Berenice?
Aqui, descobriu-se a doença de Chagas.

E esta, a primeira doente.

Foi examinando dona Berenice, hoje com 72 anos e boa saúde, que Carlos Chagas descobriu a doença transmitida pelo barbeiro.
BLOOD

HEPATITIS – B
HEPATITIS – C
HIV
T. pallidum
T. cruzi

TRANSFUSION

HOST
The Ministers of Health of Argentina, Bolivia, Brazil, Chile, Paraguay and Uruguay, decided to make a coordinated effort to eliminate *Triatoma infectans* from millions of infested houses by spraying with residual insecticides, health education, and when possible, housing improvement.
Chagas disease in the Southern cone, up to 1990

- Vector control since the 1960s in ARG & BRA. Limited in CHI & URU. Occasional in BOL & PAR
- For the first time, treatment of acute cases was successfully tested in the late 1960s and early 1970s (Nifurtimox)
- Diagnostics reagents were locally produced. The IHA was developed in the 1960s, in ARG; the IFA in 1970s in BRA. The ELISA began to be used in the 1980s. Serology with T. cruzi recombinant antigens began in the early 1990s
- Epidemiological studies were done in CHI, PAR, & URU in the 1980s. They were the bases for control activities done latter

Two studies (ARG & BRA) indicated that children ≤12 years old with sub-chronic disease can be cured if treated (Benznidazol)
## ATTACK PHASE: No. OF HOUSES SPRAYED AND TO BE SPRAYED. 1992 – 1996

<table>
<thead>
<tr>
<th>Country</th>
<th>Endemic Area</th>
<th>Sprayed</th>
<th>To be sprayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>746,832</td>
<td>614,788</td>
<td>400,362</td>
</tr>
<tr>
<td>Bolivia</td>
<td>825,064</td>
<td>84,550</td>
<td>569,013</td>
</tr>
<tr>
<td>Brazil</td>
<td>4,532,612</td>
<td>647,602*</td>
<td>686,996</td>
</tr>
<tr>
<td>Chile</td>
<td>328,499</td>
<td>15,022</td>
<td>35,414</td>
</tr>
<tr>
<td>Paraguay</td>
<td>350,000</td>
<td>107,709</td>
<td>153,620</td>
</tr>
<tr>
<td>Uruguay</td>
<td>24,650</td>
<td>5,323</td>
<td>18,274</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>6,807,657</strong></td>
<td></td>
<td><strong>2,004,694</strong></td>
</tr>
</tbody>
</table>

*up to September 1995*
Economic impact of Chagas disease Bolivia, 1992 ($USA)

- **Medical treatment**: $21,401,469
- **Lost production**: $101,329,492
- **Total direct and indirect costs**: $123,551,836

*From Chagas in Bolivia. Ministry of Human Development/USAID, 1994. 1$USA = 4Bs.*
The World Bank compares the burden of disease caused by different diseases, using the Disability Adjusted Life Years (DALYs), as a unit for measure of that burden.

This allows countries to establish which disease or diseases are priorities for control if there are tools available for such control.
Brazil: Chagas Control Program, 1975-1995

Total costs 1975-1995* US$ 516 million

77.5% of funds spend on vector control

1975-1980 3,573,000 infected individuals
(3.1% of the population)

1995 1,961,000 infected individuals
(1.3% of the population)

Vector control prevented: 277,000 new infections and 85,000 deaths. Prevented the loss of 1,620,000 DALY's, 41% from deaths, and 59% from disability

For each US$ spent on vector control US$ 2.01, in savings

The Southern Cone Initiative, advances 1991-2007

Interruption of *T. infestans* transmission in:

Uruguay, in 2007;

Chile, 2009;

Brazil, 2006

The vector has not been eliminated, but their number is so low that it is unlikely that it would be able to transmit *T. cruzi* to humans
Blood borne infectious diseases prevention: Hepatitis C and \textit{T. cruzi}, 1993

- The subject was politically important because “problems” appear in newspapers.
- Any one may be expose because of the increase in accidents and violence.
- Was relatively easy to quantify (information on donor screening and prevalence).
- There is a magic bullet for prevention (serology of donors).
**Donor screening: T. cruzi, 1993/1995**

<table>
<thead>
<tr>
<th>≥80 ≤ 90 % Screening</th>
<th>≤ 50 % Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARG, HON, URU, VEN</strong></td>
<td><strong>BOL, COL, COR, ELS, PAN</strong></td>
</tr>
<tr>
<td>≥ 70 % Screening</td>
<td>≥ 50 ≤ 70 %</td>
</tr>
<tr>
<td><strong>PAR</strong></td>
<td><strong>Screening</strong></td>
</tr>
<tr>
<td><strong>CHI, GUT</strong></td>
<td><strong>NIC, ECU</strong></td>
</tr>
</tbody>
</table>
## ANDEAN COUNTRIES: BLOOD BORNE INFECTIONS. 1993-1997

<table>
<thead>
<tr>
<th>Year</th>
<th>HIV</th>
<th>HBV</th>
<th>HCV</th>
<th>T.cruzi</th>
<th>TOTAL</th>
<th>DONORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>19</td>
<td>148</td>
<td>559</td>
<td>241</td>
<td>8.924</td>
<td>963.274</td>
</tr>
<tr>
<td>1995</td>
<td>83</td>
<td>178</td>
<td>986</td>
<td>574</td>
<td>1.821</td>
<td>756760</td>
</tr>
<tr>
<td>1997</td>
<td>2</td>
<td>2</td>
<td>422</td>
<td>63</td>
<td>489</td>
<td>1219590</td>
</tr>
</tbody>
</table>

1. Six countries (BOL, CHI, COL, ECU, PER, VEN); 2 four countries (COL, ECU, PER, VEN). 3. Five countries (CHI, COL, ECU, PER, VEN).

100% Screening
ARG, BRA, ELS, ECU, HON, URU, VEN

≥99% Screening
COL, PAR, PER

≥90 ≤98% Screening
NIC, GUT,

≤50% Screening
COR, 25%
MEX, 27%
PAN, 34%

% Screening
BOL, 86%
CHI, 75%
% of blood donors screening: T. cruzi, 2005

100% Screening
ARG, BRA, COR, ELS, ECU, NIC, URU, VEN

≥ 99% Screening
COL, GUT, HON, PAR,

≥ 75 ≤ 90% Screening
BOL, PAN, PER

≤ 50% Screening
MEX, PAN
Blood-sucking insect's bite is the kiss of death!

DRACULA BUG INVADAS U.S.

After killing 40 million people, deadly fly crosses our border

World's deadliest insect invades America

Curse of the DRACULA BUG
### Mapa 1

LATINOAMERICANOS Y CARIBEÑOS RESIDENTES EN ALGUNOS PAÍSES DE FUERA DE LA REGIÓN, ALREDEDORE DE 2000

<table>
<thead>
<tr>
<th>País</th>
<th>Año</th>
<th>Número</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadá</td>
<td>2006</td>
<td>380,000</td>
</tr>
<tr>
<td>Europa</td>
<td>1985-1992</td>
<td>250,000</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>483,000 (W/Spain)</td>
</tr>
<tr>
<td>España</td>
<td>2008</td>
<td>1,700,000</td>
</tr>
<tr>
<td>Japón</td>
<td>1990</td>
<td>150,000</td>
</tr>
<tr>
<td></td>
<td>1994</td>
<td>250,000</td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>95,000</td>
</tr>
<tr>
<td>Australia</td>
<td>2006</td>
<td>80,000</td>
</tr>
<tr>
<td>Estados Unidos</td>
<td>Up 1989</td>
<td>2,459,000</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>12,858,180</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>15,602,412</td>
</tr>
</tbody>
</table>

* Only Brazilians and Peruvians

Fuente: Centro Latinoamericano y Caribeño de Demografía (CELADE) – División de Población de la CEPAL, Proyecto Investigación de la Migración Internacional en Latinoamérica (IMILA).
Thanks for your attention