Baby Check and the Avon infant mortality study

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Abstract
Thirty seven sudden, unexpected infant deaths from the Avon study were scored retrospectively for serious illness using a modified version of Baby Check. Three cases (8%) scored very highly. In a small proportion of sudden deaths, Baby Check could have identified serious illness before death and led to hospital admission.

Table 1 Distribution of Baby Check scores in 37 infants dying suddenly and unexpectedly and 74 age matched controls

Illness grade	Score range	No (%) cases	No (%) controls
Well/mildly ill	0-7	33 (89)	66 (89)
Needs advice	8-12	—	4 (5)
Needs to be seen	13-19	1 (3)	3 (4)
Needs to be seen urgently and probably admitted	20+	3 (8)	1 (1)

Baby Check is a scoring system to help parents and doctors quantify serious illness in babies up to 6 months of age.¹ It is based on seven symptoms and 12 signs, each of which has a particular score. The individual scores are added together to give an overall score, and the higher it is the more ill the baby. Scores below 8 indicate ‘the baby is well or only mildly ill and is not likely to need medical attention at the moment’. Between 8 and 12 ‘the baby is unwell but not likely to be seriously ill—contact your doctor, health visitor or midwife for advice’. Between 13 and 19 ‘the baby is ill and needs to be seen by a doctor’. If the score is 20+ ‘the baby may be seriously ill and needs to be seen by a doctor straight away’.

A proportion of babies dying suddenly and unexpectedly may be seriously ill before they die, but with unrecognised symptoms.² To investigate this, the mothers of Avon infants who died suddenly and unexpectedly during a period of nine months, and two age matched controls, were asked about their baby’s symptoms and signs in the 24 hours before the baby’s death or interview respectively.

Methods
The mothers of 38 infants who died suddenly and unexpectedly and 76 matched controls³ were interviewed. Using questions based on Baby Check, all but four items were scored retrospectively: rectal temperature, big toe squeeze, hernia, and crying during assessment. One 12 month old infant who died and his two controls were excluded from the analysis.

Results
Table 1 gives the distribution of Baby Check scores by illness grade for the sudden deaths and for the controls. Eleven per cent of babies in each group scored 8+, but only one control (1%, score 20) as against three of the infants who died (8%, scores 26, 33, and 44) scored 20+. All the infants who died were clearly ill, while the controls were apparently well (table 2).

Table 2 Babies with Baby Check scores of 13+

Score	ID	Group	Findings (*indicates ‘explained’ death)
44	80	Case	*Intracranial haemorrhage and gastrointestinal bleeding (two day history)
33	79	Case	* <i>Staphylococcus aureus</i> septicaemia and pyelonephritis (16 hour history)
26	94	Case	Adenovirus type 5 isolated from nasopharynx
20	95B	Control	Nothing significant, no medication, saw doctor two weeks earlier
16	95A	Control	Nothing significant
15	80A	Control	Reported as having laryngeal stridor from soon after birth
14	72	Case	Respiratory syncytial virus isolated from nasopharynx and trachea
13	82B	Control	Nothing significant

Discussion
A minority of infants dying suddenly and unexpectedly had signs and symptoms consistent with serious illness. Eight per cent of the infants who died appeared to be seriously ill, appreciably less than the 24% found in Knowelden’s report,² with at least five separate symptoms/signs and Baby Check scores of 26+. In field trials of babies brought to hospital,⁴ scores of 20+ had a 67% predictive value for needing hospital treatment. Scores of 33 or 44 were rare even in paediatric outpatients, with a 100% predictive value for hospital treatment. Had these high scoring babies been taken to hospital they would probably have been admitted, and might not have died.
Two victims (79 and 80, table 2) were ‘explained’ deaths, with clear cut pathology. The other two ‘explained’ deaths were a baby with a perforated stomach, who was asymptomatic when put to bed, and a baby with heart failure due to an atrioventricular canal defect, who was always mildly cyanosed and breathless. Both babies scored low. The third high scoring case (94, table 2) was not an ‘explained’ death, but adenovirus was isolated at postmortem examination.
Fewer control babies scored 0-7 (89%) than in the Baby Check field trials of mothers at

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home (97%).⁵ Here the mothers did not see the explanations in the Baby Check booklet, so they probably used less stringent criteria for each symptom/sign, and overscored. All three controls scoring 13–19 (table 2) had either green vomit (13 points) or recession (15 points), which are very rarely seen in the community. These would probably have been reported absent with Baby Check, where parents are told not to score items if in doubt.

The results suggest that Baby Check could help parents recognise a small proportion of babies at risk of sudden unexpected death. Babies who die suddenly and unexpectedly are more likely to be taken to the general practitioner in the week before death than control babies.⁶ This difference is unrelated to reported symptoms, but parents clearly react to their perception of the babies' well being. If such

families used Baby Check they might be empowered to obtain timely medical help, so that some of the babies would not die.

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- 2 Knowelden J, Keeling J, Nicholl JP. *A multicentre study of postneonatal mortality*. London: HMSO, 1984.
- 3 Fleming PJ, Gilbert R, Azaz Y, et al. Interaction between bedding and sleeping position in the sudden infant death syndrome: a population based case-control study. *BMJ* 1990;301:85–9.
- 4 Thornton AJ, Morley CJ, Cole TJ, Green SJ, Walker KA. Field trials of the Baby Check score card in hospital. *Arch Dis Child* 1991;66:115–20.
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Guillain-Barré syndrome in three siblings less than 2 years old

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Abstract

Three of five children who were born to consanguineous parents developed Guillain-Barré syndrome before they were 3 years old. The syndrome is rare in early childhood and we suggest that there may be a genetic element in the pathogenesis.

Polyradiculoneuritis (Guillain-Barré syndrome) has become the most common form of acute paralysis since the decrease in the incidence of poliomyelitis.¹ Though the incidence in children seems to be increasing, it is still rare below the age of 2 years.^{2–3} There have been only three reports of familial Guillain-Barré syndrome in adults, and none in children, to our knowledge.^{4–6}

We describe three siblings from a consanguineous marriage who developed Guillain-Barré syndrome when they were less than 2 years old. The parents were young, healthy Arab Moslems who were second cousins and had five children (three boys and two girls). Their second, fourth, and fifth children are described in this report; the other two have always been healthy.

Case reports

CASE 1

A 2 year old boy was admitted to another hospital in 1980 with progressive weakness and difficulty in swallowing. Two weeks before admission he had a short febrile illness and a cold. On admission he was pale and in a 'poor

general condition', with drooling, generalised hypotonia and hyporeflexia. Results of laboratory tests did not indicate a diagnosis.

The child was treated with corticosteroids and intravenous fluids replacement. His condition deteriorated and he died on the sixth day in hospital with the presumptive diagnosis of encephalitis.

CASE 2

The younger sister of case 1 was admitted to this hospital in 1984 at the age of 22 months because of weakness in the lower limbs. One week before admission she had had pharyngitis, and subsequently she became sleepy and developed unstable gait. Neurological abnormalities included ataxic gait, inability to stand, and areflexia. Examination of the cerebrospinal fluid showed no cells, glucose 3.1 mmol/l, and a protein concentration of 1.6 g/l. The electroencephalogram was interpreted as normal. Electromyography showed reduced nerve conduction velocity with prolongation of distal motor latency. Poliomyelitis was ruled out. HLA typing failed to show the DR3, A3, and B8 antigens.

Within a week she started to improve spontaneously, and at follow up examination two years later she had no neurological deficit.

CASE 3

The younger brother of case 2 was admitted to the paediatric intensive care unit in 1987 at the age of 9 months with respiratory failure follow-

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