

## FAMILIES EXPERIENCING A SUDDEN, UNEXPECTED INFANT DEATH

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**T**HE reduction in the number of infants dying in the age group 1-11 months has brought into prominence those dying suddenly and unexpectedly ("cot deaths"). Most of these deaths are at the present time certified as being the result of respiratory infection (Ministry of Health 1965). Despite many recent investigations (Cooke and Welch 1964; Sutton and Emery 1966; Valdes-Dapena 1967) there is no agreement as to the exact cause of death. Most investigators have pointed to social factors which are often, but not invariably, associated with such deaths. These include low social class and poor housing (Ministry of Health 1965), an inexperienced and isolated, but intelligent mother (Emery and Crowley 1956), variation in patient-doctor relationship at different times of the week (Emery 1959), and emotional deprivation (Valdes-Dapena 1967).

During the course of an investigation into infant mortality in Salford in 1965, a detailed study was made of some of the social factors in this type of case. Particular attention was paid to the history of illness in the child and the reactions of the parents to this; the use that the mother had previously made of the medical services; and aspects of the general family situation which might have contributed in some way to the fatal outcome.

The aim was to try to identify adverse factors which could be altered, or situations in which this type of infant death might be most likely to occur. It was recognized that the deaths might not be preventable in our present state of knowledge. Gardner and his colleagues (1967), studying similar deaths occurring in hospital, suggested that much more investigation was needed into the mechanism involved. Infection did not seem to play the most important part in many of them. However, the present study is not concerned with these pathological and bacteriological aspects, but in all cases

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the post-mortem appearances were those typically found in this type of case.

### Patients and methods

During 1965, 35 deaths from all causes occurred in Salford in infants between the age of one week and their first birthday—seven in the neonatal period and 28 later. Nineteen of the 35 were certified as caused by pneumonia. Of these infants, 17 were found dead at home, and the other two died soon after admission to hospital. The coroner investigated all the deaths, except one of those which occurred in hospital. In each of these 19 cases the records concerning the child, its mother and family were examined and a health visitor went to see the mother. One worker carried out all the interviews which usually took place between two and four weeks after the child had died. Three of the mothers were not interviewed—two moved from the area immediately after the death and one persistently refused to be seen.

All the cases might not fulfil the criteria of an 'unexplained' sudden death laid down in the Ministry of Health report (1965), but the finding in that report that this type of death comprised 83 per cent of the deaths at this age certified by the coroner as due to respiratory causes, indicates that no great error would be involved in regarding them all as falling into this category.

To obtain a control group of families with which to compare the 19 in the study group, information was obtained concerning the families (209 in number) into which a legitimate child was born during October 1965, and survived the first week of life. Because these control families were interviewed in the first month of their child's life, it is not possible to use them as controls in connection with the occurrence of illness later in the first year.

### Results

Ten of the 19 deaths were boys, and the ages of the whole group at the time of death were:

0-2 months	..	..	..	..	..	..	9
3-5 months	..	..	..	..	..	..	7
6-8 months	..	..	..	..	..	..	3

Table I shows the prevalence of certain factors in the study group and the controls. The mothers of the babies who died unexpectedly had been poor users of the health and welfare services during the antenatal period, had had a poorer diet, lived in inferior housing conditions and were beset with many family problems. The factors classed as problems included disharmony in the family group, a poor work record or uncertain income on the part of the husband, inadequate housing, and chronic physical or mental illness in the

**TABLE I**  
FACTORS PRESENT IN FAMILIES WHERE AN INFANT DIED UNEXPECTEDLY AND IN THE CONTROL GROUP

	<i>Percentage concerned</i>	
	<i>Study group n=16</i>	<i>Control group n=211</i>
Mother:		
Attitude to antenatal care poor .. .. .	13	7
Saw doctor before 16th week of pregnancy	56	72
Attended clinic before 16th week of pregnancy .. .. .	19	38
Diet in pregnancy poor .. .. .	31	11
Family problems present .. .. .	75	19
Living conditions:		
(a) House in poor condition .. .. .	25	2
(b) House in multiple occupation (not included in (a)) .. .. .	19	2

family or close relatives.

Thus the families resemble those in another recent study (Ministry of Health 1965), in being of rather a lower standard than the control ones. In many cases the surviving children (and some of the parents) were dirty and ill-clad. In contrast to the mothers who had lost babies in the perinatal period, only four of these mothers (25 per cent) seemed concerned at their loss. These, however, were very upset. For one of them, and for another in the series, this was the second time they had lost an infant in similar circumstances.

*History of illness*

Only one child was thought by the mother not to have had an illness in the two weeks before death (table II). All the others had departures from normality which were present up to the day of death.

**TABLE II**  
MOTHER'S ASSESSMENT OF ILLNESS AND SUBSEQUENT ACTIONS

<i>Action taken by mother</i>	<i>Mother's assessment of illness</i>		
	<i>None present</i>	<i>Mild</i>	<i>Serious</i>
Doctor not consulted .. .. .	1	7	1
Doctor consulted, infant not seen .. .. .	—	—	1
Doctor consulted, infant seen .. .. .	—	—	6

The assessment of severity used was that made by the mother. The only serious case not seen by a doctor was a child who had had serious feeding difficulties and weighed  $9\frac{1}{2}$  lbs at the age of seven months having weighed  $7\frac{1}{2}$  lbs at birth. The mother, aged 22 with two other children, said she found her doctor's consulting hours awkward.

The mild cases tended to be respiratory infections, but vomiting was a prominent feature of the cases thought serious by the mother. Some of the information given by the mothers to the health visitors varied in detail from that given to the coroner's officer immediately after the death. The seven infants with mild illnesses were fed, appeared to be reasonably well, settled down to sleep, and some time later were found to be dead. Three of them were in the same bed as the mother.

Table III gives details of the infants who were thought (by the mother) to be seriously ill. In most cases the illness was present for only a day or two and the family doctor, when called in, gave appropriate treatment.

TABLE III  
HISTORY OF INFANTS IN CASES CONSIDERED SERIOUS BY MOTHER

<i>Case</i>	<i>Age of mother</i>	<i>Age at death (months)</i>	<i>Number of children in family</i>	<i>Days before death</i>	<i>Synopsis of history</i>
1	25	1	2	5 1 0	Cough and cold—seen by general practitioner—medicine prescribed. Gradually took less and less food. Long-standing feeding difficulty. (Sunday) drowsy—taking no food—seen by general practitioner. Seen by general practitioner twice—still not feeding—admitted to hospital.
2	26	3	2	2	Cough with vomiting. General practitioner prescribed medicine without seeing baby. Little change until sudden death.
3	19	1	2	15 7 1 0	Vomiting. Discussed with general practitioner who did not see baby. Sweating—seen by general practitioner late in day, treatment prescribed. Seen by general practitioner—restless, not feeding—admitted to hospital.

TABLE III—*continued*

Case	Age of mother	Age of death (months)	Number of children in family	Days æfore death	Synopsis of history
4	28	1	5	2 1	Vomiting, screaming, seen by general practitioner. Drops given for chest infection. 'Twitching'. Weight same as birth weight. Not improved—not feeding, panting.
5	25	5	2	2 1	Diarrhoea—seen by general practitioner. Restless. Sleepless—seen by general practitioner. Deteriorated during night.
6	20	2	2	2 1	Cold, cough, vomiting, fretful. Seen by general practitioner—drops given, continued vomiting. Vomited last feed—dead in morning.
7	29	3	5	7	Cold—seen by general practitioner—antibiotic. No improvement, but did not call general practitioner.
8	22	7	3		Vomiting and loss of weight for two months before death. General practitioner not consulted—surgery times awkward.

### *The families*

In seven of the 16 families both parents came from local families, in another two one parent was local, while in seven both parents came from other areas. These figures must be compared with those of the control families—59, 25 and 16 per cent respectively.

Table IV classifies the families in more detail in respect of the presence or absence of problems and the degree of isolation from other relatives. The two biggest groups are those where both parents had a local upbringing but are cut off from their relatives for some reason, and those who come into the area with many problems. Two of the families which could not be visited also fell into this category. They were very mobile and had no local roots. Both moved out of the area soon after the baby died—in one case on the same day. Families such as these were exceptional among the control group, in fact only six were identified, and there is no doubt

TABLE IV  
CLASSIFICATION OF FAMILIES

<i>Origin of parents</i>	<i>Problems present</i>		<i>No problems present</i>	
	<i>Isolated from relatives</i>	<i>Not isolated from relatives</i>	<i>Isolated from relatives</i>	<i>Not isolated from relatives</i>
Both local .. .. .	4 (2)	2 (1)	—	1 (1)
One local .. .. .	—	—	1	1
Neither local .. .. .	2 (1)	4 (3)	—	1 (1)
TOTAL .. .. .	6 (3)	6 (4)	1	3 (2)

Figures in brackets are cases where the mother was separated from the father at the time of the infant's last illness (see text).

that they are not at all representative of the families of the area. Only one of the 16 families might be said to have been functioning normally, and that was one of the very few West Indian families in the area.

One aspect of family life which was particularly examined was the extent to which the mother was able to discuss the child's condition with the father on the evening before the child died. It was found that satisfactory discussion was not possible in nine cases for the following reasons—parents separated—three, father working away from home—one, father on night shift—two, recurrent marital disharmony—two, mental illness in father—one. In all the seven cases where discussion was possible, it seems to have taken place, and the suitability of the measures taken were agreed in all but one. In this exceptional case, the mother refused to accept the father's suggestion that the family doctor be consulted. Discussion was possible in exactly half of the cases thought by the mother to be serious.

### Discussion

Sudden unexpected deaths ascribed to respiratory pathology have been associated with three factors—early bottle feeding, the use of a soft pillow and recent infection (Ministry of Health 1965). The first two were said to be more common in the type of family described in this present study and it could well be that the association described is indirect and the family situation as a whole should be examined. It is worthwhile looking at the process by which an infant is diagnosed by a doctor as having a respiratory infection which requires treatment. First someone (usually the mother) must notice some departure from normal and then make up her mind whether any action needs to be taken. She does this from her knowledge and experience

and by seeking advice from relatives (including her husband, if possible) and friends. If a decision is reached that medical advice be sought, then action depends on the time of day, distance to the doctor's surgery, availability of a telephone and how accustomed one is to use it, arrangements for the care of other children, the certainty of the decision, the support of the father, previous experience with the doctor and probably many other factors.

Once face to face with the doctor the mother has to communicate her feelings and description of the baby to him and he has to interpret these in accordance with his familiar signs and symptoms. The doctor must then communicate to the mother his diagnosis and suggested treatment. The problems were illustrated in one case in the present study where the mother said she went to the doctor only in emergencies, but the doctor thought that she came to see him with every minor abnormality.

Difficulties of communication exist also when enquiring into events after the death of a child. It has been suggested (Ministry of Health 1965) that parents may recall every little symptom to explain the tragedy but it could equally be argued that the severity of symptoms is minimized because it is the accepted role of a parent to obtain medical aid for a sick child.

Although respiratory infections, some of them overwhelming, may occur more commonly in the type of family described in this study, it is difficult to understand why the same should apply to another suggested cause of death, hypersensitivity reactions, and it follows that prevention must be more widely based. As a hypothesis, it might be suggested that these deaths occur where there is lack of appreciation of the severity of symptoms and signs and a failure of communication between the mother and the medical services, these factors being most common in certain disturbed social situations.

Emery (1959) found that sudden, unexpected deaths tended to occur at home at the weekends and in hospital during the rest of the week and suggested that this reflected variation in the patient-doctor relationship at different times of the week. Case 1 described by Emery and Crowley (1956) was the child of intelligent parents who lived an isolated life. The mother had no local friends and no experience of ill children. The authors concluded that these were the basic causes of the baby's death. They discuss the problems of getting a full picture of the last days of such a child's life and related this to the disturbance of inquiries into the death by the coroner's officer, but they do not mention the difficulties facing parents in deciding whether a doctor should be consulted. It has been seen that in one of the seven cases where it was possible for the mother

to discuss the child's condition with the father, there appears to have been a long and acrimonious debate.

The possibility of preventing deaths such as these must take account of the fact that many, if not quite all, of the babies were said to have been ill for a period before death. There would seem to be scope for educating parents in certain danger signs which should prompt them to seek further advice. In the present study, drowsiness, sweating and failure to take the appropriate or usual amount of feed were recognized by the mother singly or in combination in six cases for more than 24 hours without it being thought necessary to seek advice.

Delay of a few hours at this stage may have serious consequences and there is evidence that delay does occur in certain situations—at weekends or when mothers are on their own. The fact that more than half the mothers in the present study had to cope with the infant's illness without the support of the father may be significant here. The reasons offered for this delay may be unwillingness to disturb the doctor or difficulty in attending his surgery. The unsympathetic attitude of the doctor to previous worries was sometimes said by the mother to have a deterrent effect, and these families are often inarticulate and unable to express their observations in terms which the doctor understands. Such lack of communication may be why a doctor can see some of these children but not realize the seriousness of their condition. An equally likely explanation is that it was not possible to detect the seriousness when the doctor last saw the infant alive.

In either case, there would seem to be need for all concerned to be especially careful to elicit all the relevant information when presented with a young infant from a family such as those described, and not to rely on the judgment of the mother as to the diagnosis, or the meaning to be attached to such words as 'cough' or 'sick'.

The observations reported here were made on only 16 families and because of this must be treated with some caution. They are sufficiently striking however to merit further investigation and this is continuing with particular attention being paid to those family situations which appear to be of some importance. These do not explain the apparently unexpected nature of the deaths, but there was evidence in the present series that many of the children were seriously ill for some time before death.

### Summary

Sixteen families in which an infant died suddenly and unexpectedly have been studied and compared with a control group. In all but one case a departure from normality had been noticed before death, but in only seven cases was a doctor consulted. The families were



poor users of health services, lived in bad housing conditions, and the mother's attitude to her antenatal care and her diet had been poor. Twelve of the families had serious problems, seven of them were completely isolated from relatives and another three lived in a highly mobile way. In nine cases the mother, for one reason or another, was unable to discuss the child's condition with her husband, and in another the discussion led to an acrimonious dispute as to whether to seek medical advice.

Attention is drawn to the importance of these factors and to the difficulty parents have in deciding when to consult a doctor about their children, and in communicating their difficulties when they do, and to the fact that events may be affected by family circumstances or by the timing of an illness.

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#### REFERENCES

- Cooke, R. T. and Welch, R. G. (1964). *Brit. med. J.* **2**, 1549.  
Emery, J. L. (1959). *Brit. med. J.* **2**, 925.  
Emery, J. L. and Crowley, E. M. (1956). *Brit. med. J.* **2**, 1 518.  
Gardner, P. S., Turk, D. C., Aherne, W. A., Bird, T., Holdaway, M. D. and Court, S. D. M. (1967). *Brit. med. J.* **4**, 316.  
Ministry of Health (1965). Enquiry into sudden death in infancy. Report on Public Health and Medical Subjects. No. 113. London. Her Majesty's Stationery Office.  
Sutton, R. N. P. and Emery, J. L. (1966). *Arch. Dis. Child.* **41**, 220.  
Valdes-Dapena, Maria A. (1967). *Paediatrics.* **39**, 123.

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## VOCATIONAL TRAINING FOR GENERAL PRACTITIONERS

### The trainee scheme

General-practitioner trainers having a trainee desirous of obtaining a better and broader view of general practice by transferring to another type of practice for a short period of say, one week during his traineeship, should contact the Administrative Secretary, The Royal College of General Practitioners, 14 Princes Gate, London, S.W.7, for the names of those general practitioners who would be willing to co-operate in such a scheme.