

EDITORIALS

Fighting neglected tropical diseases in the southern United States

Poverty and lack of awareness need to be tackled

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The neglected tropical diseases are a group of chronic parasitic and related infections such as hookworm, schistosomiasis, lymphatic filariasis, Chagas disease, and leishmaniasis that often affect the "bottom billion" in Africa, Asia, and Latin America.¹ Extreme poverty, defined by the World Bank as average daily consumption of \$1.25 (£0.8; €1.0) or less, is the main social factor associated with a high prevalence of these diseases.¹ The World Health Organization, the World Bank, and professionals have advocated strongly for global programmes to deliver packages of essential drugs to treat the tropical diseases with the highest prevalence, such as tuberculosis and malaria, while simultaneously developing new or improved drugs and vaccines.² Diseases such as Chagas disease, cysticercosis, leishmaniasis, and dengue are listed in the 17 tropical diseases being targeted by WHO for control or elimination in low and middle income countries.³⁻⁴ Others, such as toxocariasis, a chronic parasitic infection that causes asthma and epilepsy,⁵⁻⁶ and trichomoniasis, a sexually transmitted disease associated with vaginal HIV-1 shedding,⁷ are not. That these diseases affect literally millions of Americans living in poverty,⁸ with prevalence rates of selected tropical diseases in some areas of the US comparable to rates in low and middle income countries, is less well known.⁹

Roughly 15% of Americans (46 million people) currently live below the US poverty line (as defined by a set of income thresholds that vary by family size and composition).¹⁰ Most are concentrated in the American South, especially the Gulf coast, Mississippi delta, and south Texas.⁸ About five years ago we began to estimate the burden of neglected tropical diseases among those classified as poor in the American South and elsewhere in the US (then roughly 12% of Americans—36.5 million people).⁸ Most of these diseases are not reportable illnesses in the US and few surveillance data were available. However, an initial analysis suggested a substantial but largely hidden burden of disease in the US.⁸

With the recent economic downturn poor Americans have been getting poorer.¹⁰ A recent study from the National Poverty Center estimated that 1.46 million US families, with 2.8 million children and other members, each live on less than \$2 a day.¹¹ An analysis of US census data from 2010 indicates that the income of 20 million Americans is below one half of the US poverty level.¹⁰

Texas has the second largest population of all the US states and possibly the largest number of Americans living below the poverty line, with one in five Texans living in poverty.¹² Tropical diseases such as Chagas disease and cysticercosis are widespread in Texas.¹² Poor housing conditions and homelessness promote exposure to selected vector borne tropical diseases, such as dengue and murine typhus.¹² On the basis of previous experience, the current outbreak of West Nile virus infection in Texas will probably affect homeless people and those living in poverty disproportionately.¹³

Exactly how and why poverty is inextricably linked to neglected tropical diseases is still unclear. In low and middle income countries, these diseases cause or perpetuate poverty because of their negative impact on child development, productivity of workers, and maternal health.¹ In Texas and the greater American South, a combination of socioeconomic factors linked to poverty probably play a part.¹⁴ As suggested in a recent *New York Times* opinion piece, these factors include dilapidated housing without adequate insect screens or air conditioning, poor sanitation and plumbing, and absent or inconsistent rubbish collection and street drainage.¹⁴ Such elements, together with a warm and humid climate, create ideal conditions for the spread of these diseases. Although immigration undoubtedly accounts for some imported cases of tropical disease in North America, conditions of poverty and climate also promote their transmission within US borders.⁸⁻¹²⁻¹³ Mother to child transmission of neglected diseases such as congenital cytomegalovirus, syphilis, and toxoplasmosis also occurs disproportionately among the poor and disenfranchised in the

US,⁸ and recently the first well documented case of congenital Chagas disease was reported.¹⁵

In 2011, a new National School of Tropical Medicine (NSTM) was established at the Texas Medical Center in Houston, alongside the Sabin Vaccine Institute and Texas Children's Hospital Center for Vaccine Development product development partnership (PDP) laboratories. The NSTM was partly inspired by the Liverpool School of Tropical Medicine and the London School of Hygiene and Tropical Medicine, with their ongoing commitment to studying translational medicine relevant to the world's poor. But Houston has tropical diseases in its backyard. Accordingly, a new tropical medicine clinic has been created at the NSTM to help people living with these diseases.

What needs to be done to deal with the problem of tropical diseases among America's poor? Firstly, a programme of expanded surveillance is urgently needed so that the burden of these diseases in the US can be accurately determined.^{8 14} More work is needed to help understand what contributes to disease transmission and how it links with poverty. This will require collaborative working with federal, state, and local public health agencies, as well as regional universities. In addition, many doctors and other healthcare providers cannot recognise and manage these diseases, so training is needed. The NSTM now offers a Diploma in Tropical Medicine. Finally, new drugs, diagnostics, and vaccines must be developed.^{8 14} Some headway is being made with vaccines in early stages of development, but more work is urgently needed.

Regional efforts alone will not be enough. National awareness must increase if tropical diseases, which represent one of the most glaring examples of health disparity in the US today, are to be tackled properly. A bill known as the Neglected Infections of Impoverished Americans Act (HR 528) was recently introduced to Congress to raise awareness of this problem in the US.

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