Introduction: Opportunities to work together: intestinal helminth control and programmes to eliminate lymphatic filariasis

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The purpose of this brief introduction to the supplement that follows is to highlight the current unique opportunity to coordinate intestinal helminth control programmes with the relatively new global initiative to eliminate lymphatic filariasis. Such synergy at global, regional, national and local levels has the potential to greatly enhance the impact, decrease the cost and facilitate sustainability in both of these health programmes.

As reviewed in this supplement, overwhelming scientific evidence argues that intestinal helminth infections exert an enormous toll on human health, development and prosperity. Hookworm, *Ascaris lumbricoides* and *Trichuris trichiura* infections may interfere with appetite, growth, physical fitness, physical activity, work capacity, cognitive development and school performance in malnourished populations. Furthermore, such infected individuals, particularly the children and the girls and women of childbearing age, can benefit substantially from treatment when available (see contributions by Stephenson, Latham & Ottesen, Crompton, O'Lorcain & Holland, and Stephenson, Holland & Cooper in this supplement). Hookworm anaemia, if untreated, is especially pernicious during pregnancy and in very young children, and it can lead to a vicious cycle of low birth weight and stunting in subsequent generations that perpetuates malnutrition and its sequelae (Roche & Layrisse, 1996; Crompton & Stephenson, 1990; WHO, 1996*a*; Seshadri, 1997; Stephenson *et al*. this supplement).

Programmes to treat populations at risk – especially school-age children – have increased in number and scope and have become increasingly important in recent years. Support from numerous international organizations, private foundations, non-governmental development organizations, the private business sector, academic institutions and bilateral aid programmes working together has led to the expansion of such programmes in almost 50 countries of the developing world. Programmes to reduce hookworm infection in women of childbearing age have been developed to decrease anaemia and the premature delivery that may result, to decrease low birth weight, and to reduce infant and maternal morbidity and mortality (Stephenson *et al*. and Crompton in this supplement). WHO and its partners are embarking on a scaling-up effort to control mortality and morbidity due to schistosomiasis and soil transmitted helminths. The coordination with the Global Programme to Eliminate Filariasis (GPELF) represents an opportunity to dramatically expand this effort to scale up worm control.

The GPELF, which developed as a response to the World Health Assembly resolution of 1997 calling for the elimination of lymphatic filariasis as a public health problem globally, has as its principal strategy the single co-administration of two drugs once-yearly for 4–6 years, a regimen deemed effective enough to reduce microfilaraemia to levels below that capable of sustaining transmission of infection. There are two alternative two-drug regimens; namely albendazole-plus-ivermectin or albendazole-plus-diethylcarbamazine (DEC). Albendazole, of course, is already a principal drug used in programmes to control intestinal helminth infections (WHO 1996*b*), while ivermectin has efficacy against many of these same infections (Ottesen & Campbell, 1994) and, furthermore, may be synergistic with albendazole in treating *Trichuris* infections (Beach *et al*. 1999; Ismail *et al*.1998). Therefore, these two-drug regimens, designed principally to interrupt transmission of lymphatic filariasis through mass drug administration to at risk populations, can have a major positive impact on programmes to control intestinal helminth infections as well.

Perhaps even more important, however, is that circumstances now permit these parasite control prospects to move from the realm of theory to the realm of the possible; namely, the fact that both of these 'broad-spectrum' anthelminthic drugs (albendazole and ivermectin) are being made available by their manufacturers (GlaxoSmithKline and Merck & Co., Inc., respectively) at no cost for all populations in need of them for LF elimination (for albendazole, worldwide; for ivermectin, in all those countries where onchocerciasis co-exists with LF). The potential positive public health impact of these unique private sector donations is enormous.

What must now be done is to rationalize these opportunities by coordinating national LF elimination activities with those of intestinal helminth control programmes. While the exact mechanisms for this coordination must ultimately be defined at

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national and local levels, the challenge for public health planners is both obvious and urgent. At the global level, this means harmonizing the strategies for lymphatic filariasis (LF) elimination and intestinal helminths (IH) control, ensuring that the WHO recommendations for both (Ottesen *et al*. 1997; Montresor *et al*. 1999) are met through appropriate planning and programme implementation.

For instance it is evident from many soil-transmitted helminth control programmes, that treatment delivered once a year will not be sufficient to effectively control and prevent mortality and morbidity due to soil-transmitted helminths in children and women. The delivery once a year of albendazole (with or without ivermectin) may need to be supplemented with further anthelmintic treatment with one of the anthelminitics included in the WHO List of Essential Drugs, after consideration of the local circumstances. Where and when necessary these treatments may be further integrated with delivery of praziquantel for the control of schistosomiasis (WHO 1996*b*).

At the regional level the rationalization of these opportunities calls for the coordination of international agencies and programmes involved in LF elimination and IH control, and at the national level it requires coordination both within health ministries and between health ministries and other ministries (e.g. education, planning, finance) related to maternal and child welfare and funding. Finally, and of critical importance, at the local level it requires creative interactions among the public and private sectors and the communities being served. Partnerships with local producers of anthelmintics may develop to assure availability of high quality drugs during and after the elimination of filariasis. The drugs may be used to complement, with further deworming, the yearly mass drug co-administration for the elimination of filariasis. Ideally these programmes should interact in such a way as to build confidence in the health care system, enhancing its utilization and sustainability. In some areas NGOs will play a key role in this process.

The logistics and specific plans of action to develop such coordinated programmes must now be worked out, so that monitoring and assessment can be put in place and programme success achieved through appropriate adjustments as necessary. The course is uncharted but not unrealistic. The challenge is before us (WHO, 1997), the tools are identified (Ottesen *et al*. 1997; Brown *et al*. this supplement; Houston, this supplement; Horton *et al*. this supplement), their availability is assured (WHO, 1999), and a global commitment has been made (WHO, 2000). It is now up to public health professionals to ensure that during these elimination efforts success is also achieved in controlling helminth parasites so that the children, adults and economies of the world all can benefit from this unique window of opportunity that has been presented to us.

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