



HEAD TO HEAD

Should we commit to eradicating malaria worldwide?

Bruno Moonen cannot accept the iniquitous alternative, but **Clive Shiff** believes the necessary huge investment could be better spent

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Yes— Bruno Moonen

The World Health Organization,¹ the Roll Back Malaria Partnership,² and the United Nations³ all have a vision of a malaria-free world. The world has already committed to malaria eradication, albeit without a target date. More importantly, malaria endemic regions are setting ambitious elimination targets, showing a clear demand for, and commitment to, regional elimination and, eventually, global eradication.⁴⁻⁶

Equitable and sustainable

For malaria, eradication is the only equitable and sustainable solution. Half of the world has already eliminated malaria,⁷ and, as Melinda Gates put it in 2007: “Any goal short of eradicating malaria is accepting malaria; it’s making peace with malaria; it’s rich countries saying: ‘We don’t need to eradicate malaria around the world as long as we’ve eliminated malaria in our own countries.’ That’s just unacceptable.”⁸

The alternative, indefinite control, is not sustainable. Maintaining financial commitment, especially when the burden becomes low, is challenging, and history has shown that when programmes are not adequately funded malaria will resurge.⁹ Indefinite control would require constant investment in research and development to stay ahead of an ever evolving parasite and vector. Countries that eliminate, on the other hand, are more likely to remain malaria-free.¹⁰

The challenges in the polio endgame, operationally and financially, are obvious reasons for pause. As Chris Whitty, chief scientific adviser to the UK Department of Health, noted: “Trying and failing [to achieve] eradication is costly, pulls resources from other priorities, breeds cynicism, and may destroy good control programmes. The key, therefore, is not to call for it where we cannot achieve it, and, for most diseases, we cannot.”¹¹

However, failures in control because of inconsistent funding are equally expensive,⁹ and bold and ambitious goals typically mobilise additional resources that otherwise would not have been available. Also, it is important to recognise that a

commitment to malaria eradication is not a call for a vertical campaign that would divert scarce resources and replace control programmes. Instead elimination programmes need to build on strong control efforts (not replace them); the currently well funded malaria efforts should form the basis for integrated infectious disease surveillance and integrated vector management, as was the case in Sri Lanka.¹²

In general, a false sense of the feasibility of eradication, often with a single tool, has historically stifled research and development. Funding faltered for the Global Malaria Eradication Programme in the 1960s and the programme ended, and when parasites became increasingly resistant to chloroquine and DDT controlling malaria became challenging, especially in sub-Saharan Africa, because a lack of investment in research and development meant no alternative tools were available.¹³

Investment in innovation

Today’s challenges relate to emerging resistance, and the acknowledgment that malaria cannot be eradicated with the current tools alone has spurred investment in innovation, often through public-private partnerships. We now have a robust pipeline of new molecules for treatment and active ingredients for vector control as well as investments in vaccine development and other technologies that either reduce mosquito populations or make them refractory to transmit parasites to sustainably prevent transmission.¹⁴

That malaria is a disease of the rural poor¹⁵ makes it an excellent candidate for eradication if current trends in urbanisation and reductions in global poverty continue.^{16 17} This is not necessarily the case for other infectious diseases. Interrupting transmission will become increasingly harder for diseases with human-to-human transmission as population density increases and for vector borne diseases like Dengue transmitted by a vector that thrives in urban environments.¹⁸

In addition, unlike polio, for which routine vaccination continues globally, many previously malaria endemic countries no longer have vertical control programmes for malaria, and failing in one

region does not necessarily pose a global risk because regional success has already been shown to be sustainable.

Although the vision of a malaria-free world is already broadly held, a recommitment by the World Health Assembly to malaria eradication would be a strong sign of support for regional elimination ambitions. This should not be a commitment to a campaign that is based on a single tool, effected through an all-in global effort that needs to continue everywhere until the last parasite is exterminated.

Instead it should be a global commitment to support parallel regional elimination efforts combined with sustained investments in research to develop the necessary tools and tackle the yet unknown challenges of the future. Given the impressive progress made in the past 15 years,¹⁹ now is the time to commit to eradicating a disease that has plagued humanity since its origin. And when we are in the endgame, the world should remember that at the end of the last century this disease killed more than a million children every year.

No—Clive Shiff

Without doubt the concept of global eradication of a disease is a highly desirable goal. This laudable objective has been achieved only once, with smallpox. Success depended on a vaccine that imparts long lived immunity after a single inoculation. Even this simple vaccination at scale required a huge worldwide commitment in people and supplies until the last person with symptoms was identified and immunologically isolated.

This is a top-down strategy, dependent on massive concentrated funding until finished. This runs counter to the concept of public health as an integrated, sustained service for the community.

The World Health Organization's global malaria eradication programme of the 1950s also required central monitoring to provide local commitment and oversight.²⁰ It had great success in eliminating malaria from some 34% of the area originally assessed as endemic for malaria,²¹ but it depended on functional local health infrastructure. Although research projects in Africa generated much epidemiological data,²² they could not sustain control, foiling global eradication.²³ This resulted in WHO changing its policy on malaria,²⁴ focusing on drugs to prevent and reduce deaths—and the policy foundered when chloroquine failed. Our tools today are essentially similar to those of 60 years ago, with improvements in diagnosis and predicting outbreaks and new insecticides and bed nets.

There are several reasons why we should promote the management of health services rather than commit massive funds to attempt to eradicate malaria in the near future.

Inability to see it through

Eradication of malaria will require major synchronised commitments, but the governments of many endemic countries have other priorities.²⁵ Local wars as well as unstable, reluctant, or impoverished administrations, mean many cannot commit the concerted effort necessary to achieve eradication. At the Abuja summit in 2000, African heads of state agreed to control malaria, yet few have committed adequate resources.

A combination of donor and scientific entities will be needed for successful eradication efforts. But who will do the integration? What facilities will be needed on the ground? Who will fund and audit the process? Several donors operate in most endemic countries but each with a specific agenda. For example, some donors provide bed nets only for pregnant women or children under 5, whereas others place no such restrictions but

do not evaluate their programmes. Eradication would require coordination and only WHO could do this, but many donors will not agree and WHO now lacks funds for the vital expertise to provide successful coordination.

In any programme to initiate eradication, National health ministries will be responsible for the complex interventions, requiring civil servants who are well trained and remunerated and committed to the programme. However, some endemic countries struggle to fill such roles,²⁶ hampering sustained management and coordination of necessary resources.

Countries also lack local staff trained and experienced in deploying drugs, diagnostics, and insecticides. Lack of career opportunities for entomologists and epidemiologists discourage people who trained abroad to return home. These experts are essential for global eradication. Foreign scientists are less likely to provide continuity and may be influenced by external perspectives. Total eradication would require integrated, comprehensive evidence based management in country, not just advice. Apart from South Africa, the continent has shown little commitment so far.

Finally, we have no vaccine for malaria. Vector control depends on insecticides. Experiments are underway to try to genetically modify species, but these are unlikely to be introduced soon, and there are over 40 species that are potential malaria vectors.

Invest in public health

Eradication requires elimination of all cases, even of subclinical infection,²⁷ meaning that however implemented, eradication would be costly. And costs would increase greatly when seeking and curing an exponentially shrinking number of patients.

Proper management of malaria seems the sensible route. Investing to integrate malaria control into functional local public health systems would be sustainable at a manageable expense. It would also help bolster local infrastructure and the local public health service as well as ensuring that malaria is kept under control and no longer of public health importance.²⁸ To expend huge resources in an unstable world trying to eradicate a vector borne parasite complex that has dormancy (*Plasmodium vivax* and *P. ovale*) and a zoonotic base (*P. knowlesi*) seems an irresponsible alternative to improving the management of public health in endemic countries.

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