Deworming Debunked

Summary of published article

A recent article in the BMJ sets about debunking certain long-held beliefs about deworming which has been hailed as a simple, cheap, and effective way of improving growth, raising brain power, and improving the educational and employment prospects of millions of children. The author asserts that according to the latest revision of the Cochrane review on the subject, it is clear that deworming alone has no effect on growth, cognitive ability or school attendance. While some studies carried out in the 1990s show impressive weight gains achieved in schoolchildren after a single dose of drugs that kill intestinal helminth worms (roundworm, hookworm, and whipworm), larger studies designed to confirm these benefits have tended to draw a blank.

Despite this, there is little sign of flagging enthusiasm for the deworming initiative, which is propelled by an alliance of international organisations, charities, and drug companies willing to supply the drugs (mainly mebendazole and albendazole) more or less for free. A bulletin from the World Health Organisation (WHO) on the millennium development goals is unequivocal. Deworming boosts the prospects of school age children earning their way out of poverty, it says. “The improvements in intellectual development and cognition that follow deworming have been shown to have a substantial impact on professional income later in life.” A meeting of economists, including four Nobel Prize winners, held in Copenhagen in 2012 concluded that deworming was among the top four cost effective interventions, along with improving nutrition, treating malaria, and improving childhood immunisation. Robert Mundell, a Nobel laureate in economics and a participant at the meeting, concluded that “Deworming is an overlooked intervention deserving of greater attention and resources. This simple, cheap investment can mean a child is healthier and spends more time in school.” It is puzzling, the authors feel, that he should have considered it overlooked.

GlaxoSmithKline already donates 400 million tablets of albendazole a year, while Johnson & Johnson donates 200 million tablets of mebendazole, a donation rate the two companies have promised to sustain until at least 2020. In addition, a range of charities and non-profit organisations, mainly in the US, contribute more than 100 million deworming pills a year, which they acquire either free or for a few cents a pill. Some of the charities enter the pills in their accounts as costing as much as $10 (£6; €8), making them look like hugely munificent philanthropies.

While some US charities overstate their generosity, others overstate the benefits of deworming, according to the Cochrane review. The Cochrane reviewers did identify 42 trials that met the criteria for inclusion. Excluding one for which the data are still awaited, the remaining 41 included 65,168 participants. The trials included three with 149 children who had been screened for helminth infection and treated with a single dose of deworming drugs. Although the numbers were small and the quality of the evidence low or very low, there was some evidence of improvements in weight gain, haemoglobin levels and formal tests of cognition. The evidence was weaker in trials that mimic the mass medication without screening, with either a single or multiple doses. For single doses, a positive gain in weight was reported in two trials from a single location but not in seven others published since then. Two trials measured cognition: one reported no effect, the other that deworming made cognition scores
worse. The two older studies that showed weight gain also found an improvement in physical wellbeing which is not surprising since nobody has ever denied deworming has health benefits. Studies of multiple doses, which are recommended by deworming advocates, show no significant weight gain on average and no benefit to cognition. Two studies, both in Kenya, showed school attendance 4% higher, a result that was not significant. Over longer followup periods the results were similar: no studies showed cognitive benefits, one showed weight gains, and one showed school attendance 5% higher, which again was not significant. In almost all cases, the quality of the evidence was low or very low.

Routine deworming had not shown benefits on weight in most cases, except for three studies conducted 15 years ago or more. For haemoglobin and cognition, community deworming “seems to have little or no effect,” and the evidence in relation to school attendance and school performance is “generally poor, with no obvious or consistent effect.”

The Cochrane review concludes: “Our interpretation of this data is that it is probably misleading to justify contemporary deworming programmes based on evidence of consistent benefit on nutrition, haemoglobin, school attendance or school performance as there is simply insufficient reliable information to know whether this is so.” These conclusions remain little changed from the earlier Cochrane review in 2000.

The charity GiveWell, which helps donors by rating other charities for value for money, also found an error in Disease Control Priorities in Developing Countries, a major report funded by the Gates Foundation and considered to be gold standard evidence. The report estimates that the cost effectiveness of deworming is $3.41 per disability adjusted life year, making it one of the most cost effective interventions for global health. But close examination of the figures has established five separate errors on the spreadsheet that was used to make the calculation. The true figure, based on the same data, is $326.43 – nearly a hundred times as much. Its revised figure puts deworming on the same cost effectiveness footing as treating drug resistant tuberculosis or providing family planning services, and makes it worse value for money than providing vaccination or insecticide treated bed nets.


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