

Acceptability of screening young children for anaemia

CLARE GOODHART

STUART LOGAN

SUMMARY

Although anaemia is common among young children and may be detrimental to health and development, few blood tests are done in this age group. We found that thumb-prick blood tests were not stressful to most young children and, despite the high mobility of the population, achieved an 81% uptake of screening for anaemia (273 out of 335 eligible children).

Keywords: anaemia; child health; thumb-prick blood test.

Introduction

IRON deficiency anaemia is common among preschool children and has been suggested to have a detrimental effect on development, behaviour, and susceptibility to infection.^{1,2} Screening in toddlers has been advocated,³ however, the appropriateness of this has been questioned.^{4,5} Although the United Kingdom prevalence of anaemia is often reported as being above 20%,⁶ surprisingly few blood tests are done.

An important issue for any screening programme in childhood is its acceptability to parents. The purpose of this study was to look at the acceptability of a simple blood testing technique to parents and the distress caused to the children in a general practice child health clinic.

Method

The study was carried out, with ethics committee approval, at an inner-city general practice in north London. The sample consisted of 335 children who had reached the age of 15 months while registered with the practice during the study period (1994–1996). When children were invited for their mumps, measles, and rubella immunizations, their parents were informed of the offer of the blood test for anaemia. Children were eligible to participate if they attended between the ages of 12–24 months.

A thumb-prick blood sample was collected, which was then used to produce three dried blood spots on filter paper. Where possible an additional 1 ml was collected in a paediatric ethylene diamine tetra-acetic acid tube. It was found that the best samples could be obtained while the child was on the parent's knee. A small amount of Vaseline was applied to the right thumb tip. The child's right hand was held in the tester's right hand and the prick was made using an automatic lancet (Microtainer, Becton Dickinson Vacutainer Systems). Sampling was aborted if the child was significantly distressed.

A record was made of whether the child cried during testing and of how long the child took to return to his or her normal composure. Afterwards, the accompanying parent was asked to

indicate their perception of the child's reaction to the test, on a scale from 'not upset', 'slightly upset', 'fairly upset', through to 'very upset'.

Results

Of the 335 eligible children, 273 were tested, representing an 81% uptake of the screening offer by the parents on behalf of their children. Nine parents who attended but declined the blood test said they did not want to distress their child or they were confident that the child ate well.

Of the 81 children registered at 15 months of age but who had either joined or left the practice between the ages of 12–24 months, 40 (49%) were tested. This compares with 233 (92%) tested out of the 254 children who had remained registered throughout their second year. These differences were highly significant ($\chi^2 = 70.2, P < 0.01$).

The parent's perception of their child's distress was recorded for 248 children (Table 1). Three-quarters of the parents said their child was either 'not upset', or only 'slightly upset' by the blood test. The doctors recorded that 101 (41%) out of the 248 children did not cry. Of the 65 (26%) children described as 'fairly upset' or 'very upset', 34 (52%) had returned to their normal composure within two minutes.

Although the study attempted to evaluate a blood spot measurement of haemoglobin, this was unreliable, and after the first 100 tests more effort was made to obtain the liquid sample. Overall, liquid haemoglobin results were available from 172 children. One child had sickle cell anaemia and, of the remaining 171 children, 37 (22%) had a liquid haemoglobin result below 11 g/dl. Nine of these (5.3%) had haemoglobin below 10 g/dl.

Discussion

We found that obtaining blood samples for haemoglobin screening within the context of a busy inner-city child health clinic is possible, and a high uptake of screening can be achieved.

The significantly higher uptake among children who remained registered throughout their second year, compared with those who moved in or out of the practice during the study period, suggests that mobility is an important factor in the uptake of preventive programmes.

Only one in eight children was described by the parent as being 'fairly' or 'very upset' and had not returned to normal within two minutes. Our finding that thumb-prick blood testing is not stressful to most young children may be of interest to research ethics committees considering projects involving blood tests on children.

Table 1. Parental perception of child's distress.

| Parents' perceptions | Number of children (n = 248 ^a) |
|----------------------|--|
| Not upset | 105 (42.3%) |
| Slightly upset | 78 (31.5%) |
| Fairly upset | 43 (17.3%) |
| Very upset | 22 (8.9%) |

^aData on children's responses was not collected in 25 cases.

C Goodhart, MRCP, MRCPGP, principal in general practice, Statham Grove Surgery, London. S Logan, MBChB, senior lecturer, Department of Paediatric Epidemiology, Institute of Child Health, London. Submitted: 21 October 1998; final acceptance: 9 April 1998.

© *British Journal of General Practice*, 1999, 49, 907-908.

Although anaemia is a common problem, and blood testing is acceptable to parents and children, we need to know more about the cause, natural history, and effectiveness of treatment before deciding whether widespread screening is appropriate.

References

1. Lansdown R, Wharton BA. Iron and mental and motor behaviour in childhood. In: *Iron. Nutritional and physiological significance*. [Report of the British Nutrition Foundation Task Force.] London: Chapman & Hall, 1995.
2. Chwang L, Soemantri AG, Pollitt E. Iron supplementation and physical growth of rural Indonesian children. *Am J Clin Nutr* 1988; **47**: 496-501.
3. Booth IW, Aukett MA. Iron deficiency anaemia in infancy and early childhood. *Arch Dis Child* 1997; **76**: 549-553.
4. Logan S. Commentary. *Arch Dis Child* 1997; **76**: 553-554.
5. James J, Laing G, Logan S. Changing patterns of iron deficiency anaemia in the second year of life. *BMJ* 1995; **311**: 230.
6. Lawson M. Iron in infancy and childhood. In: *Iron. Nutritional and physiological significance*. [Report of the British Nutrition Foundation Task Force.] London: Chapman & Hall, 1995.

Acknowledgements

We are grateful to Canan Dogan for her contribution as research dietician and to Jonathan Graffy, Director, East London and Essex Network of Researchers for comments on the manuscript. Funding was provided by the Royal College of General Practitioners (RCGP) Scientific Foundation Board. Statham Grove Surgery is an RCGP Research Practice. There were no conflicts of interest.

Address for correspondence

Dr Clare Goodhart, Statham Grove Surgery, Stoke Newington, London N16 9DP.