

The Kiss of Death: Chagas Disease

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Past Model Systems

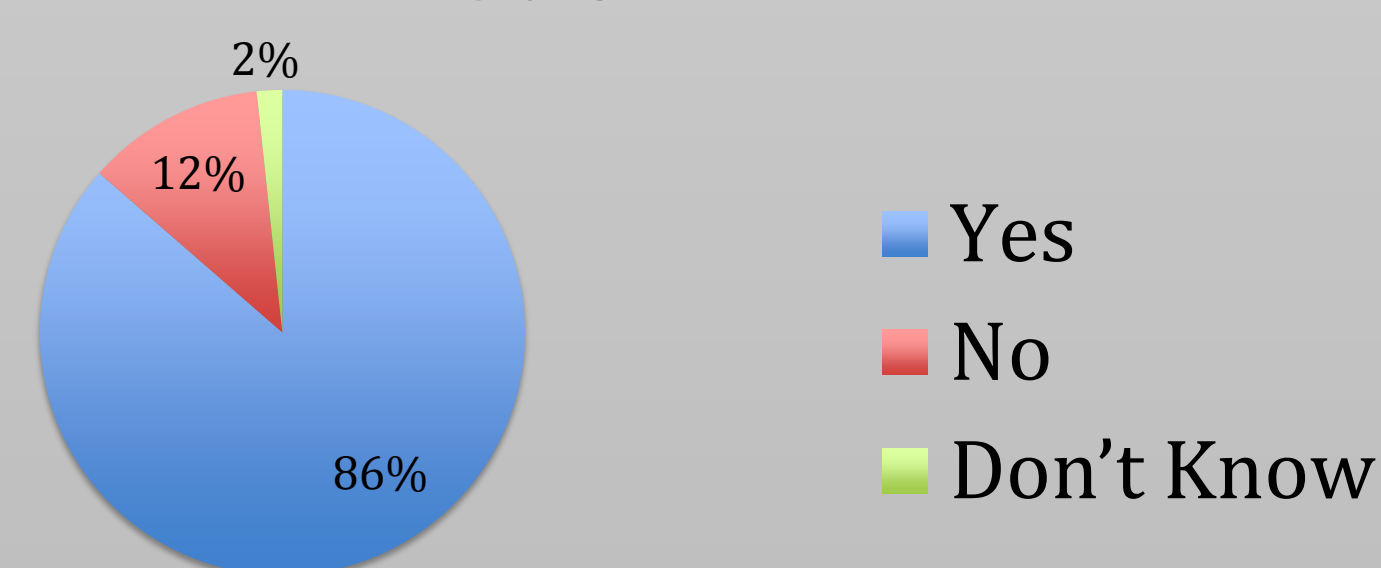
Using posters, mothers in Belize were educated about malaria symptoms in children

- Uneducated: 22.6% seek correct treatment
- Educated: 75.7% seek correct treatment

Surveys showed the effectiveness of insecticide spraying and education in preventing Chagas disease.

- **1981 Mumbai, Brazil**
 - Site of health post & research study
 - 84% understood type of disease transmitted
 - 56% realized importance of bug control
- **1995 Guatemala**
 - No health post
 - 0% knew Chagas disease existed
- **1997 Posse, Brazil**
 - Insecticide spraying & home building programs since 1981
 - Are triatomine bugs present in the household?
 - 95% no bugs
 - 39% had bugs before spraying

Is Chagas Disease an Important Health Problem?



Abstract

Chagas disease is a dangerous epidemic affecting the uneducated in poverty-stricken countries and is therefore often neglected. Besides the lack of knowledge, there is a deficiency of medication used to treat the disease. The spread of Chagas can be avoided through a combination of well-researched methods.

Need:

To prove that Chagas disease is a problem and to stop the spread in Bolivia.

Approach:

Prevent infection through:

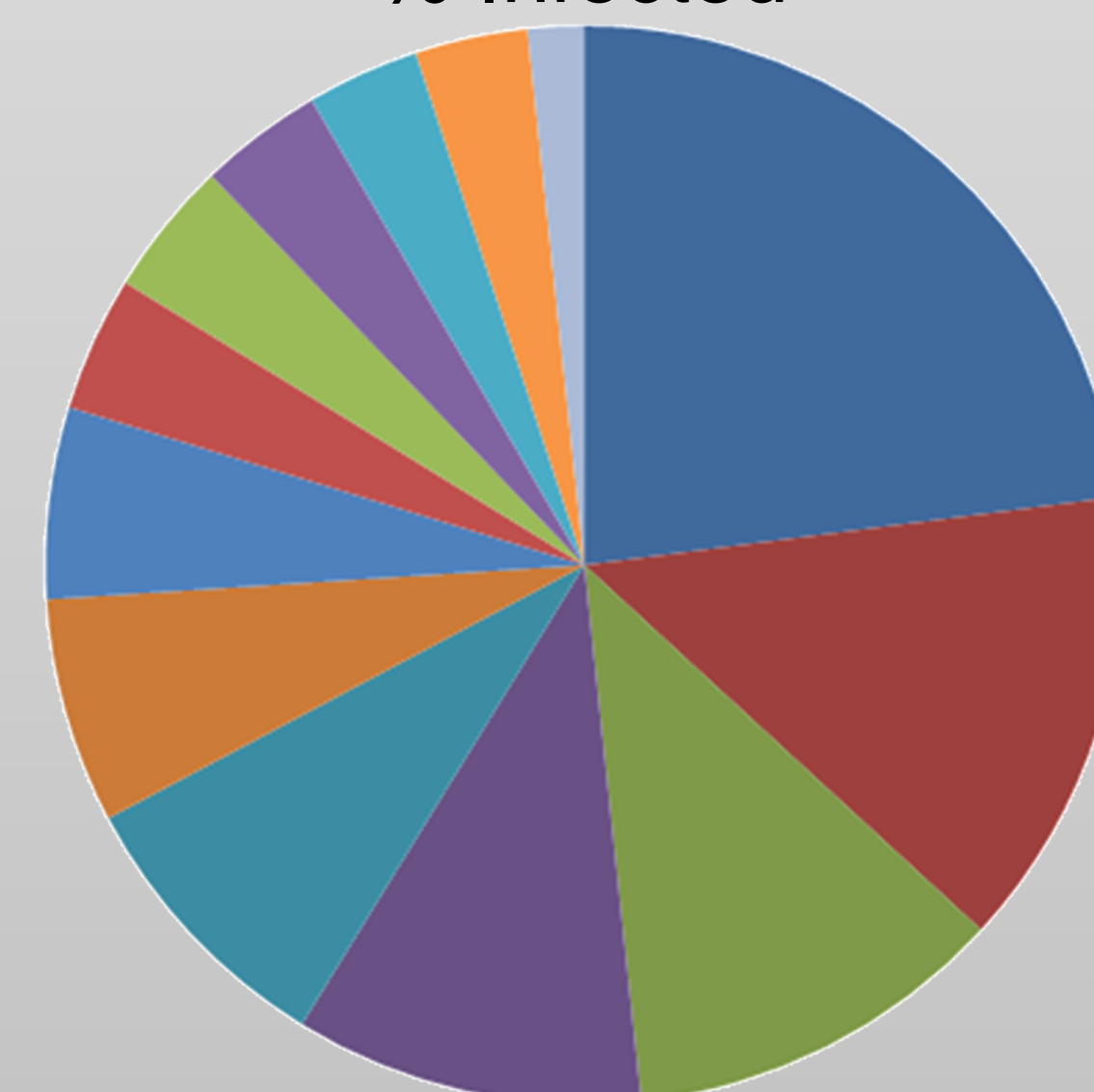
1. Education
2. Use of insecticides/ bed nets
3. Housing Improvements
4. Screening of blood/organ donors

Why Prevention?

- Lack of medicine to cure disease

Why Bolivia?

% Infected



- Bolivia
- Argentina
- El Salvador
- Honduras
- Paraguay
- Guatemala
- Excudaur
- Guyana
- Venezuela
- Nicaragua
- Brazil
- Mexico
- United States

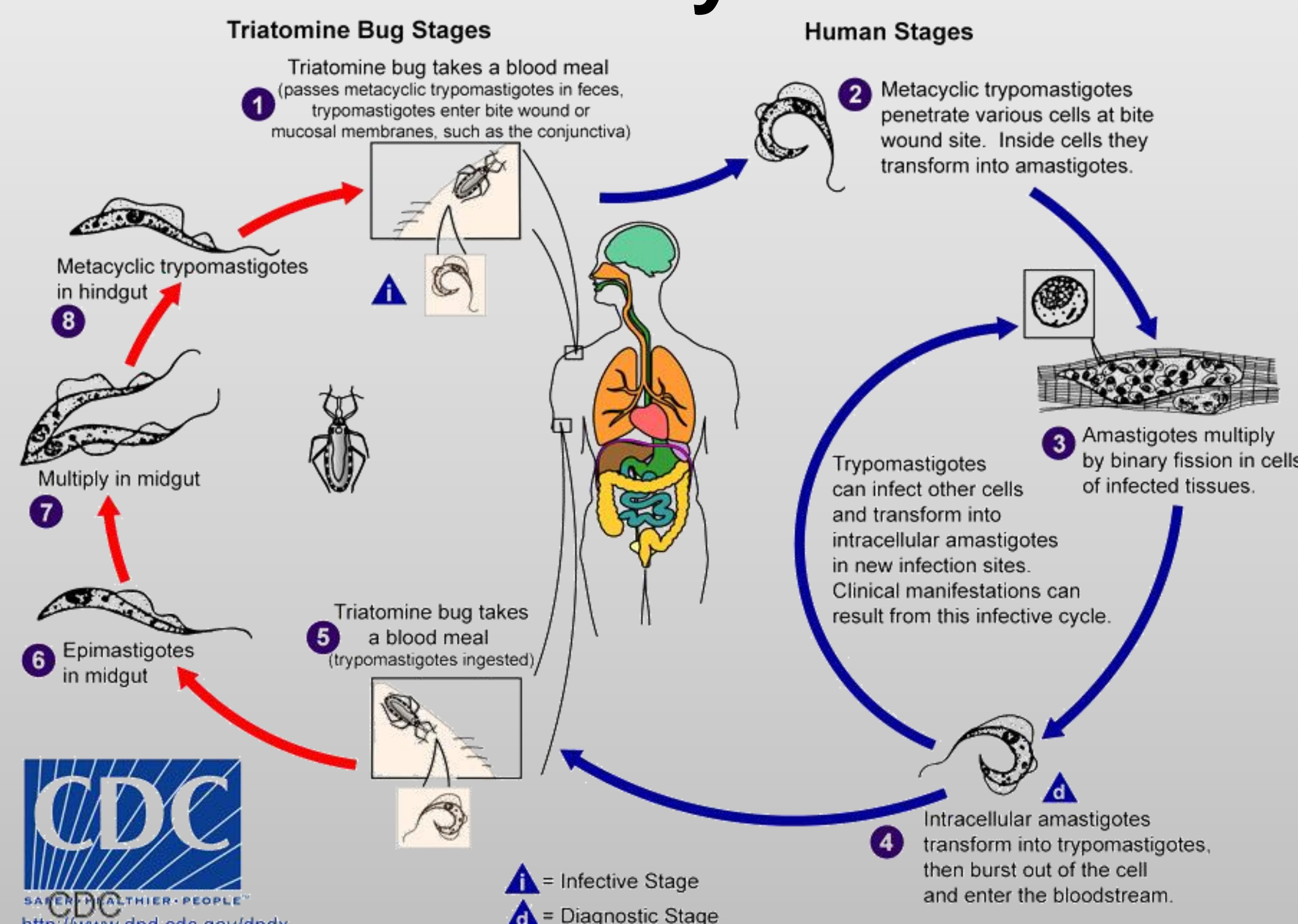
Methods of Prevention

Treatment	Pros	Cons
Insecticides	•Most Effective	•Expensive •Needs maintenance •Possibly dangerous •Possible resistance
Native Plants/Predators	•Easily accessible	•Not as effective as insecticides •Could harm ecosystem
Insecticidal Paint	•Easy to apply •Long lasting	•Not always accepted by community •Only applicable to certain houses
Insecticide Treated Bed Nets	•New LLINs •Very effective	•Limited usage •Not always used
Insecticide Treated Clothes	•Effective when outside	•Needs maintenance •Expensive •Not tested with triatomines

Conclusions

Chagas disease is a neglected disease in need of prevention. The only medicine, Benznidazole, is no longer being produced and the current supply is diminishing. Combining preventative measures such as insecticides, housing improvements, caution of transmission, and knowledge of symptoms can lead to a healthier life and lower risk of infection. These measures have been proven effective through past studies in regions similar to Bolivia.

Life Cycle



Background

- Neglected tropical disease
- Flu-like symptoms
- Spread by triatomine bugs
 - Parasite infects the skin
- Disease can be transmitted human to human (transfusions/ transplants) or animal to human
- No vaccine
- Medication is very limited
- If not treated, leads to death

References

Astien, Joseph. The Kiss of Death. 2011
Avila Montes GA, Flores M, Martinez Hernández M, Ponce C, Ponce E. Rev Panam Salud Publica. 1999- PubMed - NCBI Nov;6(5):311-20.
Cropley, Lorelei. Oxford Journals | Medicine | Health Promotion International. 1 Nov. 2004. Pp. 445-452.
Kimani Elizabeth W, Kuria Isabel W, Mugisha Fredrick, Vulule John M. Malaria Journal. Volume 5. Pp. 1475-2875.
Williams-Blangero, Sarah, John L. VandeBerg, and Antonio R.L. Teixeira. SciELO - Health Public. Cad. Saúde Pública, Jan. 1999, vol.15, pp. 7-14.
Patton, Professor R.T. Chagas Disease In The Americas: Epidemiology and Control. Florida State University Term Paper. Pages 1-11.
World Health Organization. 2007. Global plan to combat neglected tropical diseases 2008-2015.