

## The beginning: global responsibility in healthcare - with a focus on tropical disease

What are “Neglected and Rare Diseases”? And why should one care about them, if they are “rare,” or insufficiently problematic to warrant only “neglect” by the medical community?

There are two separate meanings for the phrase “rare and neglected.” One refers to diseases that occur infrequently in all populations globally; a second to diseases that occur infrequently in Europe, the United States and other countries with highly developed systems of healthcare.

The former may cause great distress to small numbers of patients, but that small number is seen by health-care systems as simply being too limited in harm done to justify the cost of developing effective drugs, vaccines, or other countermeasures. One may dislike the reasoning, but one can understand the economic argument.

The second group is paradoxical. The occurrence of the diseases can be very broad, the number of individual affected very large, and the economic cost to the countries or regions involved enormous. At the same time, there may be no obvious short-term economic incentive—in a largely capitalist, global health-care structure—to focus resources on them, rather than on the more familiar, chronic, non-infectious diseases of affluent societies.

There were many examples of diseases in this second group of diseases—diseases that are not rare, but are neglected; they are often concentrated in diseases—and especially infectious diseases—of tropical regions: malaria and cholera are obvious examples but there are others that are less familiar, and include a number of diseases caused by parasites (sleeping sickness, Chagas’ disease, schistosomiasis, leishmaniasis, filariasis, onchocerciasis), and by microbes or viruses (leprosy, Dengue, various types of encephalitis and hemorrhagic fevers, chikungunya, tuberculosis).<sup>1</sup> Genetic diseases (for

example, sickle cell disease and thalassemia) are also important.

This special issue is focused on a few of the neglected diseases that are common in medically developing regions. One can argue, however, that while the term “neglected” may still apply to at least some of them, the term “rare” really should be discarded, because a disease that is uncommon and regional today, can be global and a major health concern across many medical systems in a year.

One hundred years ago—or even 50—there were diseases that were so isolated geographically, and so uncommon—for whatever reasons—in affluent countries that they posed no perceptible threat to those countries. And since those countries were the only ones that had systems of research medicine that were sufficiently well developed that they could mount an effective response—whether drugs, vaccine or public health measures—to a newly threatening disease, these diseases were left to cause the suffering that they did, without much attention from the technologically most competent countries and organizations.

Globalization has changed the story, and human immunodeficiency virus / acquired immunodeficiency syndrome (HIV/AIDS) was the harbinger of the new order. Once AIDS began to spread rapidly, it caught the global healthcare system unprepared, and its impact made it clear that in the age of low-cost, long-distance air travel, dense populations in cities, changing patterns of social behavior, and other factors, there can no longer be any assurance that a “rare, neglected” disease can be kept localized, and there has never been an assurance that a response to a new disease can be developed rapidly.

Although the progress in understanding AIDS, and in treating its symptoms, has ultimately been one of the great triumphs of modern medicine, there is still no effective vaccine or cure for it, and the co-evolution

of HIV and strains of *Mycobacterium tuberculosis* into a closely associated disease syndrome, with its potential for developing highly antibiotic-resistant strains of *Mycobacterium tuberculosis*, illustrates how difficult it is to deal with a new disease. Severe acute respiratory syndrome, Middle East respiratory syndrome, and new strains of influenza have all reinforced the same message, although they did not have (or have not yet had) the impact of AIDS.

The development of Ebola from an uncommon, sporadic, containable disease to one with the possibility of global spread and enormous economic impact is the current example demonstrating that there can no longer be diseases that will safely remain globally uncommon, just on the basis of localized and distant geographical origin. Infected travelers and vectors spread too rapidly for a new disease to be contained without forethought, planning, luck, training, preparation, knowledge, and expense.

In a world in which the mobility of individuals globally has greatly increased the probability that a local outbreak of disease will become a major global disease, countries such as Brazil have both a unique opportunity and a unique responsibility. Brazil is a country with great (and growing) financial and human resources, and with a national-level interest in tropical disease. It is a regional leader in many fields of technology, and the only one of the BRICI countries (Brazil, Russia, India, China and Indonesia) with both the motivation and potential capability to focus on tropical diseases. It also has an enormous amount to lose in the event of epidemic or endemic disease that drains its resources, or that discourages economic development and tourism. It has not accepted the

idea that it may have both a global responsibility in healthcare—with a focus on tropical disease—and an opportunity to become—over time—a global leader in this important area.

So, Brazil has both the capability and the motivation (both in principle) to become—over 50 years—a world's leader in the area of neglected (or emerging; “neglected” and at least “potentially emerging” may be descriptions of the same thing) infectious tropical disease.

This issue represents a start. To do more will require a sustained financial and technical commitment; recruiting talented young scientists to relevant careers in infectious disease, medicinal chemistry, biochemistry and public health; the stimulation of pharmaceutical development in relevant areas; and the development of partnerships with global pharmaceutical companies.

The articles in this issue provide a good survey of representative, important areas and approaches. Six deal with new, low molecular weight drug leads, and three with analytical/diagnostic methods or genetic disease. Five reviews cover aspects of treatment of Dengue, Chagas' disease, leishmaniasis, and leprosy, and one the control of insect vectors.

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## References

1. Trouiller, P.; Olliaro, P.; Torreele, E.; Orbinski, J.; Liang, R.; Ford, N.; *The Lancet*, **2002**, 359, 2188.