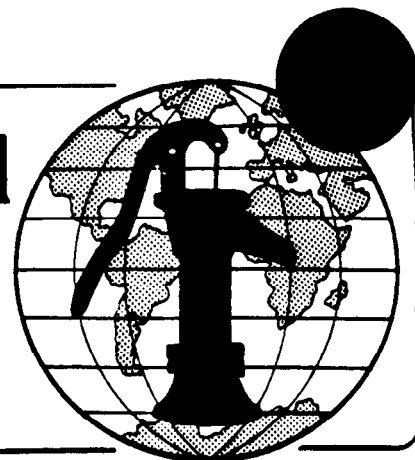


# Water for the World

## Methods of Controlling South American Trypanosomiasis Technical Note No. DIS. 2.M.3



South American trypanosomiasis caused by a blood and tissue inhabiting protozoan, is more commonly known as Chagas disease. It is becoming a widespread health problem throughout Latin America. Detection of the disease in most people is difficult and often no outside sign of infection is apparent. It is life-threatening and in most cases fatal. Young children are especially susceptible to it.

This technical note discusses methods of controlling Chagas disease and offers suggestions concerning implementation of a control program. Control is possible through relatively simple preventive measures.

### Disease Transmission

Chagas disease, or South American trypanosomiasis, is common in rural areas where poverty results in people living in poorly built and unsanitary houses. The disease is spread by a blood sucking cone-nosed bug which lives and breeds in animal dens and pens, thatched roofs, cracks and crevices of houses, and in mattresses, under beds, behind pictures and in dark corners. The bug is called a "Vinchuga" in Spanish or "Barbiero" in Portuguese. See Figure 1.

### Useful Definition

**MAMMAL** - Warm blooded animals whose offspring feed by mothers milk.

Chagas disease is spread in the following manner. The vinchuga bites an animal or person that has the parasite in its blood. The parasite enters the bug where it changes and multiplies and is passed out in the bug's feces. When the infected bug bites, it sucks blood until it is full, at which point it defecates. The parasite in the feces then enters through the bite wound in the skin or through some other cut. Generally, the vinchuga bites people on their faces around the mucus membranes or eyes. It bites mostly at night when people are sleeping. The person bitten does not feel the bite, but may feel an itch. By rubbing or scratching the bite, the feces are rubbed into the bite and the parasite enters the bloodstream.

It is not always possible to determine whether a person has been bitten. In some people, a red swelling or nodule forms after the bite indicating infection and a need for treatment. Often times, however, no red mark or nodule appears.

The parasites enter the cells of body organs and reproduce until the cell is destroyed and the parasites are freed to enter other cells. The heart and liver are especially affected with destruction of enough cells to damage normal function. Early phase symptoms are anemia, nervous illness, chills, and heart problems. Most patients die after several years of infection as internal organs fail.

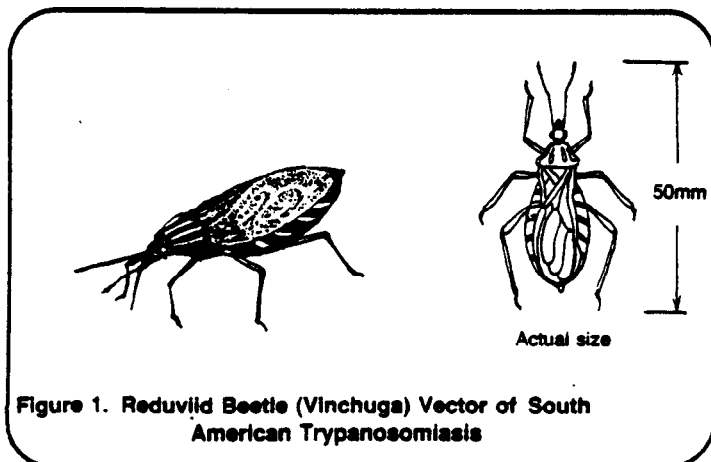


Figure 1. Reduviid Beetle (Vinchuga) Vector of South American Trypanosomiasis

# Control of Chagas Disease

Detection of the disease is still difficult and presently no drug is available for treatment. Research into cures for Chagas disease continues and is needed if the fatal effects of the disease are to be overcome. Today, the most effective and reasonable methods of control are preventive ones that focus on eliminating the bugs or preventing them from biting people. The following list of control measures should be studied and measures should be taken to use them to decrease the chance of infection.

In Chagas disease areas:

- Do not let animals into the house; especially do not let pigs, dogs, cats or other mammals sleep in the house at night.

- Build animal pens for pigs, rabbits or guinea pigs far from the house.

- Repair walls in houses. Fill in the cracks in houses and repair roofs and doors to eliminate bug hiding and breeding places. Vinchugas live in thatched roofs and, if possible the thatch should be replaced with other roofing material.

- Sweep floors, clean under the bed, pick up belongings from the floor. All these practices eliminate bug hiding and breeding areas.

- Turn over the mattress on the bed weekly. If there are vinchugas under the mattress, use insecticides to kill the bugs and air the mattress outside. Boil bed clothes to kill any eggs. In any case, mattresses should be aired monthly.

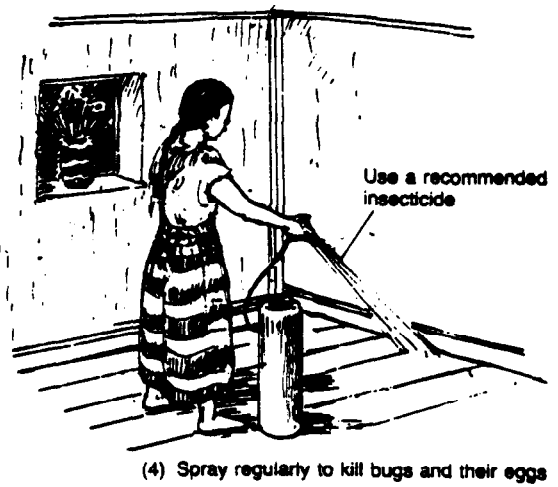
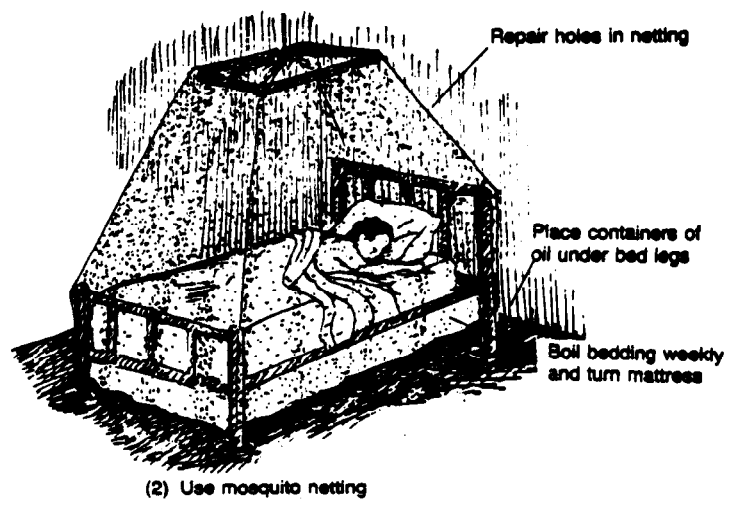
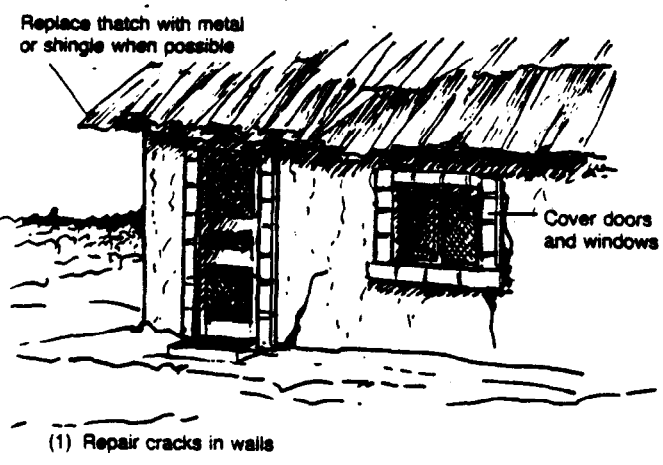


Figure 2. Methods of Control

- At night, use mosquito netting so that the bugs cannot bite people. Mosquito netting is especially important for small children. Make sure that the netting is in good repair. Vinchugas can pass through large holes in netting.

- Spray houses with insecticide to kill bugs and eggs. Check with local health officials about the type of insecticides that should be used to control vinchuga. Use insecticides that are safe for people and domestic animals. Figure 2 shows these methods of control.

Most of the measures mentioned above are family or individually oriented and will work effectively to decrease chances of being bitten by an infected vinchuga. However, community-wide and national programs should be implemented to fight the spread of the disease. The development of a program to elimi-

nate Chagas should be a national concern. One method would be to develop regional teams to spray against vinchuga. In many countries, an agency or part of an agency is or has been in existence to spray against malaria. This same group can be re-instituted or expanded to spray against Chagas.

Another important activity is health education. People must be educated and made aware of the problem. Education should stress:

- Recognition of the vinchuga bug. Adults as well as children should see the bugs and be taught to recognize one.

- Realization of the seriousness of the disease and the need to take action against it.

- Methods for controlling the spread of the disease so action can be taken.