Review: iron treatment does not improve psychomotor development and cognitive function at 30 days in children with iron deficiency anaemia


QUESTION: In children <3 years of age with iron deficiency, does treatment with iron improve psychomotor development and cognitive function?

Data sources
Studies were identified by searching databases that included the Cochrane Library (2000 Issue 4), Medline (1966 to August 2000), EMBASE/Excerpta Medica (1980 to August 2000), and the Latin American Database (LILACS). Bibliographies of relevant articles were reviewed, key authors in this field were contacted for information on unpublished trials, and forward citation searches on relevant trials were performed within the Science Citation Index.

Study selection
Randomised controlled trials (RCTs) were selected if they compared iron (oral or intramuscular) with placebo or iron plus vitamin C with placebo plus vitamin C, patients were children <3 years of age, and outcomes included psychomotor development or cognitive function.

Data extraction
2 reviewers independently extracted data on patient characteristics, key components of the intervention, quality of the study, and outcomes.

Main results
7 RCTs met the selection criteria: 5 RCTs examined the short term (within 30 days) and 2 trials the longer term effects (after 2 and 4 mo) of iron treatment. 4 RCTs (128 children) examining the short term effects of iron treatment were included in the meta-analysis. The iron treatment and placebo groups did not differ for short term effects of iron treatment assessed by changes in the Bayley Scales of Infant Development (table). Findings from the 2 RCTs that examined the longer term effects of iron treatment were reported separately. One RCT reported that the groups did not differ for the number of skills (assessed by the Denver Developmental Screening Test) gained after 2 months of iron treatment. The second RCT reported a greater improvement in the treatment group than in the control group, for change from baseline scores on the Bayley Scale Psychomotor Development Index (difference in mean increase from baseline score 18, 95% CI 10 to 27) and the Bayley Scale Motor Development Index (difference in mean increase from baseline score 19, CI 10 to 27).

Conclusions
In children <3 years of age with iron deficiency, treatment with iron does not improve psychomotor development and cognitive function within 30 days. Findings from longer term treatment are inconclusive.

COMMENTARY
The first 3 years of a child’s life represents one of the most important periods of a child’s development. Many factors in the environment influence this development, and with our tools for measuring brain function improve, we are becoming increasingly aware of how critical this period is.

Iron deficiency in the first 2 years of life is a common problem that has generated enormous study and some controversy in relation to the importance and prevalence of this deficiency. The gathering evidence of the impact of iron deficiency on behaviour and cognitive processes has clearly heightened attention to this issue.

The review by Logan et al clearly illustrates how little we know about the impact of intervening in children with iron deficiency. The RCTs that have looked at outcomes of therapeutic interventions will be important to future clinical trials looking at outcomes of therapeutic interventions.

Bob Armstrong, MD, PhD, FRCP\nUniversity of British Columbia, Vancouver, British Columbia, Canada


Iron treatment v placebo for iron deficiency anaemia in children ≤3 years of age*

<table>
<thead>
<tr>
<th>Outcomes at 5 to 30 days after study entry</th>
<th>Number of studies</th>
<th>Weighted mean differences (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change from baseline in Bayley Scales MDI</td>
<td>4</td>
<td>−0.55 (−2.84 to 1.75)</td>
</tr>
<tr>
<td>Change from baseline in Bayley Scales PDI</td>
<td>4</td>
<td>−3.20 (−7.24 to 0.85)</td>
</tr>
</tbody>
</table>

*MDI= Mental Developmental Index; PDI= Psychomotor Developmental Index.

Sources of funding:
North and South Thames Regional Health Authorities and London Regional Health Authority.

For correspondence: Dr S Logan, Systematic Reviews Training Unit, Institute of Child Health, 30 Guilford Street, London WC1N 1EH, UK. Fax +44 (0)207 813 8233.
Review: iron treatment does not improve psychomotor development and cognitive function at 30 days in children with iron deficiency anaemia

_Evid Based Mental Health_ 2002 5: 17
doi: 10.1136/ebmh.5.1.17

Updated information and services can be found at:
[http://ebmh.bmj.com/content/5/1/17](http://ebmh.bmj.com/content/5/1/17)

_These include:_

**References**
This article cites 2 articles, 2 of which you can access for free at:
[http://ebmh.bmj.com/content/5/1/17#BIBL](http://ebmh.bmj.com/content/5/1/17#BIBL)

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

**Topic Collections**
Articles on similar topics can be found in the following collections
- Epidemiology (1570)
- Screening (epidemiology) (167)
- Clinical trials (epidemiology) (989)

Notes

To request permissions go to:
[http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to:
[http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to:
[http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)