

# What is Chagas Disease?

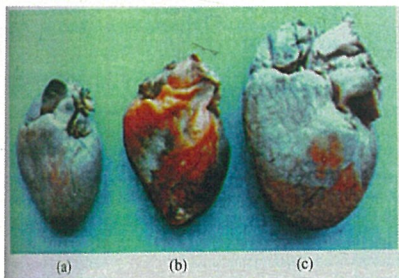


Acute Phase



Chronic Phase

Acute symptoms (fever, eyelid inflammation etc.) may be observed when a person is infected with the parasite, *Trypanosoma cruzi*. A chronic phase follows after 5-20 years of asymptomatic period, typically with **cardiomyopathy**, **megaoesophagus** or **megacolon**.



3 Cardiac Evolution Stages:

(a) Asymptomatic

(b) Developed

(c) Insufficient



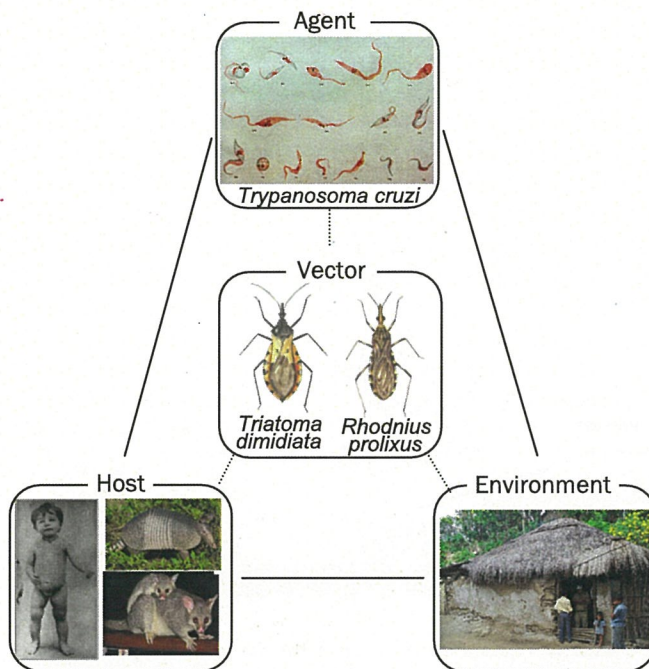
*Trypanosoma cruzi*



*Trypanosoma cruzi* is found in the faeces of vector bugs and is introduced to inside humans by scratching the bite. Chagas disease can also be caused by congenital, transfusional and oral transmission.

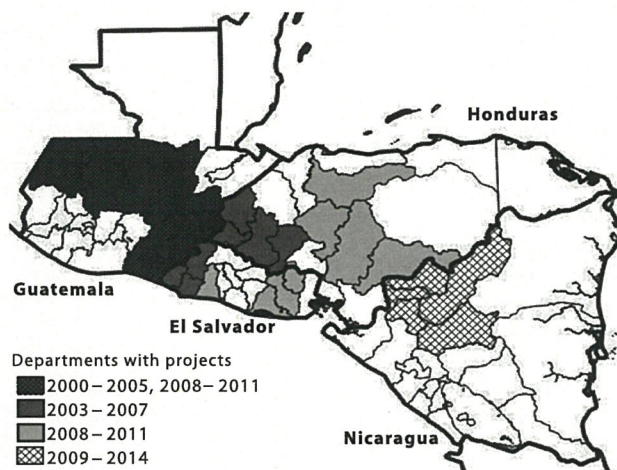
From the USA to Argentina, approximately 8 million people are infected with Chagas disease, causing the death of 12,000 individuals annually. The victims are often those who live in houses with thatched roofs and/or mud walls in rural areas. In Central America, 0.8 million or 2% of the total population are infected.

## Agent, Host, Environment & Vector



Approximately 80% of the human cases are transmitted by the vector bugs, triatominae, living in the domestic and peri-domestic areas.

## Vector Control Project Scale-up

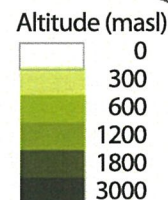
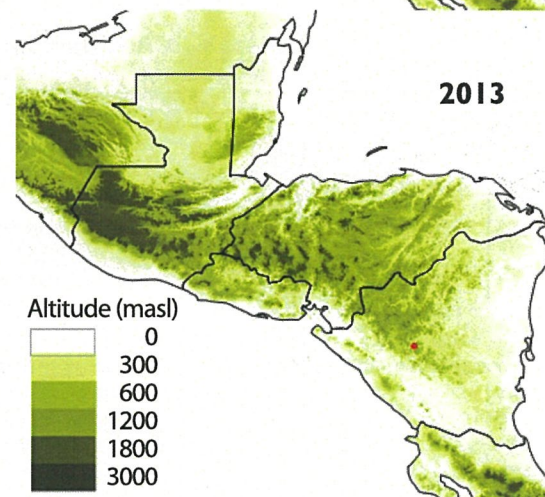
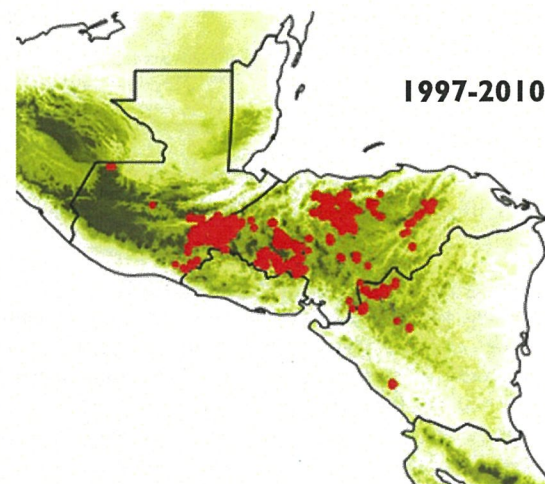


In 2000 JICA began the project in 4 eastern departments of Guatemala and extended the coverage to 25 departments in 4 countries by 2009.

Printed in Feb 2013

Inclusive and Dynamic Development

## Chagas Disease Control Projects in Central America 2000-2014



Distribution of *Rhodnius prolixus*, a main vector bug of Chagas disease in Central America



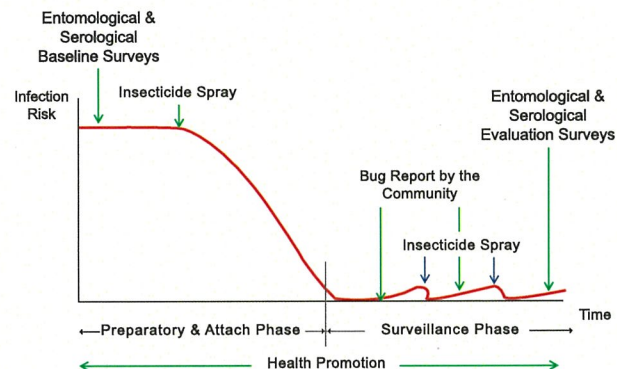
Japan International Cooperation Agency



## Vector Control Strategy

**Objective:** To interrupt the vector-borne transmission of Chagas disease.

### Methods:



The control strategy consists of THREE PHASES:

**Preparatory phase:** to determine the target areas to intervene through entomological and serological surveys.

**Attack phase:** to reduce the vector infestation levels by residual insecticide spray in risk areas.

**Surveillance phase:** to minimize the re-emergence risks by selective insecticide spray of re-infested houses.

### Project Implementation Process & JICA's Assistance

|               | 2000                        | 2001 | 2002  | 2003                        | 2004 | 2005                 | 2006 | 2007 | 2008 | 2009 | 2010                                     | 2011       | 2012 | 2013                 | 2014 |
|---------------|-----------------------------|------|-------|-----------------------------|------|----------------------|------|------|------|------|--|------------|------|----------------------|------|
| Guatemala     | Preparatory & Attack Phases |      |       |                             |      |                      |      |      |      |      | Surveillance Phase                       |            |      |                      |      |
| Honduras      |                             |      | Model | Preparatory & Attack Phases |      |                      |      |      |      |      | Surveillance Phase                       | Experience |      |                      |      |
| El Salvador   |                             |      |       | Preparatory & Attack Phases |      |                      |      |      |      |      | Surveillance Phase                       |            |      |                      |      |
| Nicaragua     |                             |      |       |                             |      |                      |      |      |      |      | Preparatory Attack & Surveillance Phases |            |      |                      |      |
| Regional C.A. |                             |      |       |                             |      | Knowledge Management |      |      |      |      |  |            |      | Knowledge Management |      |

### Capacity Development by JICA

To strengthen the decentralized health system, a Japanese manager was assigned to the National Chagas Disease Control Program (NCDPC) and Japanese volunteers were placed in the Vector Control Teams of the Local Health System of the Ministry of Health in each country. JICA reinforced the health system and capacity with:

#### Hard Components (Tools)

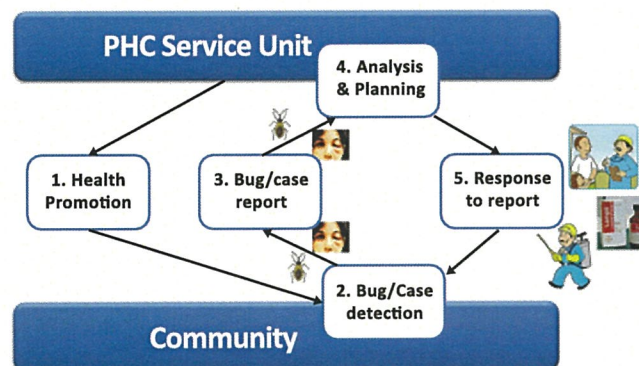
- Vehicles, spray equipment, serological test kits, etc.
- National strategy, manuals, educational materials, etc.
- Plan and report formats, quality check sheets, etc.

#### Soft Components (OJT)

- Development, utilization and improvement of the tools
- Management of human resources, time and workload
- Raising of awareness among communities

## Key Surveillance System

- To minimize the re-infestation risks of the vectors, the **community-based surveillance system** has been implemented and managed at the **PHC service units**.
- The surveillance system was **designed in pilot sites by trial and error**, and then introduced to other areas.
- 5 principal steps of the surveillance system (below) were identified through experiences in the pilot sites and **bottom-up** knowledge management by the NCDPC.



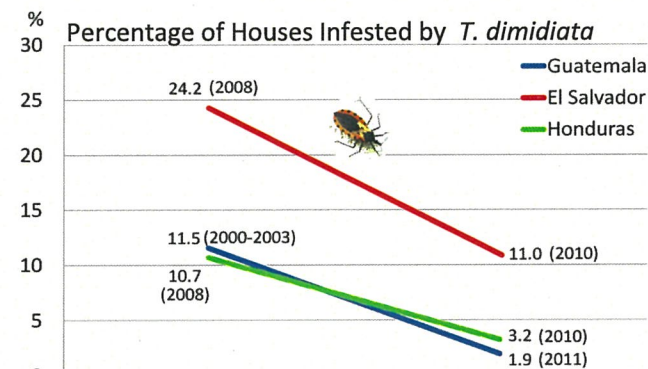
- Lack of resources in managing the surveillance system was overcome by **involving and training local stakeholders**.
- Role distribution was designed at each PHC unit but shared certain tendencies, which provided **mutual benefits and incentives** between the stakeholders.

| Affiliation:                | Ministry of Health       |                    | Community                  |              |
|-----------------------------|--------------------------|--------------------|----------------------------|--------------|
| Category:                   | Intermediate agents      |                    | Selected community members | Householders |
|                             | Vector control personnel | PHC Unit personnel |                            |              |
| Technical capacity:         | high                     | >*                 | >*                         | low          |
| Potential role distribution |                          |                    |                            |              |
| 1. Health promotion         | ✓                        | ✓                  | ✓                          |              |
| 2. Bug/case detection       |                          |                    | ✓                          | ✓            |
| 3. Bug/case report          |                          |                    | ✓                          |              |
| 4. Analysis & planning      | ✓                        | ✓                  | ✓                          |              |
| 5. Response to report       | ✓                        | ✓                  | ✓                          |              |

\* Need special training on vector control before undertaking roles.

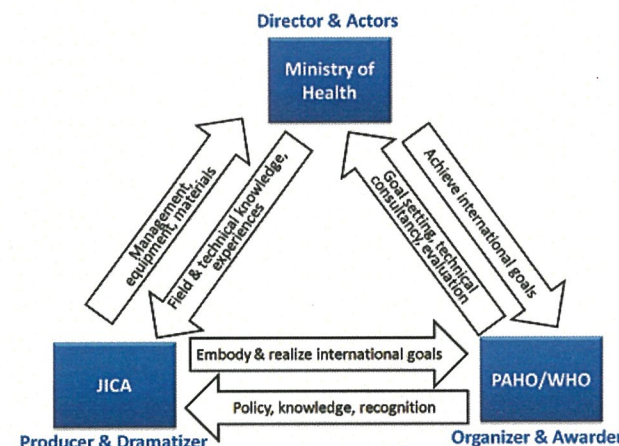
- To assure the **quality** of the surveillance system, the minimum tasks were identified for each stakeholder and were monitored as items on a checklist by the supervisors.
- Lessons from the experiences:
  - Coverage** was increased by management at local PHC units and involvement of the local stakeholders.
  - Sustainability** was improved by management at the PHC units, simplified surveillance model and routine monitoring.

## Results



- The number of sprayed houses exceeded 300,000 in Honduras and El Salvador, 200,000 in Guatemala and 30,000 in Nicaragua.
- Chagas disease transmission by *R. prolixus* was **interrupted** in Guatemala (2008), Honduras (2011) and Nicaragua (2011).
- *R. prolixus* was **eliminated** in El Salvador (2010).
- Percentage of the houses infested by *T. dimidiata* reduced dramatically as seen in the graph above.
- Seroprevalence declined from 5.3% in 1999 to 1.3% in 2005-2006 among schoolchildren in endemic areas in Guatemala and from 3.6% in 2003-2007 to 0.5% in 2008-2010 for children under 15 years-old in Honduras.
- In Central America, the estimated number of people infected with Chagas disease decreased from **1,770,000 in the 1990s to 807,000 in 2006**.

## Win-Win-Win Relationship



JICA's **alliance strategy** with the Ministry of Health and PAHO/WHO facilitated mutual investment, mutual monitoring and mutual learning, as well as the shared achievements.