

Campbell replication confirms little or no effect of community deworming



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For many years, international donors, philanthropists, and charities have poured money into deworming programmes for children in low-income and middle-income countries in the belief they will contribute to improved health, school performance, and economic development.¹ The Rockefeller Sanitary Commission started funding deworming programmes in 1909 for poor USA communities to eliminate the cause of the “laziness of the poorer classes”.² The idea caught on, research emerged, and enthusiasm increased. By 2005, WHO attributed Japan’s economic boom to deworming programmes in the 1950s, and suggested their policy reduced world poverty and enabled women’s empowerment.³ In 2016, US-based deworming organisations were behind a national government programme in India treating 240 million children.⁴

Tackling the evidence base behind these programmes, Vivian A Welch and colleagues⁵ have carried out a Campbell systematic review and network meta-analysis summarised in this issue of *The Lancet Global Health*. The authors examine trials of deworming for soil-transmitted helminths as well as schistosomiasis, and synthesise data from 52 studies in nearly 1.3 million children. They conclude that mass deworming of children for soil-transmitted helminths has little to no effect across a range of outcomes including growth, haemoglobin, cognitive development, and school attendance. The authors found a small effect on weight gain for schistosomiasis, but little to no effect for other outcomes. The effect of deworming on societal economic productivity was uncertain owing to very low certainty evidence.

Welch and colleagues’ review is a thorough and substantive replication of the Cochrane review,^{6,7} with additional sophisticated analyses and adjustments that take into account criticisms levelled by deworming advocates at the current Cochrane edition that we authored. Since the first edition⁸ of the Cochrane review in 2000, advocates of deworming have ignored, ridiculed, or attacked the various editions.^{1,9} For the past 16 years we have added new studies as they have emerged, and evidence of no effect has accumulated. We have unearthed large unpublished trials of no effect

now included in both reviews, and the controversy around our findings has helped to drive the demand for an independent replication¹⁰ of a single large study¹¹ from Kenya cited extensively by advocates as the underpinning evidence base. The replication was published in 2015 and uncovered “various errors”, ultimately finding little evidence for previously reported indirect effects of deworming, although school attendance remained higher in the intervention group. Indeed, the disbelief around the Cochrane findings was a major reason for the Campbell replication.

The Campbell review includes appraisal of programmes for schistosomiasis, which is important because deworming advocates often conflate soil-transmitted helminths with schistosomiasis. This conflation offers advocates a punchline for deworming for both soil-transmitted helminths and schistosomiasis, although the parasites are different, with different distributions and requiring different drugs.¹² The Campbell review also includes controlled before–after studies, uses network meta-analysis to compare the effectiveness of deworming combined with nutritional supplementation, and assesses treatment externalities for individuals who do not receive treatment.¹³ The authors also include studies following up the stepped-wedge Kenyan study and a cluster randomised controlled trial in Uganda.¹⁴ These follow-up studies ask whether a head start of 1–2 years with exposure to deworming in one group of children (followed in both groups by up to 10 years of deworming) provided a demonstrable advantage in long-term health, development, and societal benefits years later, and are widely cited by economists as solid evidence of long-term benefit. Welch and colleagues included these studies, assessing the risk of bias as high, and concluding that the effects on long-term economic productivity are uncertain.⁵ We had not included these data in Cochrane, but our forthcoming detailed formal appraisal indicates the studies raise interesting hypotheses but do not provide reliable evidence of effect—in line with Welch and colleagues’ assessment.¹⁵

In summary, Welch and colleagues’ review is important. Not all systematic reviews on the same topic reach the same conclusion, but the convergence

between the Campbell and Cochrane reviews here could hardly be stronger.⁷ The additional network and subgroup analyses in the Campbell review find no evidence of spillover effects, no synergistic effects of co-interventions, and no evidence regarding any moderating impact of worm burden or the learning environment.⁵ Welch and colleagues encourage a further analysis using individual patient data analysis of deworming trials, although substantive new insights seem unlikely given the evidence of ineffectiveness for most outcomes across multiple analyses. In our view, the time has come for donors, governments, and philanthropists to call it a day on this magic bullet, and turn to broader problems related to childhood poverty.

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