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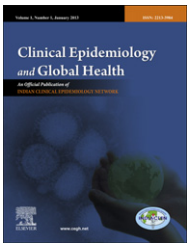

Evidence Summaries

Does regular deworming of school children in areas endemic for intestinal worms improve their physical health and school performance? Summary of the evidence and implications for public health programmes

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ABSTRACT

An update of a Cochrane Review summarized the effects on nutritional indicators, haemoglobin, cognition, school attendance; and the impacts on school performance and mortality of deworming programmes for soil-transmitted intestinal worms in children from randomised, quasi-randomised, and cluster randomised trials. It included data from 41 trials that randomised 65,168 children (<17 years) in high, medium, and low helminths-endemic areas from 23 countries in Africa, China, South Asia, and South East Asia, to selective or targeted deworming (with mostly albendazole or mebendazole), or to placebo or no treatment.

The review found that selective deworming programmes, where schoolchildren screened and detected to be infected with intestinal helminths are treated, will probably increase weight and haemoglobin but the evidence base is small. The effects of multiple doses of deworming drugs given to children without screening for infection and followed up for more than one year were uncertain for all outcomes sought due to the very low quality of the evidence.

1. The evidence

An update of a Cochrane Review of 41 community-based clinical trials that randomised 65,168 children below 17 years from 23 countries in Africa, China, South Asia, and South East Asia found that:

- In children identified as infected after screening, a single dose of deworming drugs probably increased weight and may have increased haemoglobin, compared to no deworming, but its effects on school performance were uncertain.
- Single or multiple doses of deworming drugs given to all school children in endemic areas without screening had inconsistent or uncertain benefit, or little evidence of benefit, on their physical health or school attendance.

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Review on which this evidence summary is based

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. http://dx.doi.org/10.1002/14651858.CD000371.pub4.

This evidence summary is based on the substantial update of the referenced Cochrane systematic review that was first published in 1998, and updated in 2000, 2007 and most recently in 2012. This summary presents an overview of the findings and the implications for low and middle income countries. For further details, please read the full review that can be downloaded, free of charge (through various funded provisions) in most parts of the world, from *The Cochrane Library* (www.thecochranelibrary.com). The results of this updated review were debated extensively in: The PLOS Medicine Community Blog of July 18, 2012: Should deworming policies in the developing world be reconsidered? (http://blogs.plos.org/speakingofmedicine/); The Berkeley Blog: Cochrane's incomplete and misleading summary of the evidence on deworming (http://blogs.berkeley.edu/2012/07/20/cochranes-incomplete-and-misleading-summary-of-the-evidence-on-deworming/); and The GiveWell Blog (http://blog.givewell.org/2012/07/13/new-cochrane-review-of-the-effectiveness-of-deworming/).

2. Why is this question important?

- The World Health Organization (WHO) reports that around 270 million pre-school children and over 600 million school children live in areas where they are likely to be infected with one or more of the soil-transmitted intestinal worms.[1]
- These worm infections have been shown to lead to anaemia and to limit physical and cognitive development through impaired absorption of nutrients and loss of appetite.
- Deworming involves single or multiple doses of anti-helminthic drugs (commonly albendazole or mebendazole) given once, twice, or thrice a year to children in endemic areas, depending on the prevalence of infection, and the likelihood of re-infection.
- While deworming can be selectively given to children identified by screening to be infected, screening increases costs; and WHO promotes community and school programmes that give deworming drugs regularly to all children in low-income countries (targeted deworming) in order to improve their nutrition, haemoglobin, cognition, school attendance, school performance and to promote economic productivity.
- Many countries have adopted routine periodic targeted deworming of school children and this policy has many advocates, including the World Bank and many other organisations that consider it one of the most cost-effective interventions for global health. Consequently, a considerable amount of public money is invested in achieving the postulated benefits.
- Others question these estimates and argue that the apparent benefits may apply to some helminthic infections such as schistosomiasis, but not necessarily to all helminthic infections.
- The 2007 version of this Cochrane review reported uncertainty about the assumed benefits and concluded that deworming may be effective in relation to weight gain in the short-term in some areas, but not in others. The potential long-term impact on weight was unclear, and no convincing effect on school performance was evident from the very limited data available.
- The current update included more studies, added schooling as an outcome, and incorporated advances in the methods of research synthesis developed by The Cochrane Collaboration since the previous review.

What did the systematic review seek and what did they find?

Review objectives: To summarise the effects on nutritional indicators, haemoglobin, cognition, school attendance; and the impacts on school performance and mortality of deworming programmes for soil-transmitted intestinal worms (nematode geohelminths) in children.

	What did the review authors search for?	What did the review find?
Types of studies	Randomised controlled trials, quasi-randomised trials (where allocation may be predicted) and cluster randomised trials with more than two clusters allocated to each arm.	Forty-two trials reported in 53 articles (including one unpublished trial with no available results) met the inclusion criteria. The included trials were conducted in 23 countries: Bangladesh (four trials); Ethiopia (two trials); Haiti (two trials); India (five trials); 'Indonesia (two trials); Jamaica (two trials); Kenya (five trials); South Africa (two trials); Vietnam (three trials); Zanzibar (two trials); Benin, Botswana, Cameroon, Guatemala, Java, Malaysia, Nigeria, Philippines, Sierra Leone, Tanzania, Uganda, Zaire (one trial in each); China, Philippines and Kenya (one multicentre trial).