

Evidence Update

Summary of a Cochrane Review

Child Health Series

In areas where intestinal worm infection is common, does giving school children deworming drugs improve their health and school performance?

Deworming programmes may have no effect on average weight, haemoglobin, or cognitive ability. There is not enough evidence to know if deworming improves school attendance.

Researchers in The Cochrane Collaboration conducted a review of the effects of school-based deworming programmes on children's health, ability to learn, and school attendance. After searching for relevant studies, they identified 41 randomized trials enrolling 65,168 children.

What are deworming programmes and how might they work?

The World Health Organization (WHO) currently recommends treating all school children at regular intervals with deworming drugs in areas where intestinal helminth infection is common.

Deworming drugs are known to be effective at curing an individual child with worms. Heavy infections can make children feel unwell, and may contribute to anaemia and malnutrition.

Deworming programmes are often promoted on the basis that as they treat the worms, they will improve health and enable children to attend school and perform well.

Alternative strategies to these deworming programmes could be to test children prior to treatment, or to improve nutrition, water quality, and sanitation. Deworming programmes may be relatively cheap, but confident investment can only be made with reliable evidence that they work.

What does the research say?

Deworming programmes that treat all school children at regular intervals for more than one year found that:

- They may have no effect on average weight gain.
- They may have no effect on haemoglobin.
- They may have no effect on cognitive ability.
- There is not enough evidence to know if deworming improves school attendance.

The Cochrane Review also included trials which only gave a single dose of deworming drugs, and trials which followed children for less than one year.

How much confidence can I have in these results?

The evidence for no effect on health outcomes (weight and anaemia) is of low quality, due to problems with the trial methods and inconsistency between the results of different studies.

The evidence for little or no effect on cognitive ability and school attendance is also of low or very low quality. It is unlikely that deworming programmes would impact on these outcomes in the absence of an effect on weight or haemoglobin.

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

Deworming programmes have not demonstrated consistent benefits in high, medium, or low worm prevalence settings.

Three trials from 15 years ago suggested important effects on weight gain, but trials published since then have not confirmed these findings.



The effects of school deworming programmes in areas where worm infection is common

This table provides more detail about what happens when school children are routinely treated with deworming drugs at regular intervals, and are followed up for more than one year, as this provides the best evaluation of what current policy aims to achieve. The Cochrane Review also includes: a) trials which screened children for infection prior to treatment; b) trials which only gave a single dose of deworming drugs, and c) trials which followed children up for less than one year. 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	No deworming programme	Deworming programme (95% CI)	No. of children (studies)	Quality of evidence
Mean weight gain (kg)	–	Only one of five studies found a significant benefit on weight gain.	37,306 (5 studies)	Low
Mean haemoglobin (g/dL)	The mean haemoglobin in the control groups ranged from 9 to 10 g/dL	The mean haemoglobin with deworming was 0.0 g/dL higher (0.08 g/dL lower to 0.08 g/dL higher)	1365 (2 studies)	Low
Cognitive ability (test scores)	–	These two studies assessed multiple cognitive tests and neither study found a benefit with deworming	3720 (2 studies)	Low
School attendance (%)	The mean school attendance in the control group was 66.3%	The mean school attendance with deworming was 5% higher (0.5% lower to 10.5% higher)	20,000 (1 study)	Very low

More information

This summary is based on the following systematic review:

Taylor-Robinson DC, Maayan N, Soares-Weiser K, Donegan S, Garner P. [Deworming drugs for soil-transmitted intestinal worms in children: effects on nutritional indicators, haemoglobin and school performance.](#) Cochrane Database of Systematic Reviews 2012, Issue 7. Art. No.: CD000371. DOI: 10.1002/14651858.CD000371.pub4.

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 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). 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.

Evidence Update published in January 2013. Available at www.evidence4health.org/evidence_ch.htm *Evidence Update* can be distributed free of charge. The full text of this review is available FREE on *The Cochrane Library*.