Letters

Screening toddlers for iron deficiency anaemia in general practice

No investigation can accurately separate normal from pathological

EDITOR—James et al state that iron deficiency anaemia in infancy is present when the haemoglobin concentration is < 110 g/l.[1] Using this definition, they go on to say that 15% of infants in a relatively affluent area of Bristol had iron deficiency anaemia. They do not mention the possibility that children with haemoglobin concentrations of <110 g/l can have other causes of a low concentration or can be healthy and have what Dallman has called "false anaemia."[2] Burman found that 16% (<1 SD) of infants aged 15 months who had had continuous iron supplementation had haemoglobin concentrations of <110 g/l.[3] Burman's findings, obtained in the same age group as that studied by James et al and in the same city, provide strong evidence that a haemoglobin concentration of <110 g/l is not synonymous with iron deficiency anaemia.

Iron deficiency is a common cause of anaemia in young children, but it is not the commonest cause in all groups of children.[4,5] Dallman has pointed out that much of the anaemia seen in paediatric practice is due to mild acute infections and that many children with low haemoglobin concentrations are healthy and have no illness.[5] The lower limit of normal haemoglobin concentration at this age, as stated by the World Health Organisation, is merely a statistical cut off point and does not tell us which children have a pathological cause for a "low" haemoglobin concentration. Some children with haemoglobin concentrations of >110 g/l are iron deficient and some with concentrations below this value are iron replete.[4] Similarly, laboratory tests of iron status, such as measurement of serum ferritin concentration, do not have clearly defined cut off values that can be used to identify those infants whose haemoglobin concentrations will rise, let alone those whose developmental progress will improve with iron treatment.[4]

If anaemia and iron deficiency are looked on as conditions with some disadvantage to the individual, rather than in terms of laboratory results that lie outside a reference range, then we have to admit that there is no laboratory investigation that can accurately separate the normal from the pathological. Our inability to solve this problem and perhaps address it may lie behind some of the lack of enthusiasm for screening programmes for iron deficiency in infancy.

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2 Dallman PR. Laboratory diagnosis of iron deficiency anaemia in infancy and early childhood. In: iron deficiency in infancy and childhood. *Annales Nestle* 1995;53:8-14.
3 Burman D. Haemoglobin levels in normal infants aged 3 to 24 months, and the effect of iron. *Arch Dis Child* 1972;47:261-71.
4 Stevens D. Epidemiology of hypochromic anaemia in young children. *Arch Dis Child* 1991;66:886-9.
5 Dallman PR. Changing characteristics of childhood anemia. *J Pediatr* 1989;114:161-4.

Screening is possible in populations similar to one studied by authors

EDITOR—James et al report that attempts to extend a general practice based project screening for early childhood anaemia to other practices had limited success because of poor population coverage, refusal by parents, and failure to obtain blood specimens that could be analysed.[1]

An anaemia screening programme has been operating successfully for the past three years in a population in Birmingham Health District deemed by sociodemographic and ethnic minority factors to be at high risk of iron deficiency anaemia. Children are screened by health visitors in community health centres when attending for the 21 month development check. A small (10 µl) thumbprick blood specimen is obtained and the haemoglobin concentration measured in the clinic with a portable haemoglobinometer (HemoCue machine) that gives a result within 60 seconds. Altogether, 1552 (47%) of 3303 children tested had a haemoglobin concentration of <110 g/l and were referred by the health visitor to their general practitioner to obtain iron treatment in addition to receiving dietary advice.

In a recent evaluation of this programme 396 (63%) of a population cohort of 625 children attended for the development check at 21 months after being identified by the child health computer. All but 34 (9%) of those who attended were tested for anaemia. Only four carers refused to give consent for the procedure; three were childminders who believed that they did not have parental consent for an invasive procedure. Service delivery factors such as the machine being unavailable or not functioning due to flat batteries accounted for most of the other failures to test. An adequate blood specimen was always obtained. A questionnaire sent to parents after the test found the programme to be highly acceptable. Parents indicated that the test had not unduly upset their child and that they found it helpful to know the result. Health visitors agreed that the test was well tolerated, and they found it a useful means of raising parental awareness about the importance of iron in the diet.

Primary prevention of nutritional anaemia through dietary education has had limited success. A recent evaluation of a nutritional education programme for the carers of young children in Birmingham failed to show any decrease in the prevalence of anaemia (around 30%) or to improve feeding practices.[2] We will continue to explore community based approaches to address the multiple behavioural, cultural, and socioeconomic barriers to good infant nutrition in this multiethnic inner city community, but we believe that screening for anaemia is a useful form of secondary prevention that allows anaemic children to be identified and treated.[3]

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2 Childs F, Aukett A, Darbyshire P, Ilett S, Livera LN. Dietary education work and iron deficiency anaemia in the inner city. *Arch Dis Child* 1997;76:144-7.
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Effect of delaying timing of clamping of cord is being studied

EDITOR—James et al report the feasibility of screening toddlers for iron deficiency anaemia in general practice.[1] Prevention of iron deficiency anaemia may be preferable to screening, even when screening is feasible. Although iron supplementation reverses the anaemia, impaired cognitive function has been reported four to five years later.[2] Also, dietary iron supplementation can be dangerous where malaria and diarrhoeal infections are endemic and for children who have adequate iron stores.

Iron stores at birth correlate with iron stores in the same individuals at 6, 9, and 12 months of age. It has therefore been suggested that later anaemia can be reduced by increasing neonatal iron stores by delayed clamping of the umbilical cord.[3] Current (active) management of the third