

INVESTMENT IN RESEARCH SAVES LIVES AND MONEY

# Neglected Tropical Diseases

**Neglected Tropical Diseases (NTDs)** are a group of infectious diseases that can be **debilitating, disfiguring, and potentially deadly**. These threats have historically received limited attention and research funding relative to their profoundly negative impact, particularly for populations **living in poverty**.<sup>1,2</sup> While NTDs are more common in tropical and subtropical areas, **many also occur in the U.S.**<sup>3</sup>

In addition to the [17 diseases](#) classified as NTDs by the World Health Organization,<sup>4</sup> there is another set of overlapping diseases prevalent in the U.S. called ‘**neglected infections of poverty**.’<sup>1</sup> Other tropical infections such as Zika have also emerged in recent years.<sup>3</sup> While Zika is not officially categorized as an NTD, the recent epidemic that occurred in the Americas is a reminder that **infectious diseases do not respect national boundaries**, and diseases that are unfamiliar to Americans today could be making headline news tomorrow.

**COST**  
**\$11 billion:**

Global annual cost of lost productivity that can be averted if the WHO’s 2020 goals for control/elimination of NTDs are reached.<sup>6</sup>

## TODAY

Globally, more than

**1 billion**

people are infected with one or more NTDs.<sup>2</sup>

In 2015, NTDs were responsible for

**206,155**

deaths worldwide.<sup>5</sup>

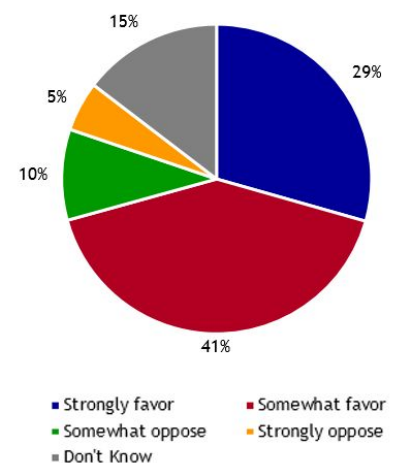
In the United States,

**3-4 million**

people living in the Gulf States are affected by at least one NTD or neglected infection of poverty.<sup>3</sup>

## Majority Favor Doubling Funding for Medical Research over the Next Five Years

Do you favor or oppose doubling federal spending on medical research over the next five years?



## Research Delivers Solutions

Medications exist for many NTDs and there are growing efforts to develop new therapies that are more effective and/or have fewer negative side effects.<sup>7</sup> Research has furthered the development of medications that are not only used to treat NTDs, but also to disrupt disease spread. Currently, seven NTDs, including soil-transmitted helminths (parasitic worms) and onchocerciasis (river blindness) can be targeted by ‘**mass drug administration**’— treating an entire at-risk population to prevent people from getting sick and stalling the spread of the disease.<sup>7,8</sup> Mass drug administration has **significantly reduced the burden of disease** since the early 2000s, decreasing the lost years of healthy life due to NTDs by up to 46%.<sup>8</sup>

**Vaccines** are available for just two of the 17 WHO-recognized NTDs — dengue and rabies. However, new vaccines for many of these diseases are in pre-clinical and clinical development.<sup>9</sup> Researchers are also advancing vaccines for **emerging tropical diseases** such as Zika.<sup>10</sup>

In 1999 there were 7 clinical trials for NTDs listed in the WHO International Clinical Trials Registry Platform. In 2018 this number was 113.<sup>11</sup>

According to the WHO Global Observatory on Health R&D, as of September 2018, there were **88 products** in development for neglected tropical diseases, including **31 diagnostics, 24 medicines, 23 vaccines, and 10 vector control products**.<sup>12</sup>

Source: A Research!America poll of U.S. adults conducted in partnership with Zogby Analytics in January 2019

# Neglected Tropical Diseases

## Then. Now. Imagine.

### THEN

Prior to the early 2000's, very little attention was given to neglected tropical diseases, which at the time were known as the "other diseases."<sup>1</sup>

### NOW

There is unprecedented global support and funding for the control or elimination of neglected tropical diseases. More research is underway than ever before, and there is a greater commitment to public health interventions that apply existing, research-based NTD interventions.<sup>13</sup>

### IMAGINE

A world where no one suffers from preventable neglected tropical diseases.

## At a Glance—

**Examples of tropical diseases that impact people in the U.S. and globally:**

**Cysticercosis:** A parasitic infection caused by ingesting tapeworm eggs. The developing larvae form cysts inside the body's tissues. If this happens in the brain, this is known as neurocysticercosis. Globally, neurocysticercosis is a major cause of adult-onset epilepsy.<sup>14,15</sup>

**Chagas disease:** Caused by the single-celled parasite *Trypanosoma cruzi*, and spread by 'kissing bugs,' which pass the parasites to humans. Untreated, the infection is chronic and can cause heart complications.<sup>16</sup>

**Zika:** A viral disease spread by *Aedes aegypti* mosquitoes. While symptoms of Zika are typically mild in adults, infection during pregnancy can cause severe neurological birth defects in babies.<sup>17</sup>

## NTDs in the U.S.

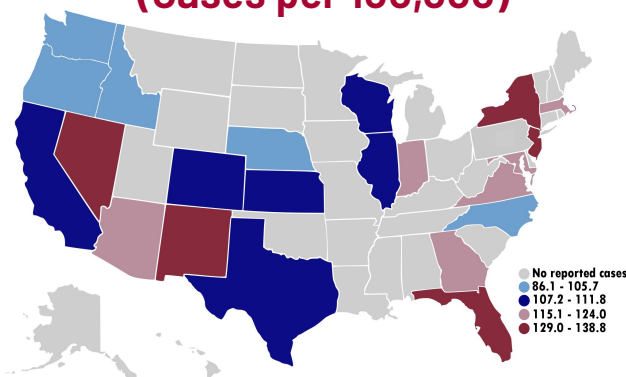
From 2003-12, **18,584** hospitalizations due to neurocysticercosis occurred in the U.S.<sup>18</sup>

An estimated **300,000** people living in the U.S. have Chagas disease.<sup>19</sup>

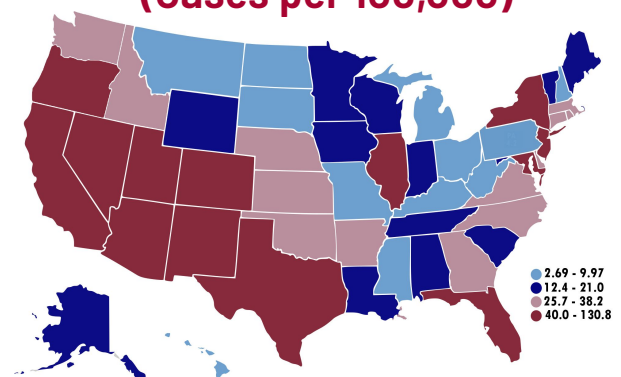
In 2016, there were **5,168** reported cases of Zika in the U.S., with an additional

**36,512** cases reported in American territories.<sup>20</sup>

## Prevalence of Cysticercosis, 2017 (Cases per 100,000)



## Prevalence of Chagas disease, 2017 (Cases per 100,000)



- Hotez, P.J. "The Neglected Tropical Diseases and the Neglected Infections of Poverty," 2011
- Neglected Tropical Diseases. National Institute of Allergies and Infectious Diseases, NIH, 2016
- Hotez, P.J. et al. "US Gulf Coast states [...]" 2017
- "Which diseases are considered neglected tropical diseases?" CDC
- Kirigia J.M., et al. "The monetary value of human lives lost due to NTDs in Africa." 2017
- Redekop, W.K., et al. "The Socioeconomic Benefit to Individuals of Achieving the 2020 Targets for Five Preventive Chemotherapy NTDs." 2017
- Hotez, P.J. "Eliminating the Neglected Tropical Diseases [...]" 2016
- Hotez, P.J. "Collateral Benefits of Preventive Chemotherapy [...]" 2019
- Hotez, P.J. "The global fight to develop antipoverty vaccines in the anti-vaccine era." 2018
- "Zika Virus Vaccines." National Institute of Allergies and Infectious Diseases, NIH, 2018
- "Monitoring processes to R&D." World Health Organization, 2019
- "Health products in the pipeline for infectious diseases." World Health Organization, 2018
- "Beating 10 diseases, reaching a billion people." Uniting to Combat NTDs, 2017
- "Cysticercosis FAQs." CDC, 2014
- "Neglected Parasitic Infections in the U.S.- Neurocysticercosis." CDC
- "Chagas disease (American trypanosomiasis)." World Health Organization, 2019
- "Zika virus." World Health Organization, 2018
- O'Neal S.E., et al. "Hospitalization frequency and charges for neurocysticercosis, U.S., 2003-2012." 2015
- "Parasites- American Trypanosomiasis. Epidemiology & Risk Factors." CDC, 2019
- "Zika Virus- 2016 Case Counts in the US." CDC, 2019

SOURCE: Institute for Health Metrics and Evaluation (IHME). GBD Compare Data Visualization. Seattle, WA: IHME, University of Washington, 2018. Available from <http://vizhub.healthdata.org/gbd-compare>. (Accessed [8/19/19]).

**Research!America** 241 18th St S, Arlington, VA 22202 | 703.739.2577  
[www.researchamerica.org](http://www.researchamerica.org) | [info@researchamerica.org](mailto:info@researchamerica.org)

The Albert and Mary Lasker Foundation is a founding partner in this series of fact sheets. [www.laskerfoundation.org](http://www.laskerfoundation.org)