

# Invisible Plagues, Invisible Voices: A Critical Discourse Analysis of Neglected Tropical Diseases

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Neglected tropical diseases (NTDs) are a group of diseases that share three distinctly social characteristics, despite being medically and biologically diverse. First, these diseases thrive amongst the most marginalized and vulnerable people in global society, including people living in absolute poverty and children.<sup>1</sup> NTDs often strike in urban slums, remote rural regions and conflict zones across resource-poor environments.<sup>2</sup> Second, NTDs contribute to and reinforce the impoverishment of the world's poorest people. It is estimated that almost every person in the "bottom billion" – the poorest billion of the world's population – has at least one NTD.<sup>3</sup> Thirdly, when taken together, NTDs are widespread, in that they are estimated to affect at least 1 billion people worldwide and may threaten millions more.<sup>4</sup> Moreover, NTDs, if taken together, have been ranked fourth in important communicable diseases, and may rank second only to HIV/AIDS in terms of disease burden.<sup>5</sup> Currently, the World Health Organization recognizes the diseases described in table 1 as neglected tropical diseases. Table 1 about here

Despite the term "neglected tropical diseases," neglect is often not explicitly defined in the literature. Implicitly, neglect appears to refer to a lack of funding for interventions that target NTDs and a lack of research and development related to NTDs. Neglect, however, should be taken to represent the broader invisibility and low priority ascribed to these diseases and the social conditions that foster them. With this perspective, lack of funding and a lack of research and development can be viewed as mechanisms of a larger pattern of neglect.

Critical discourse analysis is a type of analytical research that aims to understand, expose, and ultimately resist social inequality. Fundamentally, critical discourse analysis is primarily concerned with

the way social power enacts, reproduces and resists abuse, dominance, and inequality in text.<sup>6</sup> Moreover, the ways in which minority and powerless groups are constructed through discourse is essential to critical discourse analysis.<sup>7</sup> Critical discourse analysis has been used in conjunction with global health concerns such as influenza<sup>8</sup>, HIV/AIDS<sup>9</sup>, and other diseases. This article is concerned with examining the following questions: How and where are neglected tropical diseases discussed in the literature? How does the literature explain the neglect of this class of diseases? What is left out of the discussion? How does the literature reproduce and resist neglect?

Overall, the literature on neglected tropical diseases is limited. Despite the social characteristics of neglected tropical diseases, it appears that existing literature has not yet examined the inherently social linkages of NTDs to global inequality, power and "development." Articles on neglected tropical diseases tend to be almost exclusively published in specialty medical journals such as *PLOS Neglected Tropical Diseases*, *Transaction of the Royal Society of Tropical Medicine and Hygiene*, *Advances in Parasitology* and others. Moreover, there is a considerable lack of social science literature on NTDs, both in terms of employing a social science perspective and articles published in social science journals.\* This does not necessarily reflect a lack of social science research on global infectious disease as a whole, as social science-oriented journals have given much more attention to the "big three" infectious diseases: HIV, malaria, and tuberculosis. Consequently, it appears that social science has colluded in the low priority and invisibility of NTDs.

Central themes in the literature fall into two broad categories: explaining neglect and addressing neglect. In explaining neglect, the literature focuses on six themes: poverty, geographic and social isolation, social stigma, competition with the big three, underestimates of disease burden, and lack of research and development. When recommending interventions to address neglect, the literature typical-

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**Table 1: Selected Neglected Tropical Diseases<sup>66</sup>**

<b>Disease</b>	<b>Description</b>
Buruli ulcer	Bacterial disease; affects the skin, can cause irreversible deformity, long-term functional impairment; reported in over 30 countries with tropical and subtropical climates
Chagas disease	Caused by protozoan parasites, transmitted through blood-sucking triatomine insect; can result in cardiac impairment and digestive lesions; found mainly in Latin America
Dengue/ dengue haemorrhagic fever	Mosquito-borne viral infection causing a severe flu-like illness, which can progress to a potentially lethal complication; incidence has been increasing, now affects over 100 endemic countries
Dracunculiasis	Parasitic disease caused by a worm; causes severe pain; affects people in rural, deprived and isolated communities who depend on open water sources; nearing eradication; now endemic in Ethiopia, Ghana, Mali and Sudan.
Fascioliasis	Zoonotic disease caused by trematodes; can result in biliary cirrhosis with scarring and fibrosis of the liver and growth deficiencies; now widespread throughout world
Human african trypanosomiasis	Parasitic disease transmitted by the tsetse fly; usually fatal if untreated; considered by some to be the “deadliest disease in the world”; affects mostly poor populations living in remote rural areas of Africa
Leishmaniasis	Caused by protozoan parasites, transmitted by a tiny sandfly; may be <b>cutaneous (most common), mucocutaneous</b> or <b>visceral (most severe)</b> ; found in <b>intertropical and temperate regions</b> ; threatens ~350 million people in 88 countries
Leprosy	Caused by mycobacterium; nearing elimination; pockets of high endemicity still remain in Angola, Brazil, Central African Republic, Democratic Republic of Congo, India, Madagascar, Mozambique, Nepal, and the United Republic of Tanzania.
Lymphatic filariasis	Painful and profoundly disfiguring disease caused by nematode worms; transmitted by mosquitoes; can cause limbs to swelling, genital disease and recurrent painful acute attacks; ~120 million people infected in tropical and subtropical areas
Onchocerciasis	Caused by a worm; transmitted through infected blackflies; results in blindness, skin rashes, lesions, intense itching and skin depigmentation; found in West and Central Africa, Yemen and six countries in Latin America
Schistosomiasis	Caused by blood flukes in infected fresh water; causes severe morbidity; affects ~ 200 million people worldwide; endemic to tropical and sub-tropical areas, especially poor communities without potable water and adequate sanitation
Soil-transmitted helminthiasis	Caused by ingestion of worm eggs from contaminated soil or active penetration of skin; can cause intestinal manifestations, general malaise, weakness, anemia and cognitive impairment, impair physical growth; greatest prevalence is in sub-Saharan Africa, the Americas, China and east Asia; <i>A. lumbricoides</i> infects over 1 billion people, <i>T. trichiura</i> 795 million, and hookworms 740 million
Trachoma	Caused by microorganism spread through eye discharge and eye-seeking flies; can lead to irreversible corneal opacities and blindness; often strikes women and children; hyperendemic in the poorest and most remote rural areas of Africa, Asia, Central and South America, Australia and the Middle East; affects ~84 million people, ~8 million are visually impaired
Yaws	Chronic bacterial infection affecting mainly the skin, bone and cartilage; causes skin lesions; can lead to disfigurement and impairment; found in poor communities in warm, humid tropical areas of Africa, Asia and Latin America; children under 15 years are most affected

ly focuses on technical solutions and employs a human rights paradigm.

### **Human Rights Paradigm**

Due to the fact that NTDs are more likely to occur in conflict zones and amongst extreme resource deprivation, a “human rights” paradigm is often used. The human rights paradigm typically deals with the complex relationship between the individual as citizen and the state as guarantor of rights. Neglected diseases are both a cause and consequence of human rights violations. The failure to respect certain human rights, such as the rights to water, adequate housing, education and participation, increases the vulnerability of individuals and communities to neglected diseases.<sup>10</sup>

While this approach helps to emphasize the importance of inequality inherent in NTDs, it is also limited when the capacity of the state is reduced or where the state is not a benevolent actor. Furthermore, as primarily dealing with a relationship between citizen and state, human rights underestimates the responsibility of other institutions, such as lending institutions, donor countries, transnational corporations, and intergovernmental organizations in making neglected diseases invisible.

### **Poverty**

Neglected tropical diseases tend to flourish in environments that are deprived of resources and infrastructure, especially with regards to unsafe water, poor sanitation, and limited access to basic health care. In many of the areas in which NTDs are prevalent, absolute poverty exists at virtually all levels of society. Poverty includes individuals, but also extends to families, households, communities, and entire countries. The material circumstances of communities at risk for NTDs are denoted by a lack of access to the most basic resources and services, whether they are in poor, remote rural areas with no infrastructure or in substandard conditions of urban slums and squatter settlements.<sup>11</sup> However, neglected tropical diseases do more than merely thrive in absolute poverty. NTDs also contribute to and exacerbate the impoverishment of individuals and communities. There are extremely high out-of-pocket costs for treatment of NTDs. Moreover, there is empirical evidence that treatment costs disproportionately affect the lowest-income households.<sup>12</sup> These high costs of treatment can drive patients into delaying treatment, worse health outcomes and into deepening poverty. In addition to direct treatment costs, NTDs have several indirect common “poverty promoting” features, including: loss of economic potential due to disability and

death, economic costs of seeking inappropriate or ineffective health care, reduced agricultural productivity, food insecurity, weakened worker productivity, abandonment of tenable land due to high rates of infection, famine, migration, reduced child survival, poor school performance and poor attendance due to impairments in cognition. Taken together, these effects have been described as the “poverty trap.”<sup>13</sup>

Current discussions of poverty in neglected tropical disease literature acknowledge that poverty is significant, encompassing and pervasive, but often do not address the critical connection between poverty and inequality. In understanding the relationship between poverty and NTDs, it is imperative to examine poverty in a broader global context. Inequalities in power and resources provide the overarching social structure that allows for the more direct mechanisms that create and reinforce the low priority ascribed to NTDs. Some literature on NTDs have specifically cited “powerlessness” due to poverty and living in rural areas as being centrally responsible for the social marginalization of people affected by NTDs.<sup>14</sup> Poverty also describes the difficulties faced by “developing” countries that lack the resources to provide the infrastructure, human resources, and services that would reduce the burden of NTDs.<sup>15</sup> A political economy perspective would draw attention to poverty at the global scale, positing that: location in the global economy generally determines the standard of living and life chances of individuals; in “developing” countries, absolute poverty threatens population health, with chronic hunger, malnutrition, lack of access to safe drinking water and other structural factors increasing vulnerability to disease; and that location in the “developing” world results in poor health, in part, due to wealthy countries’ exploitation of natural resources and labor of the “developing” world with the collusion of the local elite.<sup>16</sup> Global poverty should also be viewed with a historical lens. The history of seemingly intractable poverty in much of the “developing” world cannot be addressed without the context of colonialism, subjugation and the slave trade.<sup>17</sup> Formerly colonized countries are further crippled by international debt and economic disadvantage in ways that are echoed in the incidence and prevalence of NTDs.<sup>18</sup> Due to such far reaching impoverishment, low-income countries usually must rely on external funding, as they do not have sufficient resources to manage public health threats, especially NTDs, on their own, even when investing a large proportion of national income in public health.<sup>19</sup> As a result of country-level poverty, “development” actors – pri-

marily international lending organizations – are imbued with the power to determine global health policy, including which diseases and populations are addressed and how interventions function.

### **Geographic and Social Isolation**

A key point in the relationship between poverty and neglected tropical diseases is the relative geographic and social isolation of neglected tropical diseases. Generally, agents and vectors that transmit NTDs are restricted to tropical or subtropical zones and pose little biological threat to countries in cooler climate zones. Seven main NTDs cluster in the same rural geographic regions, especially sub-Saharan Africa, Central and South America and Southeast Asia.<sup>20</sup>

While NTD literature acknowledges the endemicity of some NTDs, few recognize that geographic isolation alone cannot account for the low global health priority of NTDs. Neglect of NTDs occurs when global inequality is coupled with geographic isolation, resulting in extreme social isolation of these diseases. NTDs are specifically isolated to poorer countries and within those countries, to the extreme poor and most marginalized populations. The same structures that create a disproportionate burden of infectious diseases among the poor – lack of housing, employment, land ownership and education – also serve to physically and socially isolate the poor from the wealthy.<sup>21</sup> Consequently, NTDs’ geographic isolation is coupled with severe social isolation that serves to insulate wealthy countries *and* wealthier populations within poor countries. This is especially evidenced through the global health industry’s widely used classification of infectious diseases as “emerging,” that is biologically or medically new, as in the case of HIV/AIDS, or “re-emerging,” as in the case of tuberculosis. By stark contrast, NTDs are not emerging, as the majority have been plaguing human populations since biblical times, and are not necessarily re-emerging, as they pose little threat to becoming widespread global epidemics or pandemics that could easily cross borders and threaten wealthy populations.<sup>22</sup>

### **Poverty as a Technical Problem**

Due to the clear relationship between poverty and neglected tropical diseases, one of the recurrent themes in the literature is that low-cost and highly cost-effective treatments are available for some NTDs and that control of NTDs would have widespread and sustainable effects on global poverty reduction.<sup>23</sup>

The hegemonic problematic of “development”

discourse tends to depoliticize poverty as due to neutral technical problems, a process which ultimately divorces poverty from state and global structures.<sup>24</sup> The existing global health discourse on neglected tropical diseases may be similarly overestimating the importance of biomedical technologies as a panacea for poverty, without acknowledging the many marginalizing factors in the social, cultural, economic, political and physical environments in which affected populations live.<sup>25</sup> Clearly, “development” agents such as the World Bank and International Monetary Fund have overemphasized the adoption of organizational or institutional reforms in “developing” countries, which have little impact on NTDs.<sup>26</sup> Consequently, there is a very real and concrete need for technical interventions such as basic prevention, screening and treatment initiatives for NTDs; however, while these interventions are vital in alleviating poverty and marginalization, the persistent effects of inequality should also be acknowledged. If interventions narrow their scope to only technical applications (e.g. providing treatment or vaccines) for a few neglected tropical diseases, it is likely that other diseases will take their place in promoting and exacerbating poverty.

### **Social Stigma**

Neglected tropical diseases tend to be visibly disfiguring, which in turn leads to health-related social stigma, a social process characterized by exclusion, rejection, devaluation or blame.<sup>27</sup> Leprosy, a neglected tropical disease, is perhaps the most recognizable example of the impact of social stigma on health, but other NTDs are associated with social stigma, including: onchocerciasis, lymphatic filariasis, plague, Buruli ulcer, leishmaniasis, and Chagas disease.<sup>28</sup> Social stigma is an important mediator of social burden and may result in the invisibility and marginalization of affected populations. Stigma attached to disease can cause social isolation, emotional distress, and delayed diagnosis and treatment. Even free treatment services at government clinics are sometimes avoided because the individual’s condition would be identifiable in public.<sup>29</sup>

While the literature tends to acknowledge social stigma from an individual standpoint via social exclusion of affected individuals by peers, there is also a need to examine how social stigma acts from an institutional standpoint, especially regarding further marginalization of at-risk populations via political silence on the issues, lack of education about the disease, and a consequent lack of effective and socially-appropriate prevention and treatment programs. Social stigma may also influence

political commitment to disease control.<sup>30</sup> Furthermore, while social stigma associated with NTDs can lead to social isolation, hamper access to care, and reduce treatment adherence, stigma needs to be placed in context with structural factors including: high levels of poverty, poor health services, high treatment costs, tedious travel to health centers, and long hospital admittances. A narrow focus on stigma is both a methodological pitfall and overemphasizes the role of “culture” in poor health, to the exclusion of political and economic factors.<sup>31</sup> Therefore, while stigma is a contributing factor to the low priority of NTDs, it should be placed within the larger conceptual framework of social, economic, political and biological factors and examined from an institutional standpoint as well.

### Competition with the “Big Three”

The United Nations’ Millennium Development Goals (MDGs) are aimed at eradicating poverty worldwide. MDG Goal 6 is to “combat HIV/AIDS, malaria and other diseases.” Neglected tropical diseases are not explicitly emphasized. Since the MDGs are used by “development” agencies and donors for priority setting, exclusion from the MDGs is often cited as one of the reasons why NTDs are neglected. Moreover, exclusion from the MDGs has set the stage for competition between neglected tropical diseases and the “big three” – HIV/AIDS, malaria and tuberculosis. Comparisons between the two groups of diseases are ubiquitous throughout the literature.

Invisibility of the populations affected by NTDs compared with those affected by the “big three” is a concern. Some have posited that the conditions that foster NTDs are seldom found in capital cities and are instead concentrated in either rural areas where subsistence farming is practiced or in urban slums and therefore, unlike HIV/AIDS, NTDs tend to afflict “forgotten people.”<sup>32</sup> Consequently, confinement to the poorest people in predominantly rural tropical areas also means that NTDs do not now threaten rich countries as HIV/AIDS and tuberculosis do.<sup>33</sup>

A strong point of contention is allocations of funding for interventions, especially considering equity for the most impoverished and socially marginalized. Of the world’s poorest billion people, some have estimated that only 40 million are infected with HIV, compared with 960 million who are exposed to and likely infected with NTDs.<sup>34</sup> Although some recent progress in funding for neglected tropical diseases has been made, the amount of funding for disease interventions is still lacking. The U.S. Agency for International Development (USAID) recently increased funding directed at

NTD interventions from US \$10 million in 2008 to US \$25 million in 2009; however, this increased funding still only accounted for 0.3% of total global health funding from the State, USAID, and HSS in 2009.<sup>35</sup> Similarly, funding from the OECD’s Development Assistance Committee (DAC), non-DAC countries and multilateral agencies such as The Global Fund, only allocated 0.6% of overseas development assistance to NTDs. By contrast, assistance for HIV/AIDS was 36.3%, 3.6% for malaria, and 2.2% for tuberculosis, an allocation that is often cited as not reflecting these diseases’ respective health burdens.<sup>36, 37</sup>

While comparisons between the “big three” and neglected tropical diseases are prevalent throughout the literature, there is a significant lack of acknowledgement of the role of neoliberal health policy and the dominance of disease-specific initiatives in causing this competition.

Although individual countries’ national health systems and policies may be diverse, due to the power afforded to international donors and lending institutions by global inequality, global health policy tends to converge to reflect a dominant paradigm grounded in a neoliberal approach to health.<sup>38</sup> In the current global state of affairs, the survival of impoverished countries is almost universally defined by the ability of “developing” countries to enter in and participate in global markets at the behest of powerful wealthy donors and lenders.<sup>39</sup> The neoliberal institutional reforms that are emphasized by “development” agents generally encourage increased involvement of the private sector in health services. Neoliberal institutional reforms tend to include: commodification of health care; restricting public services to the delivery of disease control programs; maximizing the transfer of public funds to private interests and securing outlets for privately manufactured goods; and the reduction of national health financing and public provision in favor of lowering direct taxes.<sup>40</sup> There are serious implications in reducing the public sectors’ capacity to provide health services. Since NTDs primarily affect marginalized and impoverished populations, market-based health sector reforms have the potential to place the cost and availability of care further out of reach.

Despite the failures of decentralization and privatization<sup>41</sup>, one of the most prevalent neoliberal health reform efforts is the proliferation of public-private-partnerships (PPPs); these initiatives have long since outnumbered those funded by the WHO regular budget.<sup>42</sup> PPPs, also known as “Global Health Initiatives” have been receiving a steeply increasing proportion of development assistance, while the share of development assistance to health

for primary care has declined.<sup>43</sup> The dominance of PPPs has served to weaken the national health systems of “developing” countries. National health systems are now characterized by segmentation, fragmentation, excessive bureaucratization and inefficiency.<sup>44</sup> Weak national health systems, plagued by limited services, low staffing levels, managerial defects, and lack of infrastructure and information, often cannot provide adequate services, including treatment for NTDs. Weak health systems also provide further justification for continuing the very programs that contributed to their weakening, allowing “development” actors to determine global health priorities, especially through their use of disease-specific interventions.

Disease-specific interventions were first promoted by the World Bank as a “cost-efficient” alternative to the comprehensive Alma Ata “primary healthcare” policy which included “prevention and control of locally endemic diseases,” potentially significant for many endemic NTDs.<sup>45</sup> Contemporary neoliberal global health policies, however, promote a disease-specific program approach, which is usually narrowly focused, centrally administered and employs a top-down hierarchical approach in the development of protocols and policies.<sup>46</sup> The outcomes of funding one disease over another via disease-specific programs are severe. For example, while HIV-positive patients may receive free care at disease-specific program providers, those with other diseases may not be eligible to receive care, may receive poor care or may have to pay for services.<sup>47</sup> In addition to encouraging competition among resources, disease-specific programs have several additional limitations such as the limited range of treatments, reliance on external funding and “brain drain.”<sup>48</sup> Furthermore, disease-specific models often take decision-making power away from communities, instead relying on foreign consultants for technical expertise and for narrowly defined goal-setting.<sup>49</sup> In addition, the sustainability of disease-specific programs has been questioned.<sup>50</sup>

For NTDs, the consequences of disease-specific programs are clear: competition for resources from external global health actors and weakened primary health systems. One of the most significant costs of the dominance of disease-specific health programs is that their narrow focus on a handful of diseases necessarily forces competition for resources and deepens neglect. Consequently, the “big three” infectious diseases – tuberculosis, malaria, and in particular, HIV/AIDS – have received the majority of funding and resources, whereas NTDs have generally been ignored.

## Underestimating Disease Burdens

A related concern in global health is priority setting. In determining how to allocate resources, global health policy makers often rely on estimates of disease burden. However, the methods used to calculate disease burden have encouraged the invisibility of NTDs on the global health agenda by systematically underestimating their disease burden.

The “gold standard” of disease burden, the Global Burden of Disease (GBD) reported that eleven NTDs accounted for an estimated 177,000 deaths worldwide in 2002 and about 20 million disability-adjusted life years (DALYs), or 1.3% of the global burden of disease and injuries.<sup>51</sup>

Yet, literature on NTDs asserts that the GBD is drastically underestimating the burden of NTDs. A recent estimation found that NTDs cause approximately 534,000 deaths annually, with five diseases accounting for more than 400,000 deaths. This estimation also asserted that the “disability burden” caused by chronic diseases is more significant, in that NTDs are second only to HIV/AIDS as a cause of disease burden, resulting in approximately 57 million DALYs annually.<sup>52</sup> In addition, there is a significant need for better quality data collection in the regions affected by NTDs as poor quality data may result in underestimation.<sup>53</sup>

Several studies have found that the disability “weight” ascribed to specific neglected tropical disease burdens is underestimated. For schistosomiasis, an evidenced-based reassessment found that a more accurate disability rate would be 2-15%, due to observation of disability-linked morbidities, in contrast with the WHO estimate of 0.5% disability weight.<sup>54</sup> Similarly, re-estimated disability weights in another assessment of schistosomiasis were 7 to 46 times greater than current GBD disability weight.<sup>55</sup> Correspondingly, a review of the health impact of parasitic diseases, notably helminth infection, found that current methods of estimating the potential global morbidity due to parasitic diseases underestimate the health impact of polyparasitism.<sup>56</sup>

Some have pointed to flaws inherent in the DALY model that result in systematic undervaluation of the importance of neglected tropical diseases, especially: the failure to take into account the most common chronic complications of NTDs, such as anemia and malnutrition, and failure to account for impairment caused by concurrent infections, which are very commonplace in NTDs, in an attempt to avoid over-counting actual life-years.<sup>57</sup>

Underestimates of disease burden for neglected tropical diseases underscore the power dynamics inherent in global health policy and question the

legitimacy of representation of marginalized and vulnerable groups in global health priority setting. It is clear that health policy formation unfolds in the context of competitive social interest and overt and covert power conflicts.<sup>58</sup> Global health policies that underestimate and consequently, undervalue, addressing diseases that affect marginalized and vulnerable populations reproduce large-scale social forces rooted in historical and economic processes and further deepen global inequality by making neglected tropical diseases and the suffering they cause invisible.

### **Lack of Research and Development**

Stagnation in research and development, both for epidemiological and intervention studies and for new drug therapies is a significant issue for neglected tropical diseases. NTDs are less researched than other diseases with comparable DALYs, with NTDs having 5-8 times lower published articles than conditions with similar estimated impacts.<sup>59</sup> Research and development is especially important for creating cheaper, safer and more effective treatments. Most of the drugs still used to treat neglected diseases were developed in colonial times, are often expensive, difficult to administer, hard to tolerate, and subject to increasing resistance.<sup>60</sup> Despite this fact, only 1.1% of new drugs made available to the public between 1975 and 1999 were meant for NTDs, despite incentive packages and public-private partnerships aimed at improving drug development. The pharmaceutical industry argues that research and development is too costly and risky to invest in “low-return” neglected diseases.<sup>61</sup>

In discussing the lack of research and development, the literature on neglected tropical diseases generally takes a broader critical perspective and emphasizes the significance of market-based approaches to health and the responsibility of global actors. For example, lack of research and development on neglected tropical diseases is not due to gaps in knowledge but to the market-based paradigm of drug development. Scientists have a great deal of knowledge about organisms that cause sleeping sickness, Chagas disease, and leishmaniasis, but because the populations affected by neglected diseases have no purchasing power, there is no financial incentive for drug companies to develop the drugs.<sup>62</sup> More recently, a program of FDA vouchers was introduced to try to mitigate the lack of research. However, while the program may achieve short-term gains, these programs do not consistently lead to sustained improvement and may have important unintended consequences.<sup>63</sup> Consequently, the lack of research and develop-

ment for NTDs is not born out of a low demand or even scientific difficulty, but out of a market-based model that necessarily undervalues drug development for poor populations.

### **Conclusion**

Given the immenseness of the challenges and suffering caused by NTDS and the embeddedness of the factors that exacerbate them, the future outlook may seem bleak. However, it is possible to decrease the extent to which social inequalities become embodied as health disparities. Proximal interventions, which may not be in the traditional realm of “clinical medicine,” can lessen disease burden. Furthermore, structural interventions can also have significant impacts.<sup>64</sup> Some recent progress has already been made in the prevention and control of neglected tropical diseases, primarily through increased funding. Large-scale funding from the U.S. and U.K. has allowed integrated NTD control efforts to begin in sub-Saharan Africa, as well as in Bangladesh, Nepal and Haiti.<sup>65</sup>

These developments show promise in the battle against neglected tropical diseases; however, it remains clear that without addressing the multiple contributing factors to the low priority of NTDs, one set of NTDs may only be replaced with another. Of prime importance, is recognition that mechanisms of neglect, such as, lack of infrastructure and services, lack of research and development, lack of funding for interventions, underestimates of disease burden and social stigma, are intrinsically related to the broader social context of global inequality, neoliberal health policy, the dominance of diseases specific interventions, poverty, and profound social isolation. Without acknowledging global inequality and the mechanisms that reinforce this inequality, little progress will be made in alleviating the suffering of the world’s most vulnerable and marginalized people. Advocates for the elimination of neglected tropical diseases need to incorporate comprehensive strategies to address not only the neglect of NTDs, but the social contexts that have created this neglect

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