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I declare that I have no conflict of interest.

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Extending the benefits of deworming for development

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In today's *Lancet*, Charles King and colleagues, in a meta-analysis of functional disability due to schistosomiasis, show that schistosome infection is associated with significant anaemia, chronic pain, diarrhoea, reduced exercise tolerance, and malnutrition.

Previous assessments of the public-health relevance of schistosomiasis have focused mainly on symptomatic morbidity and late-stage disease.¹ Van der Werf et al² estimated clinical morbidity associated with schistosome infection in sub-Saharan Africa—eg, 70 million

cases of haematuria, 18 million cases of major bladder-wall abnormalities, and 10 million cases of major hydro-nephrosis associated with *Schistosoma haematobium*.² To this burden of disease, King and colleagues convincingly add much subtle morbidity.

Disability-adjusted life years (DALYs) are increasingly used as a non-monetary measure of the impact of mortality and morbidity caused by a disease. Subtle functional disability is very relevant in soil-transmitted helminthiasis, another group of highly prevalent helminths.³ Regular treatment is clearly linked with physical and cognitive development, educational outcome, and economic development.^{4,5} Consequently, the estimated DALYs lost due to these infections have been rated higher than those lost to schistosomiasis.

In 2001, a WHO Expert Committee concluded that the current figure for DALYs lost to schistosomiasis was considerably underestimated, and recommended that the figure should be revised to take into account the subtle morbidity induced by this disease.⁶ King and colleagues provide this missing information. As a result, we can readjust the disability weight currently assigned to schistosomiasis—and the resulting DALYs lost—to a much higher level. King's results should trigger a better quantification of the development impact of schistosomiasis. Beyond this, their analysis should encourage a



Schoolchildren in Laos being treated for worms at school deworming day organised by teachers

Photo is by Carlo Urbani, who first described severe acute respiratory syndrome in Vietnam and died of the disease on March 29, 2003. He was the WHO focal point for parasitic diseases in the Western Pacific.

comprehensive re-evaluation of the burden on human and economic development of a group of highly prevalent but still concealed communicable diseases of the poor, including soil-transmitted helminthiasis, lymphatic filariasis, onchocerciasis, cysticercosis, echinococcosis, food-borne trematode infections, and trachoma.

The past 20 years of schistosomiasis control have been characterised by two major advances. The first is the acknowledgment that even in areas where reinfection is intense, regular chemotherapy can effectively control morbidity. The second is the endorsement in 2001 by the World Health Assembly of a novel public-health strategy for the integrated control of soil-transmitted helminthiasis and schistosomiasis.⁷ The aim of this strategy, tailored specifically for areas with high transmission, is to remove the disease burden by regular treatment of high-risk groups within a broader context of preventive measures such as improvement of living conditions and hygienic behaviour.^{8–10}

When possible, regular treatment should be delivered through existing channels for the sake of sustainability. School health-programmes, also targeted at non-enrolled school-age children, are an excellent vehicle for the delivery of integrated interventions to a fundamentally high-risk group. Recently, we have also seen a multiplication of country experiences for the delivery of deworming to preschool children, packaged with vaccinations and/or vitamin A distribution.¹¹ The community-directed treatment approach used in the onchocerciasis control-programme might be an option for delivery of combined treatment packages to remote communities.

We need to strengthen the links between deworming programmes and other chemotherapy-based programmes against endemic diseases affecting poor people. The delivery channels we mention above provide realistic opportunities for the health system to extend its capacity for the packaging and delivery of a series of simple health interventions to those most in need.¹² The combined delivery of antiparasitic treatment is likely to be highly cost effective because most drugs are today cheap or donated.

However, in the current context, two concerns need to be raised. The first is the need to ensure sustainability of delivery, because regular treatment will have to be delivered for a long time before improvement of living conditions will eventually provide a permanent solution. The second concern is the potential limitation of a chemotherapy-based strategy should drug resistance

arise. We therefore believe that appropriate tools need to be developed and mechanisms put in place to enable monitoring of any reduction in drug efficacy so that strategic changes can be made in a timely manner.¹³ We also believe that research for new drugs and new control tools, such as the possible development of a hookworm vaccine, should be pursued.¹⁴

King and colleagues have added a further dimension to the effect that chemotherapy against schistosomiasis may have on disability. We believe that this novel information adds strength to the process of development of a comprehensive public-health strategy to control the burden of chronic endemic diseases in the developing world. We also hope that such a strategy will yield a high return on investment in terms of contribution towards reaching the Millennium Development Goals.¹⁵

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