UK National Screening Committee

Evidence map on iron deficiency anaemia in children under 5 years

Date: 09 November 2022

Contents

Aim

This document provides background on the agenda item addressing the evidence map on screening for iron deficiency anaemia (IDA) in children under 5 years.

Current Recommendation

The UK NSC does not currently recommend screening for IDA in children under 5 years. The Committee based this recommendation on the evidence provided by the 2017 UK N S C evidence summary carried out by Bazian.

The 2017 the key findings of the summary were that the estimated prevalence of ID/IDA in UK in children under 5 years old is inconsistent. No studies were identified assessing whether ID/IDA in in this population is associated with later adverse health and developmental outcomes. Similarly, no studies were identified assessing a screening test for ID/IDA (invasive, non-invasive or minimally invasive) against a diagnostic reference standard in a non-selected sample representative of the general UK population under 5 years old.

Although 2 systematic reviews identified several small randomised controlled trials (RCTs) assessing treatment, they were in clinically detected children, inconsistent and inconclusive, and the trials included were published over 25 years ago, and so had limited applicability to a contemporary UK screening population.

Evidence Map

The 2022 evidence map on screening for IDA in children under 5 years was performed by Costello Medical. Evidence maps are rapid evidence products which aim to gauge the volume and type of evidence relating to a specific topic.

The aim of this evidence map was to address the following questions:

What are the adverse developmental outcomes of ID/IDA in children aged under 5 years?

1. Is there a non-invasive, simple, safe, precise and validated screening test for ID/IDA in children aged under 5 years?
2. What is the effect of iron supplementation on developmental complications of ID/IDA in asymptomatic children identified early through screening?

For each question, evidence was considered relevant if it provided data answering the questions with regards to (a) just ID, (b) just IDA or (c) both.

The aim of this document is to present the information necessary to decide if there is sufficient evidence to justify commissioning a more sustained review in 2022 and if the evidence map document is fit for public consultation.

Summary of findings

Question 1 In total, 5 publications reporting on 3 studies were included. Although, there is some evidence linking ID/IDA to some adverse developmental outcomes, 2 SR concluded that in relation to ID such evidence is at the best inconclusive. The current evidence base it is too limited to reach conclusion on such association.

Question 2 Three publications reporting on 3 studies were included for this question. Overall, the amount of evidence is too limited to reach conclusion on whether there is a non-invasive, simple, safe, precise and validated screening test for ID/IDA in children aged under 5 years.

Question 3 One publication reporting on 1 study was included looking at the effect of iron supplementation on developmental complications of ID/IDA in asymptomatic children identified early through screening. Of note, this publication was also considered relevant to question 1. From the study, it was not clear if the children included were asymptomatic when included in the study. The low volume of evidence and the uncertainty about the included population make it impossible to reach a conclusion on this question.

Overall, the evidence map concluded that there is insufficient evidence to justify commissioning an evidence summary, and the current UK NSC recommendation should not be changed.

Consultation

A three month consultation was hosted on the UK NSC website. Direct emails were sent to 14 stakeholders. (Annex A)

Four comments were received from the following stakeholders (see Annex B for comments):

- Royal College of General Practitioners
- Royal College of Paediatrics and Child Health (RCPCH)
- British Dietetic Association Paediatric Specialist Group
- Member of the public (Parent of child with condition)

Three of the stakeholders were supportive of the review conclusions. However, one stakeholder also suggested some amendments to the background section of the evidence map which were implemented. They also suggested that it is important to recognise that children with some risk factors (such as: living in food insecurity; coeliac disease, chronic kidney disease or other disorders of absorption; restrictive diets due to extreme fussy eating and eating disorders; from family following a vegan or plant based; and some ethnic group with higher rates of maternal ID/IDA during pregnancy, low birth weight and prematurity) may be at increased risk of IDA. Therefore, it would be necessary to provide access to training for health care professionals on IDA so that children at risk can be identified and safely managed. They further recommended research into a non-invasive easy to use screening tool.

One stakeholder response was supportive of the introduction of screening for IDA in children. This response was from a parent whose daughter is symptomatic for iron deficiency. She described having to fight to get her daughter's condition recognised, investigated and managed. She expressed concern at a lack of resources and a lack of awareness of ID/IDA in primary care. She called for more education and training of health care professionals in recognising the signs and symptoms of IDA so that prompt interventions could be provided. She said that a screening programme would enable IDA in children to be diagnosed earlier and would help to increase awareness of the condition.

Recommendation

Committee is asked to approve the following recommendation:

On the basis of this evidence map, no further work on screening for IDA in children under 5 years should be commissioned at the present time and the topic should be reconsidered in 3-years' time.

Therefore, systematic population screening for IDA in children under 5 years is not recommended in the UK.

Annex A: List of Organisations Contacted

1. Association for Improvements in the Maternity Services
2. British Association of Perinatal Medicine
3. British Dietetic Association Paediatric Specialist Group
4. British Maternal & Fetal Medicine Society
5. Faculty of Public Health
6. Institute of Child Health
7. National Childbirth Trust
8. Royal College of General Practitioners
9. Royal College of Midwives
10. Royal College of Obstetricians and Gynaecologists
11. Royal College of Paediatrics and Child Health
12. Royal College of Physicians
13. Royal College of Physicians and Surgeons of Glasgow
14. Royal College of Physicians of Edinburgh

Annex B: Consultation Responses

Note: Personally identifiable information has been redacted from certain comments, where individuals have chosen not to have personal details made public.

1.

Name: Comments received on behalf of Dr Eugen Strehle
Organisation: Royal College of Paediatrics and Child Health

We agree with the summary of the UK NSC review on iron deficiency in children under 5 years.

2.

Name: xxxx xxxx
Royal College of General Practitioners
Role: Senior Clinical Policy Officer

The RCGP agrees with the NSC findings and that under 5s should not be screened for iron deficient anaemia.

3.

Name: Kiranjit Atwal
Organisation: British Dietetic Association Paediatric Specialist Group
Role: Professional Affairs Officer

The BDA Paediatric Specialist Group would like to the thank the authors for compiling the recent evidence, and putting the report together.

Within the background section, it is important to note inflammatory markers can effect hepcidin levels and markers of iron although we appreciate the guide is for those without disease. It would be helpful to include some information around iron absorption, for example that iron absorbed in the proximal duodenum; absorption decreases with increasing iron stores; iron absorption is enhanced by vitamin C and inhibited by phytates and calcium.

Within the Current treatment section, it is cited that GI upset is a common side effect. It is imperative to also state that due to the side effects, compliance to treatment can be poor and often treatment courses are altered (reduced frequency or dose) which can affect treatment response.

Whilst we agree with the recommendations against public screening for IDA in children under 5 years for impractical reasons and paucity in the evidence, it is important to recognise factors that pose risk of IDA in some children.

Children with the following risk factors may be at increased risk of IDA:

- those living in food insecurity which can impact on a child's intake, likely to put iron at risk of deficiency due to to the poor quality of the diet (high in fat, salt and sugar food items due to affordability, over meat, legumes and grains)
- Coeliac disease, chronic kidney disease or other disorders of absorption where iron may be impacted
- restrictive diets due to extreme fussy eating and eating disorders such as avoidant-restrictive food intake disorder, where there may be an over reliance on milk and little source or complete refusal of iron containing foods
- those following a vegan or plant based diet with lack of dietary knowledge on suitable iron sources; megaloblastic anaemia may also arise due to vitamin B12/folate deficiency which is common in vegetarianism/veganism
- ethnic group: asian children due to higher rates of maternal iron deficiency during pregnancy, low birth weight and prematurity

These children are likely to cross the path of many healthcare professionals. Access to essential training on IDA is necessary (to understand prevalence, risk factors, diagnosis, non-supplementary management and treatment) for healthcare professionals (especially health visiting teams) so those at risk can be identified and safely managed.

We recommend further research into a non-invasive screening tool which could be used in amongst health visiting teams as part of the universal child surveillance program which could identify children at risk of IDA.

4.

Name: xxxx xxxx
Member of public

My child was symptomatic for iron deficiency. Her ferritin was 13 and I was told this was ‘normal’ by the GP. As she is still symptomatic I have done some research and discovered this is absolutely not normal. She is 11 years old and in the early stages if puberty. I am really concerned that doctors have no idea how to screen, treat and manage children who are struggling to concentrate, short of breath, tired all the time etc. I am at a loss if what to do. I give her iron gummy bears but they are not resolving her symptoms and the GP is no help as apparently she is in the ‘normal lab range’

Evidence Comment:

Lack of resources in primary care.

Lack of awareness of ferritin and how it helps cell development.

Lack of recognising symptoms and how to investigate, treat and manage this condition.

Lack of care.

Discussion comment:

All of the above

Recommendation comment:

Absolutely.
I have had to fight just for a blood test. Its taken multiple telephone/ face to face visits. A screening programme would be more efficient and help those who are undiagnosed.
It will also raise awareness.

Alternatives comment:

Tv adverts of symptoms to look out for.
School nurse visiting and screening suspected children.
Education of professionals.