

## Editorial

### Special issue on Chagas disease

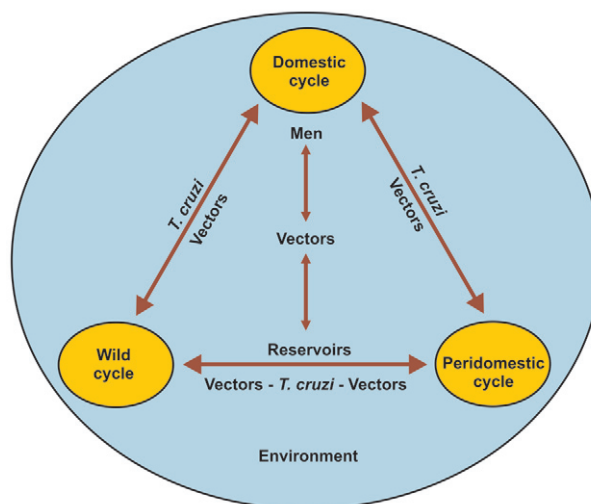
This special issue of *Memórias do Instituto Oswaldo Cruz* was based on studies presented by invited speakers at the 13th International Congress of Parasitology, which was held in Mexico City from 10-15 August 2014. These speakers participated in symposia on different scenarios of Chagas disease transmission, disease control, congenital transmission of this disease, transmission of *Trypanosoma cruzi* in the Orinoco region of Colombia, importance of transmission by *Triatoma rubrofasciata* and the need to monitor this in Vietnam, *Triatoma infestans* in the Gran Chaco of Argentina, prospects for a vaccine against *T. cruzi* infection, markers for therapeutic response in treatments for chronic Chagas disease, phylogenetics of the interrelationships between the main lineages of *T. cruzi*, infection of populations of golden lion tamarin (*Leontopithecus* spp) by *T. cruzi* and other topics of relevance to Chagas disease and to *T. cruzi* and its reservoirs and vectors.

The main scenarios for Chagas disease transmission by vectors relate to *T. infestans*, *Panstrongylus megistus*, *Rhodnius prolixus*, *Triatoma brasiliensis*, *Triatoma dimidiata*, *Triatoma pseudomaculata*, *Triatoma sordida*, *Triatoma maculata*, *Panstrongylus geniculatus*, *Rhodnius ecuatoriensis* and *Rhodnius pallescens*, which are distributed across South America, Central America and Mexico. *T. infestans* has been brought under control in Uruguay, Chile and Brazil and *R. prolixus* in some Central American countries. In addition to the fact that vector transmission is not under control in many countries, the other great challenge is transmission through blood transfusion, for which controls only exist in these same three South American countries and in a few Central American countries.

Congenital transmission of *T. cruzi* is a worldwide problem in both endemic and nonendemic countries. In the latter, this is due to migrations of women infected with *T. cruzi* from endemic areas. The mean congenital transmission rate is between 2-5% among children born from infected mothers with variations according to the region. Given that it is possible to treat neonates that are infected with *T. cruzi*, it is important that the children of mothers with Chagas disease should be monitored through serological tests to investigate IgG until the age of nine months, along with polymerase chain reaction at birth.

The strategies for controlling Chagas disease include actions to prevent vector, blood transfusion, vertical (congenital) and oral forms of transmission, complemented by monitoring, diagnosing of infections and appropriate treatment for acute and chronic cases. Community education is the foundation for this. All of these actions should be implemented in a comprehensive manner, so as to achieve the best result possible.

It needs to be borne in mind that Chagas disease cannot be eradicated, given the diversity of its transmission scenarios. This is especially so because of the large number of vector and reservoir species and, moreover, because of the wild and peridomestic cycles of the disease, which interchange with the domestic cycle (Figure). Furthermore, it is impossible to cure a large proportion of the chronic cases of the disease.



Interchanges between wild, peridomestic and domestic cycles of *Trypanosoma cruzi* [adapted from JR Coura and JCP Dias (2009). *Mem Inst Oswaldo Cruz* 104 (Suppl. I): 31-40].

The complexity of controlling Chagas disease can be appraised through two studies in this special issue. The first of these, “New Scenarios of *Trypanosoma cruzi* transmission in the Orinoco region of Colombia”, describes a situation in which *R. prolixus* coexists in wild and peridomestic cycles with a reservoir population in endemic areas of the Casanare region. The authors of this study found, in their study area, that 88.5% of the palm trees were infested with this insect, among which 60.2% were infected with *T. cruzi* and 11.9% of the mammals were also infected. The other study, “Positive deviance study to inform a Chagas disease control program in southern Ecuador”, reports that in the province of Loja, despite repeated interventions comprising insecticide use and education, the investigators found triatomines in the homes surveyed and 3.6% of the human population was serologically positive for infection with *T. cruzi*. The triatomine that is most common in Ecuador is *R. ecuatoriensis*, which has been found in association with wild animals, including rodents, birds, marsupials and mice and also with domestic species such as hens and guinea pigs.

The great dilemma with regard to controlling Chagas disease relates to oral transmission, especially in outbreaks of acute disease, through ingestion of food contaminated by the faeces and urine of triatomines or by the odiferous secretions of marsupials, as has been described in Latin America, where cases have been notified in at least four countries, in particular Brazil and Venezuela. Several outbreaks of Chagas disease that probably involved oral transmission have been reported in Brazil. The first outbreak of acute disease was reported in Teutônia, in the municipality of Estrela, state of Rio Grande do Sul, in 1966. Several other outbreaks have been described in different Brazilian states, especially in the Amazon Region since 1969, when the first outbreak was diagnosed in Belém, state of Pará (PA). Several other outbreaks have been described in PA, Amapá, Acre, Amazonas and, outside of the Amazon Region, in Catolé do Rocha (Paraíba), Navegantes (Santa Catarina), Ceará and Bahia. The number of cases has been estimated as more than 1,500. In Venezuela, 10 outbreaks have been described (4 in Caracas) with 249 cases (73.5% in children) with 4% mortality.

The great dilemma in controlling this form of transmission of Chagas disease is how to prevent it, considering that insecticides and improvements to housing do not apply in this case. I believe that the only alternative is education for the communities exposed to the risk of oral transmission of *T. cruzi*.

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