

CASE FOR INVESTMENT IN NEGLECTED TROPICAL DISEASES

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Over the last year, we have witnessed a plummeting global economy, one so distressed that it is hard to point at any one thing — real estate, a company, a commodity — that can hold real value and pay dividends. That sort of instability makes it a great time to be in global public health. For the last few decades, pundits have critiqued our work, pointedly asking about the 'cost-effectiveness' of public health interventions and demanding returns on investment for public health dollars, which correspond to the sky-high returns seen in the private sector over the past ten years. While not completely free of corruption, inflated numbers and general lack of transparency reminiscent of the global financial meltdown, public health programmes and professionals can point to the value of their programmes and the returns seen in the average financial portfolio of the last several years.

A recent review of the World Health Organization's Global Programme to Eliminate Lymphatic Filariasis (WHO, GAELF) (Ottesen et al, 2008) reminds us that great buys in public health do exist and are abundant. Amazingly, 20% of the world's residents (1.3 billion people) are at risk for lymphatic filariasis (LF), which is transmitted through mosquito bites. Nearly 120 million are currently infected and 40 million are seriously debilitated by the disease. In the past seven years, the Global Programme saved an astonishing 32 million disability adjusted life years (DALYs)

(the gold standard for a public health intervention) (Ottesen et al, 2008). That includes 6.6 million children who never contracted the disease thanks to treatment and another 9.5 million infected patients spared from its more debilitating effects. You can therefore imagine why LF treatment and prevention is often cited as a best buy

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in public health. But LF is not alone — it is merely one of a group of diseases known as the neglected tropical diseases or 'NTDs', sorely in need of a makeover and name change.

The seven most common NTDs, including LF, can be easily prevented and treated at a very low cost. However, to remove the 'neglected' from the NTDs will require a dramatically bolder, new approach to the issue. Public health advocates will have to sharpen their presentation, fundraising, and implementation skills to realise what we have all known to be the case for decades: the best buys in public health are not yet being purchased. For the first time in history, it seems the world may be poised for that to change.

Current situation

Remarkably, on a continent with roughly 22 million human immunodeficiency virus (HIV) infections

(www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/2008/), NTDs are the most common conditions affecting the 500 million poorest people in sub-Saharan Africa (Hotez et al, 2007; www.gnntdc.sabin.org/). That will come as a surprise to most people who are under the impression that acquired immunodeficiency disease (AIDS) is the leading cause of morbidity and mortality in Africa. The majority of global NTD burden results from helminth infections (Hotez et al, 2007) — these are the distended bellies seen in young children the continent over. Hookworm infection and schistosomiasis occur in roughly half of the poorest people in Africa, with school-aged children harbouring the largest number of worms compared to any other group. Together, hookworm and schistosomiasis are major causes of childhood anaemia in sub-Saharan Africa, and result in growth stunting, memory loss, and reduced school attendance (Hotez et al, 2008). These two infections are also important causes of anaemia among pregnant women, with some estimates suggesting one-third of pregnant women have hookworm (Brooker et al, 2008). In West and Central Africa, onchocerciasis, also known as river blindness, is responsible for a colossal loss of productivity from blindness (Amazigo et al, 2006). Trachoma is an important cause of blindness in the Sahel. The depth and sheer magnitude of disease demand new approaches and a new strategic plan for action. Here are a few areas where action is urgent and necessary.

Demonstrate the value and integrate the insights

Just a few months ago, the Global Network for Neglected Tropical

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Diseases ('The Global Network') received its single largest grant in history. That was in large part due to having carefully developed a strong evidence base from the peer-reviewed published literature for the benefits of NTD control and its cost-effectiveness, as well as a great idea in integrating the control of the seven most common NTDs through a package of donated or low cost-drugs (Hotez et al, 2007; Molyneux et al, 2005). The Global Network translated science into policy. Savvy marketing and lobbying also helped, in addition to a superb core strategy based on an ideal: we're more effective together than apart. Seems obvious, right? Yet, for the last decade, the public health world has been highly fragmented with the HIV/AIDS lobby taking the lion's share of the prize. That is not to generate ill-will from AIDS activists, but rather to draw attention to their singular achievement and point the way toward more rational funding and approaches.

LF is one of a suite of lesser-known ailments that include schistosomiasis, trachoma, leprosy, and soil-transmitted helminths, all of which affect billions of people in South America, Africa, India and Southeast Asia. Though massively widespread, the NTDs can be defeated with a more modest investment than it takes to fight pandemics like AIDS and tuberculosis. Ironically, because they are less known and potentially easier to fight than more well publicised scourges, they have always been shunted off to the side of the global public health agenda.

Further, it is likely that NTD reduction helps in the fight against AIDS, tuberculosis (TB) and malaria by improving general health. Gains made against AIDS and tuberculosis are often made 'uphill'. We can get medication and treatment to those suffering from HIV/AIDS, but what good is that if patients are suffering from other disorders that reduce the effectiveness of that medical attention? Further, these diseases require more follow-up and attention than the fight against the NTDs.

Both the WHO and the Centers for Disease Control and Prevention

identified the NTDs as 'targets of opportunity' in the battle to improve global health. Thankfully, efforts against some of these pernicious diseases are not just gearing up, but they are gaining significant traction.

This success is the product of what has been called the most rapid scale-up of a drug programme in the history of public health. The effort to control NTDs could also become the largest programme of its kind in public health history: so far, for LF alone over the last eight years, 1.9 billion drug treatments

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have been administered to hundreds of millions of people in 48 countries (Ottesen et al, 2008).

This programme shows what is possible when the funding needed to fight these neglected-but-conquerable diseases is put into the hands of organisations that have the will to use it effectively. This kind of programme is vitally important, because it is so unlike what we are used to seeing. This is not an effort to mitigate the effects of a disease, and it is not finding the cause of a disease. If followed through to completion, it is nothing less than complete eradication of a disease. Lymphatic filariasis, along with its fellow NTDs, could simply go from being threats to more than a billion people, to an interesting epidemiological footnote in a few years.

Change the toolkit

Given the success against LF, we should not hesitate taking on the rest. Beating NTDs as a group is within our grasp, and it could be the most cost-effective investment we will ever make in global public health. What is the right approach for getting the job done?

First, recognise that a new approach is required. Public health workers need toolkits better suited to business than to public health business-as-usual approaches. How should this manifest itself? To start, the types of programmes needed to eliminate (if not reduce) NTDs dramatically both nationally and internationally do not exist in many countries. Tight coordination, planning, and strategy — the toolbox of someone more likely to have an MBA (master of business administration) than an MPH (master of public administration) — are requisites for success and funding.

Second, focus on the people who have the disease. According to Dr Peter Hotez from the Global Network, the largest number of people with NTDs live in Nigeria and the Democratic Republic of Congo. Not surprisingly, these are two of the most difficult countries in Africa to productively and effectively implement public health interventions. That said, the interventions for NTDs tend to be far more straightforward than other efforts underway in AIDS, tuberculosis and malaria.

Expand the research

There is a striking lack of overall data for the prevalence of NTDs, particularly on a country-by-country basis. In Rwanda's newly-launched national NTD programme, the collection of baseline data was particularly critical since the data from the early 1990s was incomplete and outdated. In addition to determining that intestinal helminth infection was present in the vast majority of school-aged children, the study determined that trachoma was far more prevalent than previously believed. Even within the Ministry of Health, there was no clear sense of whether trachoma even

posed a threat to health in Rwanda. The study in nine districts, however, revealed 102 active trachoma cases in 1375 children. The disease was invisible to public health officials until the research was completed.

Rwanda's experience is hardly unique, except that generous donors came forth to recognise the needs and finance the research. The collection of baseline data, particularly across sub-Saharan Africa, should be a top research priority, and one that ideally could better elucidate the extensive needs and epidemic spots on the continent. Currently, global health advocates tend to rely on broad estimates — which though perhaps accurate, fail to paint a complete and compelling picture for intervention. The trick is convincing donors to care about diseases they have likely never known.

Making the economic case

In tough economic times, talking economics is the way to shore up funding and to get the job done. NTDs are no exception. Malaria was in part put on the global health map (again) by economic arguments. AIDS funding came about in a similar way. It is time to improve the precision of economic analysis for NTDs. Here is what we have to go on right now: NTD control programmes tend to return 15–30% on their investment in increased economic activity (Molyneux, 2004). The cost per disability adjusted life year (DALY) averted — one of the most commonly cited statistics for cost-benefit analysis — is lowest for interventions such as deworming, LF and river blindness control. Most of these analyses rely on free-standing, non-integrated programmes, since they are easier to study and more common. Brady et al (2006) have further quantified the benefits of integrating NTD programmes into existing initiatives in sub-Saharan Africa. In Rwanda, we are working hard to integrate the NTD efforts into the public health and educational interventions of government, thereby lowering their cost and improving their overall effectiveness by reaching more people in need.

The fact is, NTD control and elimination serves multiple ends and that is the strongest argument that can be made to address them. There is a raft of incoming evidence that demonstrates how pursuing NTDs has a symbiotic effect on existing programmes. Hookworm and other NTDs geographically overlap with malaria where they worsen the clinical course of the disease (Brooker et al, 2006, 2007). A study in a Zimbabwean community reveals that women with female genital schistosomiasis have almost a three-fold risk of having HIV

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relative to women free of infection (Kjetland et al, 2006). A study in Kenya found that deworming children reduced absenteeism in school by 25% (Miguel and Kremer, 2004). Thus, everything is connected to NTDs and NTDs are connected to everything in global health. While one could attribute the challenge to a failure of basic public health systems, there is more to it than that. Even in places where public health systems are rapidly improving, NTDs remain overlooked. We have simply failed to get them in their deserved position on the roster of diseases to fight.

Next steps

The next several years are vital for the future of NTD control. For the first time, there is true advocacy in the form of the Global Network for Neglected Tropical Diseases. Although a vital component, advocacy is only a sliver of what is required for the overall effort against NTDs. Financing, training, government support, and management can all potentially converge to create effective national and regional programmes. These will be absolutely essential for future efforts to generate

the excitement and success that will lead to the eventual elimination of these diseases. [JL](#)

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