6 weeks to 2·4% at 35-6 weeks. As the study population included only babies weighing less than 2001 g those born at term (37-42 weeks) were small for dates and interrupted the trend towards decreasing mortality and incidence of handicap with advancing gestational age.

The incidence of handicap among survivors similarly decreased with increasing birth weight. The importance of using 250 g categories was exemplified by taking a cut off point of 1250 g: below this the incidence of handicap among survivors in different birthweight categories ranged from 19·0% to 33·3%, and above it the corresponding incidence ranged from only 4·1% to 6·9%. Among the total population of survivors weighing less than 1251 g the incidence of handicap was 20% (25/125), whereas the corresponding incidence among those weighing more than 1250 g was only 5·0% (30/599) ($\chi^2=30·25$, df=1, $p<0·001$). When handicapped infants were considered as a proportion of live births the incidence of handicap seemed to decrease with increasing gestation, but this was a function of poor rates of survival as the proportion of survivors with handicaps actually rose.

The value of dividing our study population at 1250 g was emphasised by the fact that among surviving babies who weighed more than 1250 g the annual incidence of handicap was remarkably stable and averaged 5·6% during the five year period. In contrast, among survivors weighing less than 1251 g the incidence of handicap tended to fall: in the three years 1976-8, 26·7% of survivors (12/45) had a major handicap, whereas over the two years 1979-80 only 15·9% (13/82) were handicapped. If the rate of handicap had not fallen during the last two study years nine further children might have been handicapped.

INDIVIDUAL DISABILITIES

Table V shows the individual disabilities observed among the 55 children with major handicap. Cerebral palsy and developmental retardation were the most common, occurring in over half of the handicapped children. Multiple disabilities occurred in 22 (40·0%), the most common combination being cerebral palsy and developmental retardation. In addition, among the handicapped children there was a history of non-febrile fits in 12 (21·8%) and clumsiness in six (10·9%).

The incidence of each disability was significantly higher among surviving children weighing less than 1251 g than among those with a heavier birth weight. Both blindness and deafness were especially overrepresented in the lighter birthweight group. The distribution of individual disabilities among the survivors was also influenced by birth weight. Five (20·0%) handicapped children weighing less than 1251 g had three or more major disabilities compared with only one (3·3%) weighing 1251-2000 g. The distribution of the individual types of cerebral palsy was unequal: of the 11 children with cerebral palsy weighing less than 1251 g, five had a spastic quadriplegia, three a spastic diplegia, two a spastic hemiplegia, and one athetoid cerebral palsy. In contrast, of the 20 children with cerebral palsy weighing 1251-2000 g, only five had a spastic quadriplegia while 11 had a spastic diplegia.

TABLE VI—*Minor impairments in the 599 survivors examined who had no major neurodevelopmental handicap (figures are numbers (percentages) of children)*

Minor impairments	Total (n=599)	Birth weight: 500-1250 g (n=87)	Birth weight: 1251-2000 g (n=512)	p Value*
Neurological impairments	11 (1·8)	4	7	NS
Borderline Griffiths quotient/IQ	18 (3·0)	4	14	NS
Non-febrile fits	4 (0·7)	1	3	NS†
Visual impairments	52 (8·7)	13	39	<0·05
Hearing impairments	40 (6·7)	12	28	<0·01
Speech impairments	71 (11·9)	15	56	NS

IQ=Intelligence quotient.
*Infants weighing less than 1251 g compared with those of 1251-2000 g by χ^2 test with Yates's correction or †Fisher's exact test.

TABLE VII—*Effect of environmental influences on psychometric test scores*

Group	Griffiths scores: No†	Griffiths scores: Mean (SD)	Griffiths scores: p Value	Wechsler preschool and primary scales of intelligence scores: No‡	Wechsler preschool and primary scales of intelligence scores: Mean (SD)	Wechsler preschool and primary scales of intelligence scores: p Value
Socioeconomic group:						
A (classes I and II)	85	104·6 (19·3)		32	107·5 (11·0)	
B (class III)	147	102·2 (16·1)		79	101·9 (13·7)	
C (classes IV and V)	87	100·2 (15·7)		31	98·2 (12·6)	
D (single mothers)	41	95·8 (18·8)	0·002*	15	97·7 (12·1)	0·013*
Nursery education§:						
None	171	103·1 (11·2)		6	95·2 (8·6)	
>3 Months	142	108·7 (11·9)	0·002	53	102·3 (14·7)	
Family structure:						
Living with both natural parents	305	102·7 (16·5)		130	102·2 (13·5)	
Otherwise	61	94·8 (20·0)	0·003	28	99·7 (12·0)	
Rank order of child:						
First	195	103·3 (18·1)		72	103·3 (14·1)	
Second or more	168	99·8 (15·5)	0·011	85	100·5 (12·4)	
No of siblings:						
None	125	104·3 (15·2)		30	104·3 (13·7)	
One	125	100·9 (19·3)		76	103·6 (12·2)	
More than one	114	99·6 (16·1)		52	97·6 (13·6)	0·041*

*Significances tested with Kruskal-Wallis one way analysis of variance.
†Altogether 389 children were tested but only 360 completed all parts of the questionnaire.
‡Altogether 158 children were tested but only 157 completed all parts of the questionnaire.
§Preschool children only.

MINOR IMPAIRMENTS

Of the 724 survivors, 146 (20·2%) were found to have one or more minor impairments (table VI). The 11 children with neurological impairments had asymmetry of muscle tone (one), monoplegia (two), resolved unilateral sensory inattention (one), and clumsiness (seven). The visual impairments were unilateral retinopathy of prematurity (one), myopia (12), and squints (39). Of the 71 children with delayed or impaired speech, 45 were having speech therapy when tested and a further 17 received therapy subsequently. When compared with those of birth weight 1251-2000 g, children weighing less than 1251 g had a significant excess of visual impairments (14·9% *v* 7·6%; $\chi^2=4·15$, df=1, $p<0·05$) and hearing impairments (13·8% *v* 5·5%; $\chi^2=6·99$, df=1, $p<0·01$). Children of less than 1251 g had no excess of either minor neurological impairments or fits.

RESULTS OF PSYCHOMETRIC TESTING

Full psychometric testing was carried out on 547 children (96% of the 570 seen, or 75·6% survivors); 389 were tested with the Griffiths scales at a median age of 2 years 10 months (range 1 year 6 months to 6 years 9 months) and 158 with the Wechsler preschool and primary scales of intelligence at a median age of 4 years 8 months (range 4 years to 6 years 3 months). The mean (SD) Griffiths quotient was 101·6 (17·2) (range 50-147). These figures were artificially lowered by the inclusion of all 13 children with severe retardation, who were allocated a nominal score of 50. When those with cerebral palsy or sensory impairment were excluded the mean Griffiths quotient was 105·6 (11·8). The mean intelligence quotient (Wechsler preschool and primary scales of intelligence) was 101·8 (13·2) (range 56-127). Children weighing less than 1251 g had slightly lower mean scores (Griffiths quotient 98·7 (20·9), intelligence quotient 98·2 (17·9)), compared with those weighing 1251-2000 g (Griffiths quotient 102·1 (16·2), intelligence quotient 102·0 (12·9)). Neither overall nor subscale scores varied significantly when analysed by birth weight or gestation.

Children who might commonly be classified as small for dates, having birth weights below the 10th centile for their gestational age, had similar scores on psychometric testing to those of children above the 10th centile. Within the small for dates group, however, when children with birth weights below the third centile were considered their psychometric scores were reduced: Griffiths quotient 99·2 (18·5) (p=0·002) and intelligence quotient 96·6 (14·4) (NS).

Table VII shows the environmental influences on psychometric scores. The registrar general's classification of socioeconomic class by husband's occupation (1974) was modified and the analysis done for four groups: classes I and II (n=117); class III (n=226); classes IV and V (n=118); and single mothers (n=56). A significant trend towards lower scores in lower socioeconomic groups was observed for both Griffiths and Wechsler scores. Children living with both natural parents scored higher than those with other home arrangements. Higher scores were also found for only children and those who were first in a sibship. Preschool children who were at nursery school had higher Griffiths scores than those not at nursery, but no effect of preceding nursery education could be shown in those at school.

Discussion

Few data are available for the outcome in infants weighing 1501-2000 g as most previous reports have been devoted mainly to those weighing more than 1500 g. Among 124 consecutive survivors weighing 1501-2500 g born at University College Hospital in 1973 no significant handicaps were found.[2] By contrast, in 208 babies weighing less than 2001 g born in Helsinki between 1971 and 1974 mortality was 13% and major handicaps occurred in 6·7%.[3] For the 521 babies weighing 1501-2000 g reported on in this study mortality was 8% and a major handicap occurred in 3·5% of the survivors. The risk of handicap in heavier low birthweight babies cannot be ignored because, compared with very low birthweight babies, their numbers are greater and their survival rates higher.

Close analysis of the study population in 250 g groupings, rather than the conventional 500 g categories, showed that those weighing less than 1500 g were a far from homogeneous group. In terms of both mortality and morbidity those infants with birth weights of 1251-1500 g had outcomes similar to those of the heavier infants, whereas those infants weighing 1001-1250 g tended to have higher mortality and morbidity, resembling infants of less than 1000 g. As in most reports from regional centres our population contained a high proportion of neonatal referrals. The contribution of perinatal transfer to outcome will be discussed in a further report. The overall incidence of handicap in infants weighing less than 1251 g was similar to other published data.[4] Because of the wide differences in neonatal care that exist further detailed comparisons are not valid.

The incidence of handicap is closely related to both gestational age and birth weight. It is often suggested that preterm small for dates infants have a poor neurodevelopmental outcome compared with babies of the expected weight, although previous reports have been far from clear about this.[5] In the present study of babies weighing less than 2001 g a birth weight below the 10th centile for gestational age was not associated with any reduction in scores on psychometric testing or any increase in handicap. The use of the 10th centile, however, is arbitrary, and when the most severely growth retarded babies were considered those falling below the third centile had appreciably reduced psychometric test scores when compared with heavier infants, although there was no excess of children with major handicap.

Children with birth weights of less than 1251 g in this study were at risk of a different range of disabilities compared with infants weighing 1251-2000 g. The high incidence of multiple disabilities in the lighter group is of concern. Five (20·0%) of those with major handicap and weighing less than 1251 g had three or more major disabilities compared with only one (3·3%) of those weighing 1251-2000 g. In addition, major visual and hearing impairments were found almost exclusively among the smaller infants. This emphasises the need for multidisciplinary follow up of very small babies.

Spastic diplegia has been the type of cerebral palsy classically associated with preterm birth since its first description by Little in 1862. Indeed, the prevalence of diplegia has been used as an index of the efficacy of neonatal care.[6] Spastic diplegia was the most common cerebral palsy among children with birth weights of 1251-2000 g in the present study. Among children of less than 1251 g the commonest cerebral palsy, however, was not diplegia but quadriplegia. Furthermore, among four recent studies of survivors who weighed less than 1000 g at birth no clear association of extremely low birth weight with any particular form of cerebral palsy was observed, although, overall, quadriplegia was the most common.[7-10] This finding has implications for the long term care of extremely low birthweight babies because quadriplegia is a more severe disability than diplegia and is frequently associated with severe psychomotor retardation and almost total dependency on the family or care givers. Thus the recent improvements in survival of the very small baby are associated with more complex and severe handicaps in the survivors when compared with surviving heavier low birthweight infants.

Although the overall incidence of minor impairments was as high as 20%, only 29 (4·0%) survivors had minor neurological or developmental impairment. Fine motor testing and more detailed educational assessment, however, were outside the remit of this study. Had the children been older at the time of assessment such techniques might have identified more minor problems. The difficulties in interpreting developmental scores and intelligence quotients are emphasised by the finding of several significant extrinsic influences (table VII) that are rarely studied in surveys of perinatal outcome. Parenting arrangements, sibship size, and ranking contributed to the neurodevelopmental outcome as did socioeconomic grouping and preschool education. Indeed, no association between birth weight or gestation and Griffiths's quotient or intelligence quotient was shown. Major influences on neurodevelopmental outcome may lie more in the home and on those factors leading to preterm birth than in perinatal events.[11]

The overall incidence of non-febrile fits was 2·2%, but most of the children who suffered these had pre-existing major disabilities. Thus only four (0·6%) of the survivors who had no major handicap had isolated non-febrile fits. None of these children had any demonstrable disability associated with the fits and thus were not included in the group with major handicap, as has been the practice in many previous surveys. Febrile fits occurred in 17 children (2·6% of the survivors without major handicap). The incidence of both febrile and non-febrile fits was similar to that expected in a normal population.[12]

A high incidence of minor impairments of hearing and visual function was observed in the present study. Five per cent of survivors had appreciable conductive hearing impairment. This was also observed by Kitchen and colleagues,[13] although no clear reason for this is apparent. The incidence of mild sensorineural deafness was certainly underestimated in the present study as no formal audiological screening was used. Squints have been reported in 19% of survivors weighing less than 1501 g at birth[14] and in 13% of otherwise normal preterm infants, compared with only 2·7% of full term infants.[15] Eleven per cent of those weighing less than 1251 g who survived in the present study and 8% of those weighing 1251-2000 g had squints. Myopia was known to be present in 12 children, but this does not represent the true incidence as formal refraction was not undertaken in the absence of visual symptoms. None the less, recognised minor impairments of hearing and vision were significantly overrepresented in the group weighing less than 1251 g at birth.

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