

# Chagas Disease-Awareness Program for CHWs

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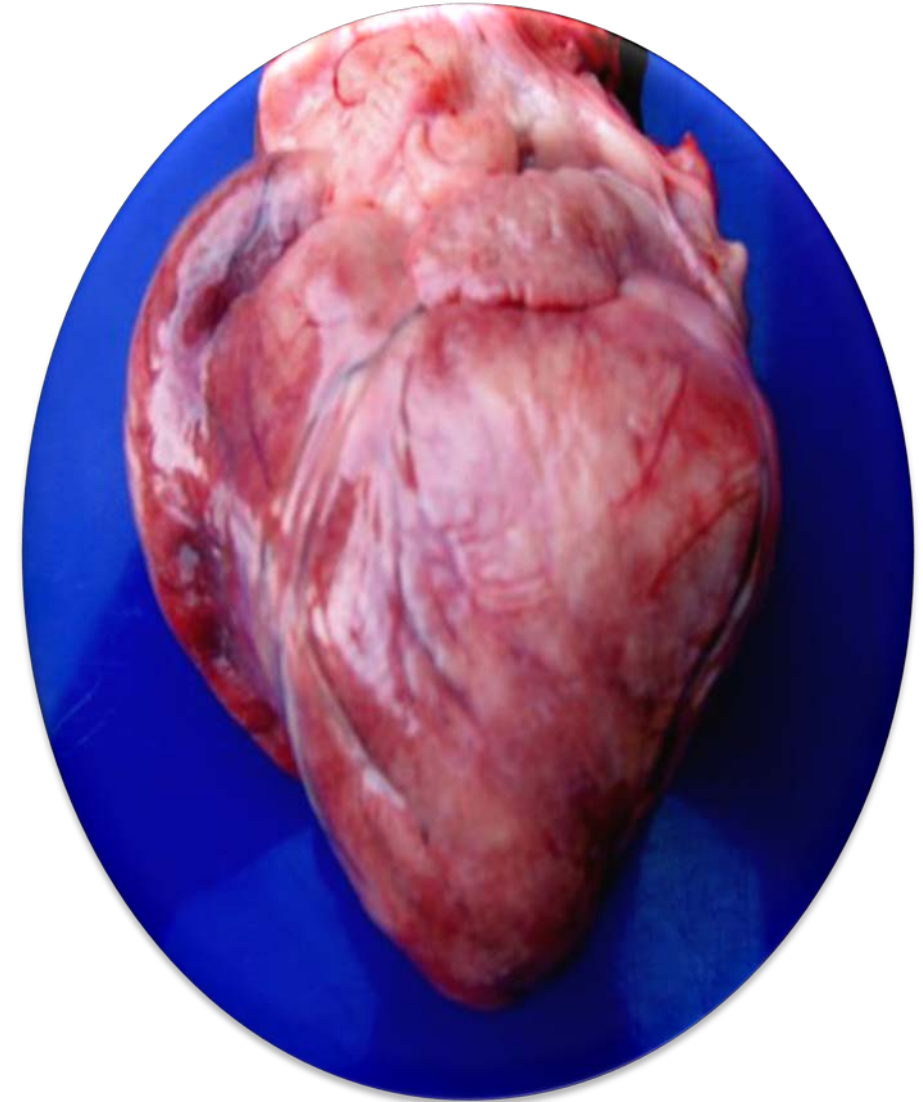
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# A Brief Review

- Acute phase of Chagas disease lasts for approx. 8 weeks
- Symptoms (if any) are similar to cold or flu
- *T. cruzi* infection may be lifelong if untreated and develops into either of 2 chronic stages of Chagas disease
  - Stage 1 is ASYMPTOMATIC & occurs in 60-70% of population
  - Stage 2 is SYMPTOMATIC & occur in 30% of population
    - Symptoms: dilated heart, esophagus or colon; heart rhythm abnormalities
- Chagas is treatable if caught before advanced symptoms occur



# A Brief Review

- FDA has required first-time blood donations to be screened for Chagas parasite since 2006
- FDA blood donor screenings ARE NOT diagnostic testing – only a screening test
- Patients must confirm their Chagas disease diagnosis with laboratory testing
  - Must also receive complete physicals to check for Chronic Chagas Stage 2 symptoms
- Drug therapies are most effective during the Acute Stage or Chronic asymptomatic
- Individuals who are pregnant or have advanced symptoms **should not** undergo treatment



Session 3:  
Chagas Disease Health  
Threats to Pregnant and  
Reproductive Age Women  
“Congenital Chagas”



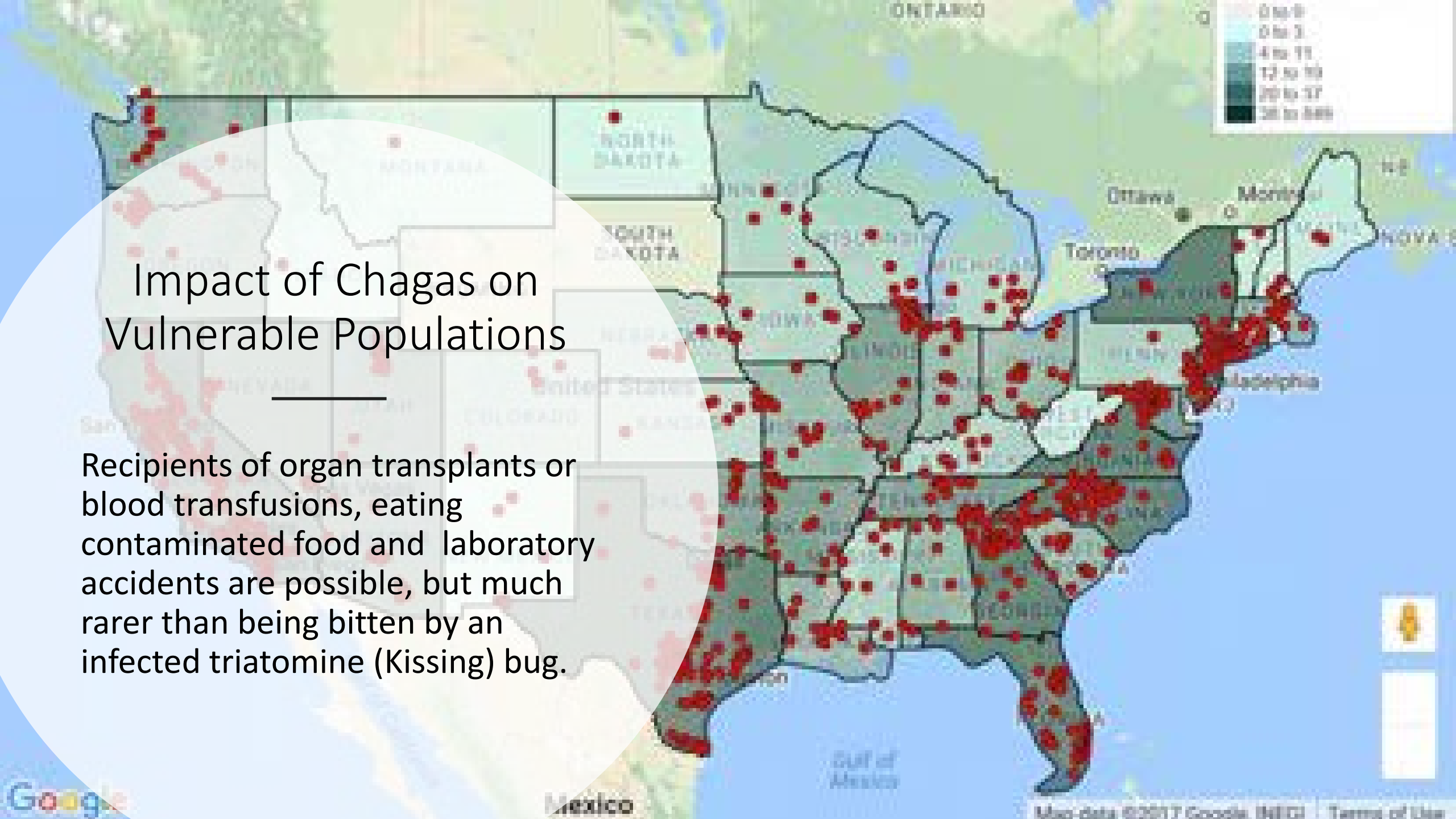
# Impact of Chagas on Vulnerable Populations

Individuals and families living in substandard housing, particularly in rural areas where public health infrastructure is minimal or lacking. This encourages the breeding of the Kissing bug vector and their proximity to humans.



## Impact of Chagas on Vulnerable Populations

Recipients of organ transplants or blood transfusions, eating contaminated food and laboratory accidents are possible, but much rarer than being bitten by an infected triatomine (Kissing) bug.



# Impact of Chagas on Vulnerable Populations

Pregnant women or women of reproductive age who have contracted Chagas earlier in life may transmit the disease to the unborn child. This is called “Congenital Transmission”

## Protect Your Baby from Chagas Disease

Chagas disease is an illness that can lead to serious heart and stomach problems, and even death. Chagas disease can be life threatening even though you may not feel sick now. In fact, people usually don't feel sick until many years after they have been infected.

### Who can get Chagas disease?

Anyone. However, people have a much greater chance if at some point in their lives they have:

- Lived in rural areas of Mexico, Central America, or South America
- Stayed in a house in Mexico, Central America, or South America with walls that have cracks or crevices
- Seen this bug



### How can someone get Chagas disease?

People usually get Chagas disease from contact with a triatomine bug (also called “kissing bug”). However, there are other ways the disease can be spread, including from an infected mother to her unborn baby.

### What should I do if I think I might have Chagas disease?

If you think you might have Chagas disease, you should see your OB/GYN or other health care provider, who will examine you. He or she may take a sample of your blood for testing.

### If I have Chagas disease, does it mean my baby is infected?

No, not necessarily. The risk of an infected mother spreading Chagas disease to her unborn baby is less than 1 in 10.

### If I have Chagas disease, should my baby be tested?

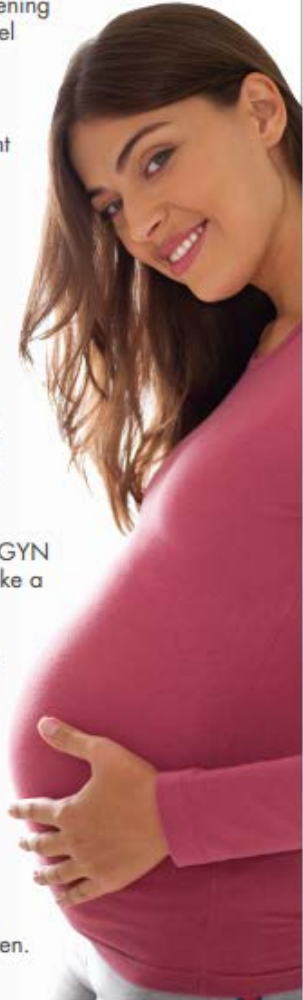
Yes. If you have been told you have Chagas disease, all of your children should be tested, regardless of their ages.

### Is there treatment for Chagas disease?

Yes, there is treatment for the disease. Your baby can be treated any time after birth, and treatment is very effective for newborns and children. You can be treated after your baby is born and you have finished breastfeeding.

**Many people who have tested positive are leading healthy lives with the help of their health care providers.**

For more information on Chagas disease, please visit [www.cdc.gov/parasites/chagas](http://www.cdc.gov/parasites/chagas) or call **404.718.4745**.





# Congenital Chagas Disease



- Congenital Chagas disease has been known for at least 70 years
- In the US, an **estimated 40,000 women** of childbearing age have Chagas disease and could transmit infection to their infants
- The annual incidence of congenital Chagas disease in the US is **estimated to be 63-315 cases**
- At least **2,000 T. cruzi-infected infants and children** live in the US
- Cure rates for treatment of congenital Chagas disease are excellent; untreated, infants are at risk for development of Chagas cardiomyopathy or gastrointestinal disease
- The diagnosis of congenital Chagas disease has been confirmed in **only two infants** born in the US



# Mother-to-Child Transmission of T. cruzi

- Transmission occurs through the placenta in the **2nd or 3rd trimester of gestation**.
- Mothers usually have chronic disease and are asymptomatic
- **Mother-to-infant transmission rates from infected mothers are about 1% to 5%**
- Transmission rates are higher (5%) in countries where T. cruzi is endemic than in those where it is not (3%)
- Transmission is more likely if mothers have acute or reactivated infection



# Health Threats to Pregnant and Reproductive Age Women

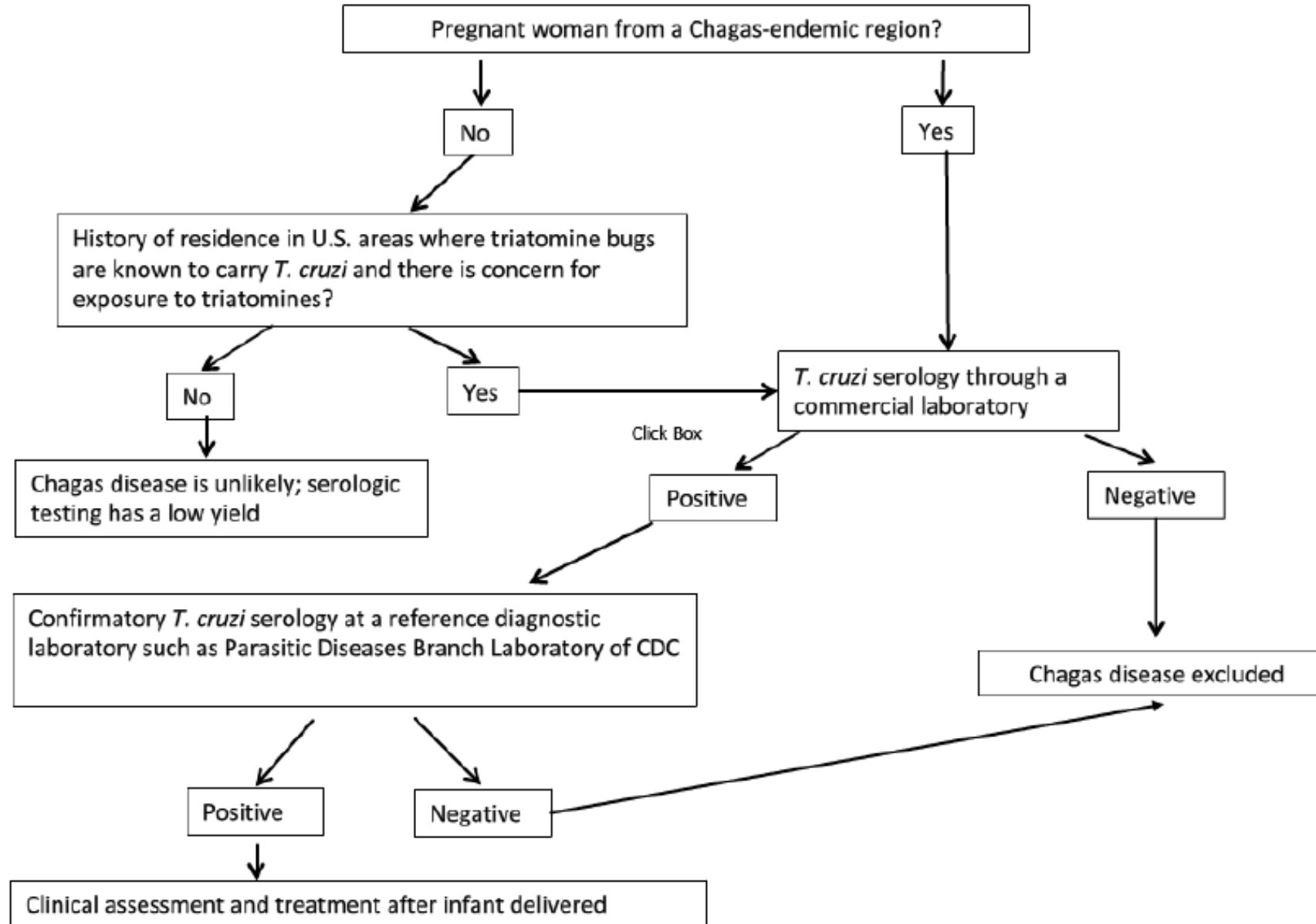
- Infected nursing mothers do not transmit Chagas to infants.
- The difficulty in diagnosis is:
  - making mothers who have lived in endemic areas for Chagas disease aware that they should be tested to determine if they are infected, and
  - providers of care to women from endemic areas of the world must be also aware of the clinical guidelines for diagnosis and treatment.
- Death of untreated children approaches 5%.



# Identifying Women at Risk for Chagas Disease

- Testing for Chagas disease before or during pregnancy should be considered for women who are at risk because they live or have lived in locales endemic for Chagas disease
- Women at greatest risk are those from endemic regions who may have had contact with triatomines through:
  - Residence in a rural region
  - Residence in a mud or thatched-roof house in endemic regions
- Vector-borne Chagas disease acquired in the United States has been documented in <50 persons; routine testing of pregnant women is not indicated for lower risk patients

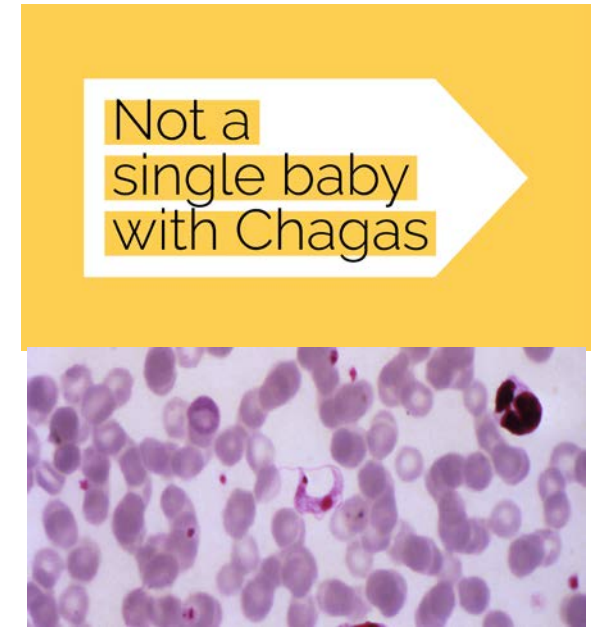
## Algorithm for Evaluation of Chagas Disease in Pregnant Women





# First US Case of Congenital Chagas Disease

- The first report of congenital Chagas disease in the United States was a boy born in Virginia in 2010. His mother had moved recently to the United States from Bolivia.
- The infant was born at 29 weeks of gestation by C-section. His birth weight was 4 lbs. By exam, he had ascites, pleural effusion and pericardial effusion
- Blood smear in week 2 of life revealed *T. cruzi* trypomastigotes and *T. cruzi* PCR was strongly positive; serologic tests for anti-*T. cruzi* antibodies were positive
- He received benznidazole for 60 days and was cured





## Houston, TX: Congenital Study

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- Cord blood or residual maternal blood obtained from 4,000 of 4,016 infants born consecutively at a single hospital in Houston (2011-2012) had serologic testing for Chagas disease performed at CDC
- ~75% of mothers were born in Mexico, Central America or South America
- Samples from 28 of 4,000 women were positive
- **Additional testing confirmed Chagas disease in 10 of those women**

# Houston, TX study: Maternal Interviews and Infant Evaluation

- 8 of 10 chronically infected mothers were interviewed
  - None had heard of Chagas disease
  - None knew of relatives with heart or GI problems
- None had known heart disease or arrhythmia
- All had lived in rural areas of Mexico or Central America
  - 6 had lived as children in a mud or adobe home
  - Several had lived in homes with thatched roofs
- 7 infants were term, 1 was a 25-week preterm infant; all had negative serologic tests by age 7 months

# Challenges to Identifying Infants with Congenital Chagas Disease

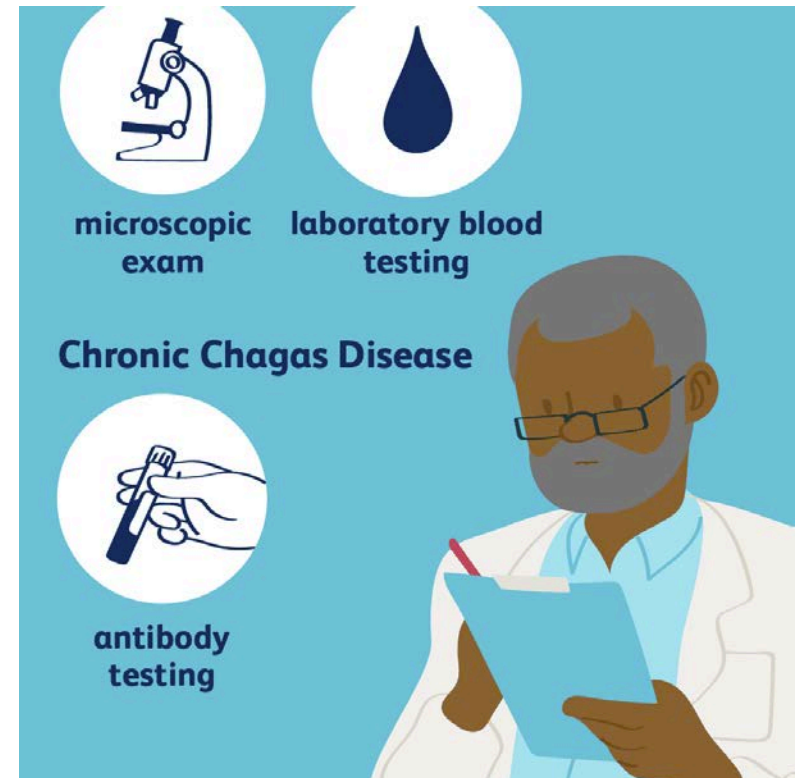


- Many infants with congenital infection are **asymptomatic** at birth
- 10% to 40% of infants show symptoms at birth but these are non-specific
  - Ex. Prematurity, jaundice, or anemia
- **Chagas disease in infants likely occurs more frequently than recognized**
- Identifying maternal infection is a critical step to finding infants who should be monitored for congenital infection during the first year of life
- **The exact prevalence of infection among women of child-bearing age in the U.S. is not known**



# Testing Infants born to positive mothers

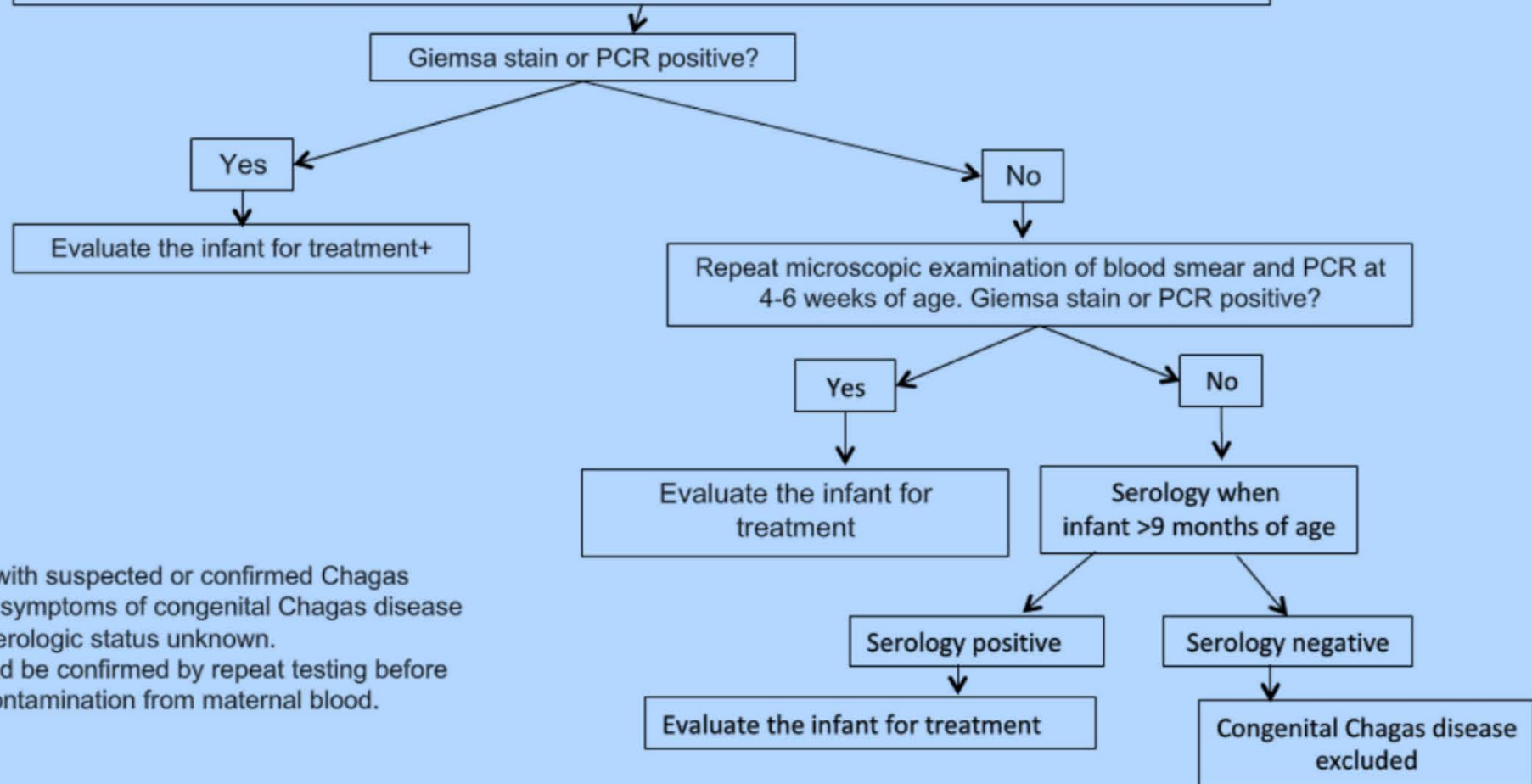
- Infant diagnosis relies on detection of the parasite after birth by microscopic examination of blood smears and/or PCR testing for *Trypanosoma cruzi* DNA in blood.
- Because the infected mother's antibody to *T. cruzi* can persist in her infant for up to 9–12 months, serologic testing is not useful for detecting congenital infection in newborn infants.
- Over time, the mother's antibody will disappear and children who are uninfected should be antibody negative by 9–12 months of age.



## Algorithm for Evaluation of Congenital Chagas Disease: Infant <3 Months of Age\*

At time of birth, test cord blood (if no maternal blood contamination) or whole blood from infant for:

- Microscopic examination of blood (Giemsa stain for *T. cruzi* trypomastigotes)
- PCR
- Chagas disease serology if mother not tested during pregnancy to detect maternal antibody and determine whether infant at risk



\*Infant born to mother with suspected or confirmed Chagas disease **OR** infant with symptoms of congenital Chagas disease in at-risk mother with serologic status unknown.  
+ A positive PCR should be confirmed by repeat testing before treatment to exclude contamination from maternal blood.

# Treatment of Chagas Disease in Infants

- Treatment early in life kills the parasite and prevents long-term complications from heart and intestinal disease with cure rates exceeding 90%
- Treatment is always recommended for infants with congenital infection and children up to age 18 years
- Infection can be transmitted in subsequent pregnancies among women chronically infected with *T. cruzi*



# Treatment of Chagas Disease in Infants

- Benznidazole or nifurtimox: Not FDA-approved in infants but can be used
- Dosing is age-specific and determined by physician
- Side effects are common and can include:
  - Benznidazole: dermatitis, peripheral neuropathy, anorexia, bone marrow suppression
  - Nifurtimox: anorexia, nausea, weight loss, tremors, insomnia, peripheral neuropathy
- Treatment must be under close supervision of physician





# Evaluation of Family Members



- Transmission of *T. cruzi* can occur with sequential pregnancies and throughout the childbearing years
- Transgenerational transmission can occur
- If Chagas disease is confirmed in a mother, family members should also undergo serologic testing, including:
  - Each of the mother's children
  - Her mother (the infant's maternal grandmother)
  - Her own siblings

# Breastfeeding



- Transmission through breast milk has not been reported
- Mothers with chronic Chagas disease can safely nurse their infants
- Mothers with acute Chagas disease or reactivation of Chagas disease from immunosuppression can have a high parasite load and should not breastfeed
- Breastfeeding should be withheld if there is bleeding around the nipples, only until bleeding has resolved
- Safety for infants exposed to drug through breastfeeding has not been documented; withholding antitrypanosomal treatment while breastfeeding is recommended

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# Chagas Disease Awareness

- Chagas disease fact sheets for the public are available on-line in English and Spanish through CDC
- Other printable resources include, "Help protect mothers and their children from Chagas disease" and, "Chagas disease in the Americas"
- <https://www.cdc.gov/parasites/chagas/printresources.html>

## Case Study 3:

Mother screens positive for Chagas disease while pregnant



# Summary



- Poor public health infrastructure and substandard housing hurt vulnerable populations
- Chagas diseases CAN be transmitted congenitally via the placenta but NOT through breastfeeding
- If the child is diagnosed with Chagas early after birth treatments can be up to 90% effective
- In the United States, an estimated 40,000 women of childbearing age have Chagas disease
- At least 2,000 *T. cruzi*-infected infants and children live in the United States
- Many infants with congenital infection are asymptomatic at birth
- 10% to 40% of infants show symptoms at birth but these are non-specific
- Early treatment has a cure rate of 90%
- Infants are treated by either benznidazole or nifurtimox, dosing is age-specific

# Thank you!

## Final Session–

- Session 4: Talking about Chagas disease and prevention
  - November 13<sup>th</sup> 11am