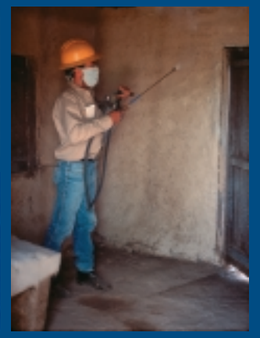
Chagas disease

Found only in Latin America and named after Carlos Chagas, a Brazilian doctor who first described the disease in 1909. He also described the life cycle of the parasite, identified insects that transmit the parasites, some small mammals that act as reservoir hosts and suggested means to help prevent its transmission.

GLOBAL STATUS

- **Cases:** 16-18 million
- **Deaths:** 21,000 annually
- **New cases/year:** 300,000
- **Chronic complications:** 2-3 million cases
- **People at risk:** 120 million
- **Disease burden:** 676,000 Disability Adjusted Life Years (DALY)



Distribution

18 countries in 2 ecological zones:

- Southern Cone, where vector insects live inside human homes
- Northern South America, Central America and Mexico, where the vector lives both inside and outside dwellings.

Causative agent

The protozoan parasite (*Trypanosoma cruzi*) which enters the human body though broken skin.

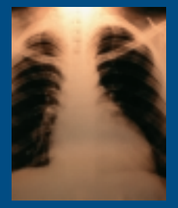
Transmission

Parasites are transmitted to humans in 3 ways:

1) By bloodfeeding "Assassin bugs' (sub-family *Triatominae*), which live in cracks and crevices of poor-quality houses, usually in rural areas. They emerge at night to bite and suck blood. The faeces of the insects contain parasites which can enter the wound left after the bloodmeal, usually when it is scratched or rubbed.
2) Through transfusion with infected blood.
3) Congenitally, from infected mother to foetus.

Symptoms

Usually a small sore develops at the bite where the parasite enters the body. If this is near the eye, the eyelid becomes swollen (known as Romaña's sign). Within a few days, fever and swollen lymph nodes may develop. This initial acute phase may cause illness and death, especially in young children. More commonly, patients enter a symptomless phase lasting several months or years, during which time parasites are invading most organs of the body, often causing heart, intestinal and oesophageal damage and progressive weakness. In 32% of those infected, fatal damage to the heart and digestive tract occurs during this chronic phase.



Prevention & Control

1) Treatment of homes with residual insecticides.
2) Blood screening to prevent transmission through transfusion.
3) Drug treatment for acute early indeterminate and congenital cases.
4) House improvement (substituting plastered walls and a metal roof for adobe-walled, thatch-roofed dwellings).
For therapy, two drugs (nifurtimox and benznidazole) can be used for the early chronic phase. *T. cruzi* antigens can stimulate autoimmunity, so the prospects for an effective vaccine are slim.
Control relies on killing vector insects in houses, improving housing to render them unsuitable for colonization by vector insects, and comprehensive health education initiatives.
Travellers can avoid the disease by not sleeping in infested housing and ensuring that any transfusions are with blood that has been screened.

Progress

- Designated by WHO for elimination as a public health problem by 2010.
- Marked success in Southern Cone countries where incidence has fallen by over 70% since 1985.
- Transmission interrupted in Uruguay (1997), Chile (1999) and in 10 of 12 endemic states in Brazil plus 12 of 19 provinces in Argentina (2000).
- Activities to interrupt transmission in Andean countries and Central America began in 1997.

Research Challenges

- The links between sylvatic and domiciliary infection cycles.
- Evaluation of markers linked to evolution from the indeterminate phase to cardiac or digestive disease forms.
- Population genetics and mobility patterns for the vectors *Triatoma dimidiata* and *Rhodnius prolixus*.
- Prevalence and incidence of congenital transmission.
- Insecticide efficacy and resistance in vectors.
- Discovery and development of more effective and better tolerated drugs.

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