

# Febrile convulsions — what do parents do?

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## Summary and conclusions

To find out about the medical and parental management of children having their first febrile convulsion a hospital-based questionnaire study was carried out in which parents were asked what they did at the time.

Fifty-four out of 89 parents brought their child directly to hospital while the remainder attempted to contact their general practitioner, usually successfully, and were then referred to hospital. Whichever course of action the parents chose the outcome was satisfactory. Eighty-seven per cent of convulsions lasted for less than 15 minutes and in only two instances did they last longer than 30 minutes. One child who had convulsions for an hour was given intramuscular phenobarbitone at home without success, and the fit was finally terminated with intravenous diazepam. Parental management of the fit was often wildly inappropriate. Only a few parents laid the child on his side and waited for the fit to stop. The parents were bewildered and frightened—30% thought their child was dying or dead.

Education of parents of young children is needed. Simply written instructions on how to reduce the temperature of a febrile child and manage a convulsion might help.

## Introduction

Febrile convulsions are common in childhood—about 4% of all children will have one, and many will be admitted to hospital. Their aetiology, natural history, and management have been extensively studied,<sup>1</sup> but little is known about what parents do when their child has convulsions. Such knowledge, however, is important. Inhalation of vomit and secretions during the convulsion may seriously complicate the illness. If the convulsion is prolonged there is a high risk of epilepsy in later childhood. Lowering the temperature of a febrile child may lessen the chances of a convulsion occurring. We have therefore carried out a prospective study, asking the parents of children who had had a first febrile convulsion what they thought was happening and what they did.

## Method

Between January and August 1977 a questionnaire survey was carried out in the accident and emergency department of Nottingham Children's Hospital. This department deals with all acute admissions to the hospital and is the only one in the city that sees children in an emergency. Shortly after arrival at the hospital parents of children who had had their first febrile convulsion were asked several pre-determined questions by senior nursing staff. The cases were unselected. "Febrile convulsion" was diagnosed on the basis of a firm history of a convulsion in a child with a febrile illness. Cases were excluded if there was doubt whether or not a convulsion had occurred, or if the child had had a previous convulsion of any cause.

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The questionnaire was divided into three parts. Details of the child and his family were obtained, questions were asked about the medical management of the child before reaching hospital, and parents were asked about their thoughts and actions when their child had a convulsion.

## Results

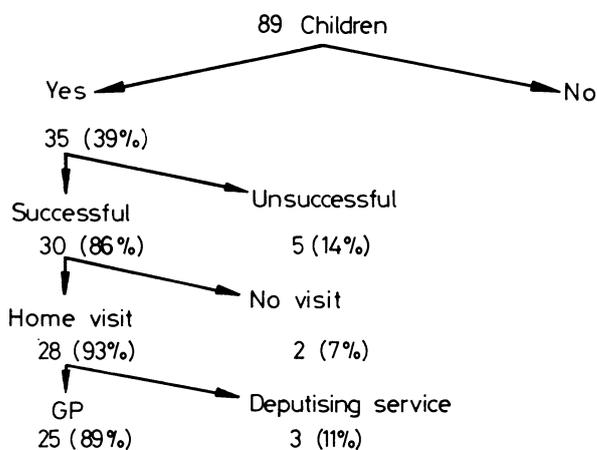
Eighty-nine completed questionnaires were analysed.

### THE CHILD AND HIS FAMILY

There were 54 boys and 35 girls, whose ages ranged from 5 months to 6 years, with a peak incidence between 1 and 2 years. The number of children in the family, the position in the family of the affected child, and the age of the mother and her marital status did not differ greatly from the national average.<sup>2</sup> The findings are what would be expected from a study of children of this age group. The social-class distribution of the families was similar to that of the Nottingham population generally and did not show the excess of families from lower socioeconomic groups that was found in a recent study of all paediatric medical admissions.<sup>3</sup>

### MEDICAL MANAGEMENT (see figure)

Sixty per cent of parents brought their child directly to hospital, either by ambulance after a 999 call or by car, without attempting to contact a doctor first. Five of 35 parents who tried to contact a



Details of medical advice sought by parents of children with a first febrile convulsion.

doctor claimed they were unsuccessful because there was no reply or the telephone number was unobtainable. Two parents were asked by their doctor to bring the child straight to hospital. In the remaining cases the doctor (usually the general practitioner) visited the child at home. This was usually within 15 minutes and in all cases within an hour of being called. In four instances the child was still having convulsions when the doctor arrived. Three of these children were given diazepam (two intramuscularly and one intravenously), and within 15 minutes after the onset the convulsion stopped. One child was given intramuscular phenobarbitone but continued to have fits. Twenty-nine per cent of all children in the study had been seen by a doctor in the three days preceding the convulsion, usually because of a febrile illness.

Eighty-seven per cent of convulsions lasted less than 15 minutes. Two lasted for longer than 30 minutes, the longest lasting an hour. All children reached hospital within two hours of the start of the

convulsion, half of them within 30 minutes. As expected, those children who came directly to hospital arrived sooner than those who had been seen by their doctor first. This had no adverse effect on the child since the convulsion lasted no longer. The only possible exception was a girl of 18 months who had a prolonged convulsion associated with an upper respiratory tract infection. Her general practitioner visited her within five minutes, found her still having convulsions, and gave her phenobarbitone intramuscularly. Because the convulsion did not stop she was sent to hospital, where she was still having fits on arrival. Intravenous diazepam finally stopped the fit, which had lasted for an hour.

Four other children had convulsions on arrival at hospital, none of whom had been seen by their doctor first. In three cases this was in fact a second brief convulsion rather than one long convulsion, and it was immediately stopped with intravenous diazepam. The fourth child had been seen at a small hospital outside the city first, where no treatment had been given. He had convulsions for 30 minutes until given intravenous diazepam on arrival.

#### PARENTAL MANAGEMENT

In all except seven instances one or both parents were present when the child had convulsions (in half the cases the mother only). In the remainder the child was in the care of a sibling, another relative, neighbour, teacher, or child minder. The reaction of the first person to witness the fit was often one of fear and panic. They usually shouted for their husband or wife to come, but if alone often picked the child up and ran out of the house to find a neighbour. Some called their doctor or an ambulance at once. Action towards the child was extremely variable. Some lay the child down, some picked him up and sat him on their lap, while some patted or banged his back because of suspected choking. In 12 cases a parent tried to prise the child's clenched teeth apart, in eight the child was vigorously shaken, and in seven mouth-to-mouth resuscitation was attempted.

Thirty per cent of parents spontaneously volunteered that they thought their child was dying or dead. The remainder were often bewildered and frightened.

Half the parents had taken no steps to lower the child's temperature before the fit. In the remaining cases the child had been given aspirin or paracetamol, had been tepid-sponged or bathed, or had been undressed. One mother possessed and used an electric fan. Parents were more likely to have tried to lower their child's temperature if they had seen a doctor in the preceding three days (65%) than if they had not.

#### Discussion

This study concerned only children who were seen at hospital: it did not deal with children who were managed entirely by their general practitioner without hospital admission, or with children whose parents sought no medical advice. The number of children having febrile convulsions who fall into these last two categories is not known in Nottingham, but in Oxford they represent at least 25% of all cases (P Harker, personal communication).

There is evidence that a prolonged febrile convulsion (longer than 30 minutes) is associated with an increased incidence of epilepsy in later childhood, particularly of the temporal lobe type.<sup>4,5</sup> There is therefore a need for medical intervention if the convulsion lasts longer than a few minutes. Parents have two courses of action—either to contact their own doctor or to refer themselves directly to hospital. Whichever course they chose here, the children either soon stopped having convulsions or received appropriate treatment. The only exception was the child with a prolonged fit who received intramuscular phenobarbitone—this drug takes too long to act to be useful. A general practitioner faced with a child with convulsions at home can try to give intravenous diazepam (0.2–0.3 mg/kg body weight), which may be difficult without nursing help; intramuscular diazepam, which is probably less effective; or intramuscular paraldehyde (0.15 ml/kg).<sup>6</sup> Rectal diazepam has been used successfully by parents of epileptic children and might be useful in cases of prolonged febrile convulsions where an intravenous injection has proved impossible.

The ideal parental management of a febrile convulsion would be to lie the child on his side on a comfortable surface where he cannot hurt himself and to remain with him until he has stopped having it. The parents should phone for a doctor or an ambulance if the convulsion lasts longer than a few minutes. If the child is sat up, placed on his back, or shaken or banged, there is a real danger of inhalation of vomit or secretions. Attempts to prise the mouth open may damage teeth. If the child is left alone he may injure himself. Only 16% of parents laid the child on his side and waited until the fit ceased. While in most cases management was inappropriate, often wildly so, in fact no complications did occur from mismanagement. The parental management reflected the fear and panic felt by most parents when their child convulsed. They clearly did not know what was happening and had not heard of febrile convulsions. Only half had taken any steps to lower their child's temperature, although this might have prevented the fit in some instances. Parents tend to overclothe their febrile children and a simple measure like undressing the child may help. Although some might not have recognised that their child was febrile, most did not know about the risk of a convulsion.

There is clearly a need to educate parents of young children. All children have febrile illnesses, and therefore all parents should know about the risks of a convulsion in children between the ages of 6 months and 5 years. They require simple written instructions on the different measures that could help lower their child's temperature. The one reported to be used in the Oxford hospitals is a good example.<sup>6</sup> Since febrile convulsions often recur, such instructions are also useful for parents whose child has had a first fit. The instructions could also include the recommended action the parents should take if their child has convulsions.

Special care would have to be given to the wording of such instructions, which should be simply written in lay terms. In a recent Nottingham survey many parents did not understand the terms febrile, convulsion, and fit. These written instructions could then be explained to the parents by anyone who deals with young children—health visitors, general practitioners, infant welfare clinic doctors, and hospital paediatricians. They might reduce the number of febrile convulsions, prevent prolonged fits, ensure proper care of the child during a convulsion, and help the parents manage the episode more calmly.

We thank the nursing staff of the accident and emergency department of Nottingham Children's Hospital for questioning the parents in this study. We are grateful to Dr Paul Harker for supplying details of his Oxford febrile convulsion study.

#### References

- 1 Lennox-Buchthal, M A, *Electroencephalography and Clinical Neurophysiology*, suppl No 32, 1973.
- 2 Registrar General, *1971 Census, England and Wales: Household Composition Summary Tables*. London, HMSO, 1975.
- 3 Wynne, J, and Hull, D, *British Medical Journal*, 1977, **2**, 1140.
- 4 Ounsted, C, et al, *Clinics in Developmental Medicine, No 22: Biological Factors in Temporal Lobe Epilepsy*. London, Heinemann, 1966.
- 5 Aicardi, J, *Developmental Medicine and Child Neurology*, 1976, **18**, 381.
- 6 Bower, B, *British Journal of Hospital Medicine*, 1978, **19**, 9.

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*Should a patient who wishes to cease breast-feeding restrict her fluid intake, or should she drink a lot?*

Neither. Within reasonable limits the fluid intake has no influence on the quantity of secretion. The cells of the glandular tissue of the breast need an adequate water supply to fulfil their functions, but how much of it they will take up depends on their metabolic processes and not on some theoretical notion that the body is like a tank to be filled to generate a higher hydrostatic pressure. It is time that such simple-minded notions were expunged from midwifery and obstetric textbooks and practice.