

# Funding the future of global health: A medical student perspective

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As students from the Penn State College of Medicine (PSCOM) who are engaged in medical research projects in Ecuador, Kenya, Ethiopia and Peru, we recognize we are at a defining crossroad in global health; yet, our voices are seldom invited into public debate. For decades, global health has been synonymous with prevention and treatment of infectious diseases such as malaria and tuberculosis; today, however, the disease burden is shifting toward non-communicable diseases (NCDs) and future physicians will face the likelihood of having to make difficult decisions about the distribution of the scarce resources devoted to health care.<sup>1</sup> The 2011 United Nations General Assembly Summit on Non-Communicable Diseases sparked a debate when members proposed increased funding for NCDs without acknowledging the negative impact such allocations would have on funding for preventing and treating infectious diseases.<sup>1</sup> With our future careers and past experiences in mind, students from PSCOM have explored this conflict in depth and concluded that it is critical that we fight for continued funding of neglected tropical diseases (NTDs).

## Argument for increasing funding for NCDs

Non-communicable diseases, which include cardiac disease, cancers, chronic respiratory diseases and diabetes, are rapidly consuming health care dollars worldwide.<sup>2</sup> Although NCDs are classically considered “diseases of the developed world,” because they often result from unhealthy food choices and sedentary lifestyles, they have quietly become ubiquitous in developing nations as well.<sup>3</sup> Chronic diseases currently account for 60% of all deaths globally. Perhaps surprisingly, 80% of these deaths occur in low- or middle-income countries.<sup>4,5</sup> The reasons for this high death toll are numerous: globalization has made alcohol, tobacco and unhealthy processed foods available worldwide, and unplanned urbanization rapidly exposes populations to these risk factors.<sup>1</sup>

Despite the fact that NCDs represent a large global burden of disease, a mere 2% of international global health funding is allocated to these diseases.<sup>6</sup> A 2011 cost-benefit analysis shows that this lack of funding could lead to major repercussions in the future, estimating the cost of inaction on NCDs as \$4,000 per individual, while the cost of prevention is estimated to be only \$2 per individual.<sup>7</sup> Margaret Cho, Director-General of the World Health Organization (WHO), referred to the growing threat of NCDs as “a slow-motion disaster,” emphasizing the need to confront the spread of diseases which are projected to cause five times the deaths worldwide by 2030.<sup>1</sup>

The 2011 United Nations General Assembly Summit on Non-Communicable Diseases sounded the alarm on the growth of NCDs, detailed specific trends, and also offered recommendations for a number of public health “best buy” interventions.<sup>1</sup> Several large-scale preventative measures—including warnings about tobacco and bans on its advertising, raising taxes on harmful substances, using mass media to promote physical activity or restricting marketing of unhealthy foods/beverages to children—have proven successful in reducing diseases such as cancers and respiratory diseases in developed nations. Evidence demonstrates that preventative measures can also be highly cost-effective (costing less than 50 cents a person) in ameliorating chronic diseases in developing nations.<sup>7</sup>

These small per capital numbers can be misleading, however, as the summit recommended such interventions on a grand scale, stating that “the greatest reductions in non-communicable diseases will come

from a complete Government approach to adopting population-wide interventions that address risk factors.”<sup>1</sup> From the perspective of medical students and future clinicians who are trained to think of the patient as an individual or part of a small panel, a grand scale advertisement campaign is much more difficult to incorporate into our own future practice. While risk-reduction strategies (tobacco and healthy lifestyle counseling, for example) could certainly be mimicked in our smaller scale global health ventures, it would not be done with confidence that such activities are efficacious or valuable uses of time and resources. Certainly some smaller scale risk factor reduction efforts are being made in the developing world—for example, the “Know Your Numbers” campaign to reduce hypertension run by doctors based in Guayaquil, Ecuador—but the data suggests that efforts on a larger scale are more effective.<sup>8</sup> Perhaps in the future, a strongly evidenced model of smaller scale interventions will be established. We understand that devoting funds to NCDs today could help mitigate the impending chronic disease burden that is expected to otherwise consume an even greater share of future resources. However, we are convinced that, considering the limited funds for global health outreach, efforts to ameliorate the chronic disease burden will direct money and attention away from more productive international medical efforts.

## Argument for funding neglected tropical areas

Although it is important to increase funding for NCDs, there may be negative implications for other global health ventures. A significant shift of funding toward NCDs—and recall that the UN spoke of interventions on a Government scale—will siphon money and interest from low-cost, life-saving interventions for preventable infectious diseases that have long been the sine qua non of global health. A group of infectious diseases known as the neglected tropical diseases (NTDs) disproportionately afflict more than a billion of the world’s poorest people, half whom are children.<sup>9</sup> This diverse group of infections tends to cause disabling diseases, resulting in blindness, limb deformities and/or brain and other organ damage. Consequently, afflicted individuals often miss out on school and work opportunities and face social isolation. For example, in Ecuador, a group of Penn State students met with patients stricken with leprosy, many of them blind, scarred and with amputated limbs. In essence, the disease had left these people unemployable and requiring nursing home care. More appallingly, our students who worked in Ethiopia saw disfigured sufferers of polio paraded around the streets for money. From an economic perspective, NTDs are among the most cost-efficient diseases to prevent and cure, costing 50 cents per person treated per year to eliminate these infections with currently available vaccines and/or antibiotics.<sup>9</sup> While some efforts aimed at NCD prevention have been successful, the interventions are behavioral and based on large-scale campaigns, and thus far more complex and difficult to implement, particularly from the viewpoint of a physician or medical student attempting a medical intervention abroad.

The difference in ease of intervention for representative infectious and non-communicable diseases was illustrated to our student group in Ecuador. In a small fishing village with dirt roads and dirt floors, we screened patients for the intestinal parasite *Giardia lamblia*, found a 20% carriage rate and sent patients to the pharmacy for the single dose of metronidazole needed to clear up the infection. We also screened patients for hypertension. We found a similarly high rate of positive re-

sults, and knew that unless the patients decided to purchase lifelong antihypertensive medication or understood and planned to implement diet changes, they were destined to live with hypertension and its long-term ill effects. Though we were aware of the asserted cost-effectiveness of behavioral interventions, from our vantage point on the ground, the difference between ease of treating the giardia infection versus hypertension was astronomical. We acknowledge that the types of projects frequently undertaken by the medical community are often short term visits intended to diagnose and treat acute illnesses, and are not suited to address the growing burden of chronic diseases. These sorts of zeitgeist interventions are generally more effective in treating infectious processes.

We are concerned that shifting funding from NTDs towards NCDs may widen the wealth gap and increase the inequity in distribution of healthcare. Eradicating NTDs has an economic benefit. Experts estimate that hundreds of millions of children would be afforded the opportunity to live longer and healthfully enough to contribute to their country's workforce, thereby stimulating economic and social development if not stricken with NTDs. For instance, the WHO reports that, in Kenya, deworming could potentially increase per-capita earning by 45%.<sup>10</sup> In addition, a 1950s Japanese de-worming campaign was credited as being partly responsible for the nation's economic surge.<sup>11</sup> The impoverished and unhealthy state of the world's poorest billion would only worsen if the global health community averts its eyes

to their plight in favor of the ever-expanding public health problem of NCDs.

### Conclusion

With internationally prevalent NCDs emerging as a big contender for global health funding, this is truly a pivotal time to be a medical student with aspirations to work abroad. The UN's plea for re-allotment of funding inspired us to reconsider what global health really means and how best to support global health ventures in a changing world. Against the new back-drop of global NCDs now clamoring for funding of their own, we challenge our fellow health workers to educate themselves and advocate for causes they believe in by presenting at conferences, raising the issue in classrooms and discussing with peers across disciplines. As future doctors poised to take on a share of responsibility for the health of the world, we have explored this topic at length through the literature, but we have also seen in our own experiences abroad how NTDs disproportionately affect the world's poorest, and how easily and cost-effectively infectious diseases can be treated by smaller scale ventures—the modality most frequently employed by groups of US medical teams such as ours. Fully acknowledging how important the issue of NCDs has already become, we implore that pure prevalence of these diseases not overshadow the low-hanging fruit to be had in both prevention and treatment of NTDs.

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