

# Evidence Update

Summary of a Cochrane Review

Child Health Series

Do children benefit from taking oral zinc during acute diarrhoea?

**In communities where zinc deficiency is common, zinc may reduce the duration of acute diarrhoea by half a day in children aged over six months.**

We don't know if it reduces the number of deaths or need for hospitalization.

Researchers in The Cochrane Collaboration conducted a review of the effects of oral zinc to reduce the duration and severity of acute diarrhoea in children. After searching for relevant studies, they identified 24 randomized trials enrolling 9128 children. This *Evidence Update* summarizes the key findings.

## How is diarrhoea treated and how might zinc work?

Acute diarrhoea is very common in low- and middle-income countries, and can sometimes cause death. Oral rehydration salt solution (ORS) is the main treatment for acute diarrhoea.

Zinc is an essential micronutrient found in more expensive foods such as meat and fish. Deficiency of zinc is common among many populations due to an inadequate diet. Zinc is excreted in the stools and so repeated bouts of diarrhoea can cause deficiency too.

Zinc may protect against gastro-intestinal infections by helping to maintain the lining of the bowel, and increasing antibody production against infecting organisms.

The World Health Organization and UNICEF currently recommend that acute diarrhoea in children is treated with ORS plus a 10-day course of zinc sulphate.

## What does the research say?

### The effects of zinc in acute diarrhoea:

- In children aged over 6 months, zinc may shorten the duration of diarrhoea by about half a day.
- In children with signs of moderate malnutrition, zinc shortens the duration of diarrhoea by around a whole day.
- In children aged under 6 months, zinc may have no benefit on the duration of diarrhoea.
- Zinc increases vomiting in all age groups.
- There is currently not enough evidence to be able to say whether zinc reduces death or hospitalization.

### How much confidence can I have in these results?

The evidence for a reduction in diarrhoea duration is considered to be of low quality because some studies found zinc had no effect and some studies found large effects.

The largest and most consistent benefits were seen in studies only recruiting children with signs of malnutrition.

### Can the results of the research be applied to my setting?

Most of the studies were conducted in Asia in populations at high risk of zinc deficiency.

Only two trials are reported from Africa, and neither found a significant benefit with zinc.

## The effects of zinc in acute diarrhoea

This table provides more detail about what happens when children with acute diarrhoea are given oral zinc in addition to rehydration with ORS. These numbers are based on the results of the research, when available. The quality of evidence is either ranked as high, moderate, low or very low. The higher the quality, the more certain we are about what will happen.

Outcome	ORS alone	ORS plus zinc (95% CI)	What happens	No. of children (studies)	Quality of evidence
In children aged over 6 months, how long will the diarrhoea last on average?	Between 2 and 7 days	10 hours shorter (21h shorter to 0h longer)	Zinc may shorten the duration of diarrhoea by about half a day	2175 (6 studies)	Low
In children with signs of moderate malnutrition, how long will the diarrhoea last on average?	Between 4 and 6 days	26 hours shorter (39h shorter to 15h longer)	Zinc shortens the duration of diarrhoea by about a whole day	336 (3 studies)	High
In children aged under 6 months, how long will the diarrhoea last on average?	Between 4 and 6 days	5 hours longer (4h shorter to 14h longer)	Zinc may have no benefit on the duration of diarrhoea	1334 (2 studies)	Low
How many children will vomit during initial treatment?	134 per 1000	213 per 1000 (170 to 267)	Zinc increases vomiting	5189 (10 studies)	High
How many children will die from severe dehydration?	-	-	We currently don't know if zinc reduces child deaths	2198 (4 studies)	Very Low
How many children will require hospitalization for severe dehydration?	-	-	We currently don't know if zinc reduces hospitalization	1965 (2 studies)	Very Low

### More information

This summary is based on the following systematic review:

Lazzerini M, Ronfani L. [Oral zinc for treating diarrhoea in children](#). Cochrane Database of Systematic Reviews 2012, Issue 6. Art. No.: CD005436. DOI: 10.1002/14651858.CD005436.pub3.

#### What is a systematic review?

A systematic review seeks to answer a well formulated and specific question by identifying, critically appraising, and summarising the results of all relevant trials, published and unpublished, according to pre-stated and transparent methods.

#### What is the Cochrane Collaboration?

The Cochrane Collaboration is an international network of more than 28,000 people from over 100 countries. The collaboration is one of the biggest producers of systematic reviews on the effects of healthcare interventions, and Cochrane Systematic Reviews are recognized internationally as the benchmark for high quality information. The *Cochrane Database of Systematic Reviews* is available from [www.thecochranelibrary.com](http://www.thecochranelibrary.com) and free for eligible countries.

#### How has the quality of evidence been assessed?

The quality of evidence has been assessed using methods developed by the GRADE working group ([www.gradeworkinggroup.org](http://www.gradeworkinggroup.org)). The GRADE system considers 'quality' to be a judgment of the extent to which we can be confident that the estimates of effect are correct. The level of 'quality' is judged on a 4-point scale. Evidence from randomized controlled studies is initially graded as HIGH and downgraded by one, two or three levels after full consideration of: the risk of bias of the studies, the directness (or applicability) of the evidence, and the consistency and precision of the results.

**High:** Further research is very unlikely to change our confidence in the estimate of effect.

**Moderate:** Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

**Low:** Further research is very likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

**Very low:** We are very uncertain about the estimate

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