

## EPIDEMIOLOGICAL TRENDS FOR CHAGAS DISEASE IN PERU AND OTHER COUNTRIES OF LATIN AMERICA

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Chagas disease is caused by infection with the protozoa *Trypanosoma cruzi*. Transmission to humans usually occurs through contact with faeces of vector insects (triatomine bugs also called assassin, or kissing bugs), including the ingestion of contaminated food, transfusion of infected blood, congenital transmission, organ transplantation or laboratory accidents. More than 100 triatomine species (Hemiptera: Reduviidae: Triatominae) transmit *T. cruzi* to humans. It is estimated that 10 million people are currently infected worldwide with *T. cruzi*, including 300,000 people residing in the United States and the at risk population ranging from 25-90 million. Each year there are approximately 109,000 new infections and 11,000 deaths resulting from Chagas disease. Chagas disease is found primarily in Latin America. It is endemic in 21 countries: Argentina, Belize, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, French Guyana, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, the Plurinational State of Bolivia, Suriname and Uruguay. However, the increasing movement of populations from Latin and South America to North America and Europe has also raised the prevalence of Chagas disease in other regions of the world. The millions of chronically infected persons who are at risk for developing cardiovascular and/or digestive pathology and the high number of cases make Chagas disease one of the leading causes of cardiovascular morbidity and premature death in Latin America.

The main epidemiological factors associated with *T. cruzi* infection are: age higher than 29 years, contact with vector last year, history of Chagas disease in relatives, residence in rural area and housing conditions in childhood.

The highest prevalence of Chagas disease observed in Bolivia (6.8% and 620 000 infected persons), Argentina (4.1% and 1 600 000 infected individuals), El Salvador and Honduras (3.4% and 3.1% respectively and 220 000 - 232 000 infected persons).

There are approximately 192 000 infected Peruvians with estimated prevalence 0.7%. In Peru the highest prevalence of human infection is found in the Departments of Arequipa, Moquegua, Ica and Tacna, which comprise 8% of the total population of the country. The main vector is *T. infestans* and it is estimated that there are some 394 000 houses infested with the vector and 24 000 persons infected with the parasite. Acute cases are regularly reported from this endemic area, which indicates active transmission.

The strategy for the prevention and control of Chagas disease must be effective and capable of reducing morbidity and mortality, as well as efficient and capable of saving resources for the countries by reducing the costs associated with the disease.

Twelve countries of the Americas have active control programmes that combine insecticide spraying with health education. The common pattern of vertical, centralised control programmes follows several operational steps or phases, namely a preparatory phase for the mapping and general programming of activities and estimation of resources; an attack phase during which a first massive insecticide spraying of houses takes place and is followed by a second spraying 6-20 months later, with further evaluations for selective re-spraying of re-infested houses and a surveillance phase for the detection of residual foci of triatomines after the objective of the attack phase has been reached. In this last phase, the involvement of the community and the decentralisation of residual control activities are essential.

The advances in Chagas disease control achieved in the period of 1991-2010 changed the epidemiological model of the disease. The most important changes achieved are: interruption of transmission of *T. cruzi* by *T. infestans*, certified in Brazil, Chile, Uruguay, the Eastern Region of Paraguay and five of the endemic provinces of Argentina; notable reduction of vectorial transmission in Bolivia thanks to house spraying with insecticides in the endemic area and regular vector control activities in Southern Peru, where domiciliar infestation is also caused by *T. infestans*; reduction of transmission by secondary species in Brazil and close to 100% blood screening coverage in all the countries.

Eradication of Chagas disease is impossible because of the zoonotic characteristics of the *T. cruzi* transmission cycle and control of the disease is hampered by several operational, policy challenges and knowledge gaps. But all endemic countries and the international community should provide the resources necessary to remove the primary risk factors for Chagas disease – poverty and exposure – by ensuring access to clean water and basic sanitation, improved living conditions, vector control, health education, and stronger health systems in endemic areas.