

Neglected Tropical Disease in the United States: Infections of Poverty

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- Full references and citations listed in capstone paper "Neglected Tropical Diseases in the United States Pathologies of Poverty"

Introduction

Neglected Tropical Diseases (NTDs) are pathologies prevalent in tropical or subtropical climates that are often significant within poverty stricken regions. They are typically viral, parasitic, or bacterial in nature.

Common Characteristics:

- Chronic and disabling symptoms
- Poverty promoting qualities – affect productivity, child development, pregnancy outcomes, etc.
- High disease burden, relatively low mortality
- Significant affect on quality of life
- Social and economic implications

Neglect occurs on different levels:

1. Community: arouse fear and create stigma
2. National: low priority for intervention (NTDs tend to exist in poor or remote areas)
3. International: perceived as less of a threat than HIV/AIDS, Tuberculosis, and Malaria

Fast Facts

- NTDs affect nearly everyone in the world's "bottom billion"; nearly 1.4 billion people live on less than \$1.25 per day (World Bank)
- Globally the core group of 13 NTDs results in approximately **57 million Disability Adjusted Life Years (DALYs)** lost. This combined burden is greater than that of malaria and tuberculosis.
- Despite causing mostly chronic and long-term disease, an estimated **534,000 people** around the world die each year from NTDs
- **The 10/90 Gap:** 10% of global research and development funding is committed to diseases that disproportionately affect 90% of the world's population living in low-income and middle-income countries
- 1,556 new chemical entities were marketed from 1975-2004, of these only 10 drugs specifically targeted NTDs
- **2.8 million children** in the United States live in households with an income of less than \$2 per person, per day
- As many as **5 million Americans** are infected with one or more NTD; infection rates in some areas of the United States are comparable to those of developing or middle income countries

NTDs in the United States

A Historical Note

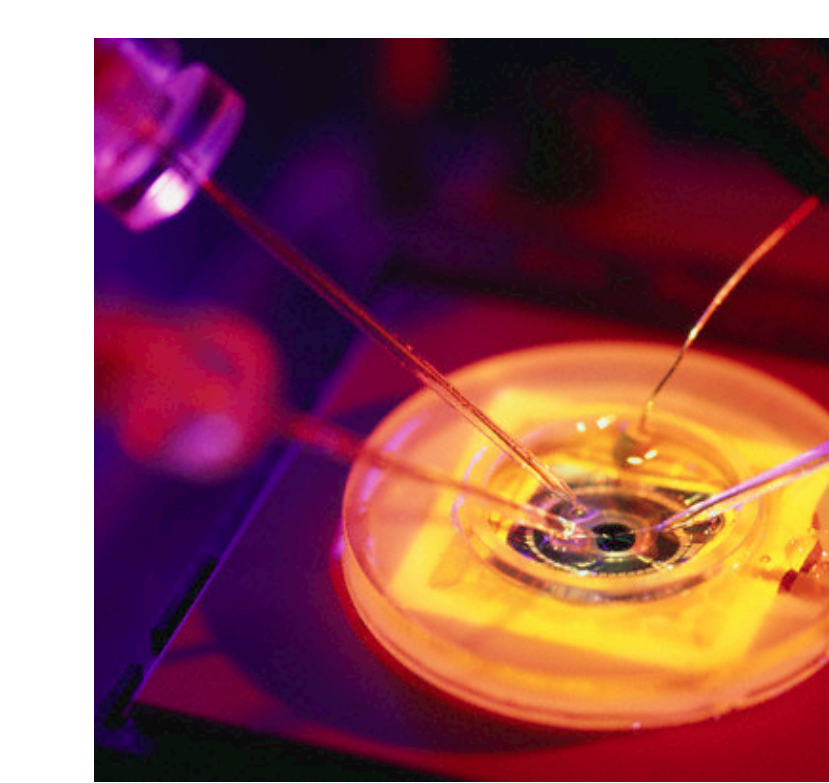
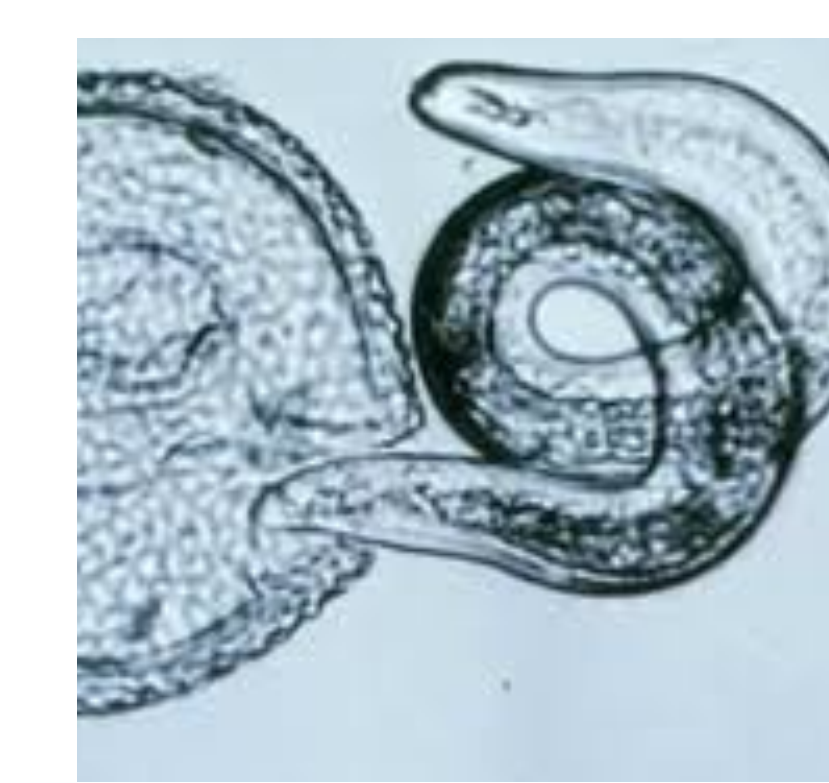
- Hookworm in the American South during the 19th and 20th centuries – responsible for severe anemia and an estimated 43% reduction in the future wage earnings of the area (Hoyt Bleakly, PhD)
- "New Deal" programs relocated agricultural workers to urban areas and helped transition from an agrarian economy into an urbanized and industrial one, greatly reducing the burden of tropical disease

Today

- NTDs thrive in the warm climate of the American South
- Immigrant and refugee populations pose unique challenges to preventing and treating disease transmission within our borders
- Poverty in the United States is not evenly distributed, but concentrated into several defined geographic regions, each with individual socioeconomic characteristics
- NTD is both a cause and effect of poverty
- Measures of disease burden (for example the Disability Adjusted Life Year) fundamentally undervalue chronic conditions with compounding symptoms and co-morbidities (such as NTDs), which leads to a general lack of awareness in decisions involving policy or funding

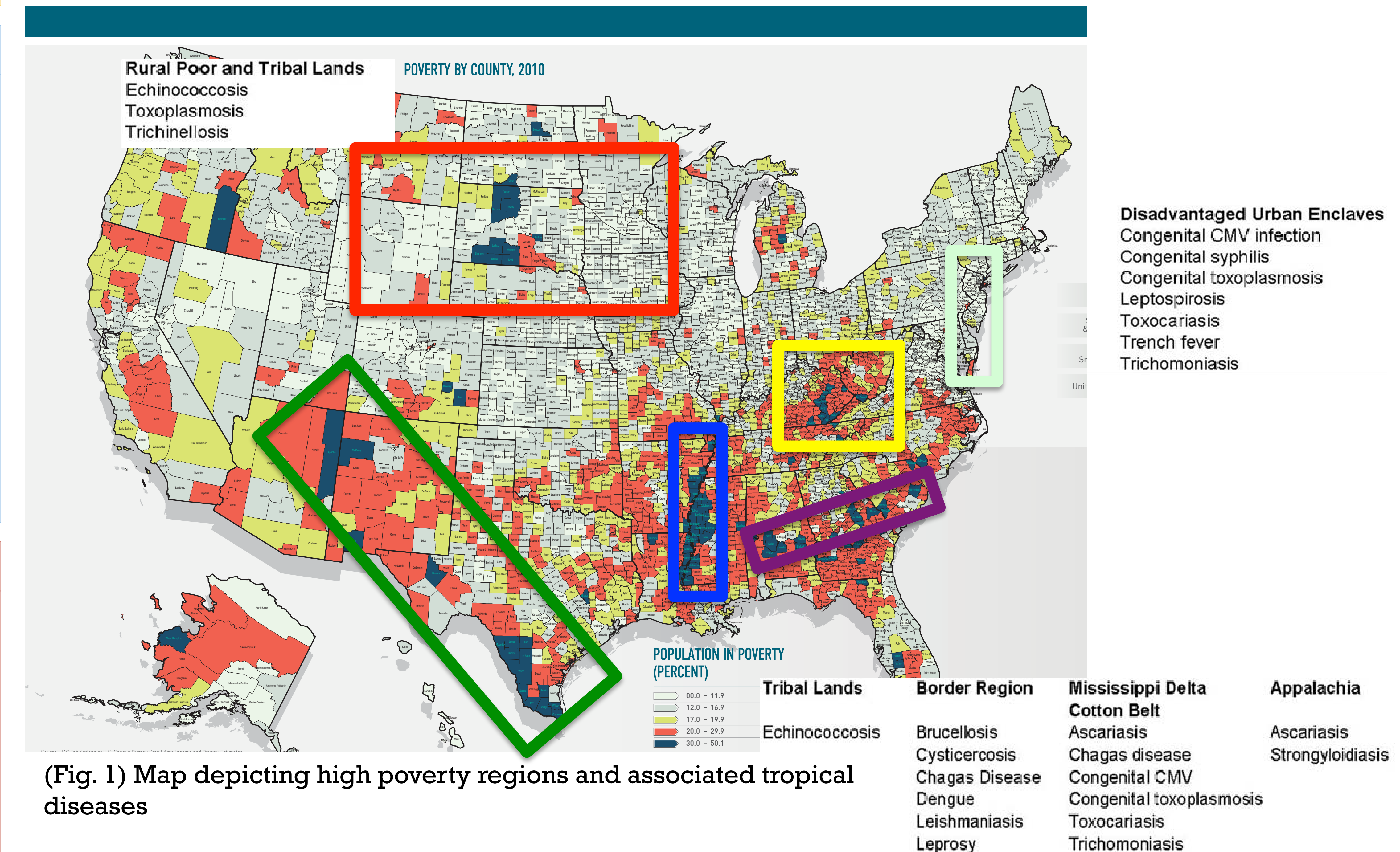
Influence of Infrastructure

- Substandard housing: limited ventilation or air conditioning leaves individuals more susceptible to insect vectors
- Poor plumbing, sanitation, and waste disposal increase chances of parasitic contamination and transmission
- Infrequent or impaired access to primary and preventative care; or health providers lacking in resources to diagnose and appropriately treat NTDs



Produced by the Housing Assistance Council

POVERTY IN THE UNITED STATES



(Fig. 1) Map depicting high poverty regions and associated tropical diseases

Intervention and Innovation

- Formulate solutions to NTDs at the intersection of research, education, clinical care, public policy, and infrastructural improvement
- Development needs to occur at the structural and community level; substandard housing, health resources, and sanitation contribute to the burden of tropical disease
- NTDs are "tool ready", but "tool deficient" – amenable to clinical intervention or control, but currently lack viable, accessible or sustainable treatment options
- Adequate disease surveys to estimate the incidences and effects of NTDs have not been conducted in decades
- A comprehensive "surveillance program" would promote a more thorough understanding of diseases, how they are transmitted, and how they are linked to poverty

Institutional Collaboration

- "The enormous impact of NTDs...on global health and economics is dramatically disproportionate to the existence of NTD-specific research and educational opportunities" – National School of Tropical Medicine
- Unique initiative partners healthcare, research, and educational institutions including:
 1. National School of Tropical Medicine (first and only of its kind in the United States)
 2. Rice University – global health technologies and the James Baker Institute for Public Policy
 3. Sabin Vaccine Institute
 4. Baylor College of Medicine – pediatrics and global health
 5. Texas Children's Hospital
 6. University of Houston – social science, economics, pharmaceuticals
- Tap into new genomic databases to utilize bioinformatics in drug design and vaccine development
- Promote holistic intervention and provide appropriate clinical training for health professionals to improve the recognition and management of disease
- Create partnerships, programs, and policies that encourage health and overall infrastructure – resource intensive community clinics, accessible primary, preventative and maternal care