# Chagas Disease Reporting in Texas

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Office of the Chief State Epidemiologist

Texas Department of State Health Services

Chagas ECHO Session - January 6, 2025

# Presentation Overview

- Chagas disease reporting and surveillance in Texas
- Human Chagas disease cases
- Chagas disease vector surveillance
- Chagas disease reporting in animals
- DSHS online Chagas disease resources
- Chagas disease challenges

# Chagas Disease Reporting & Surveillance in Texas

*Triatoma sanguisuga* on arm - Picture courtesy of Dr. Ed Wozniak & Christina Wozniak

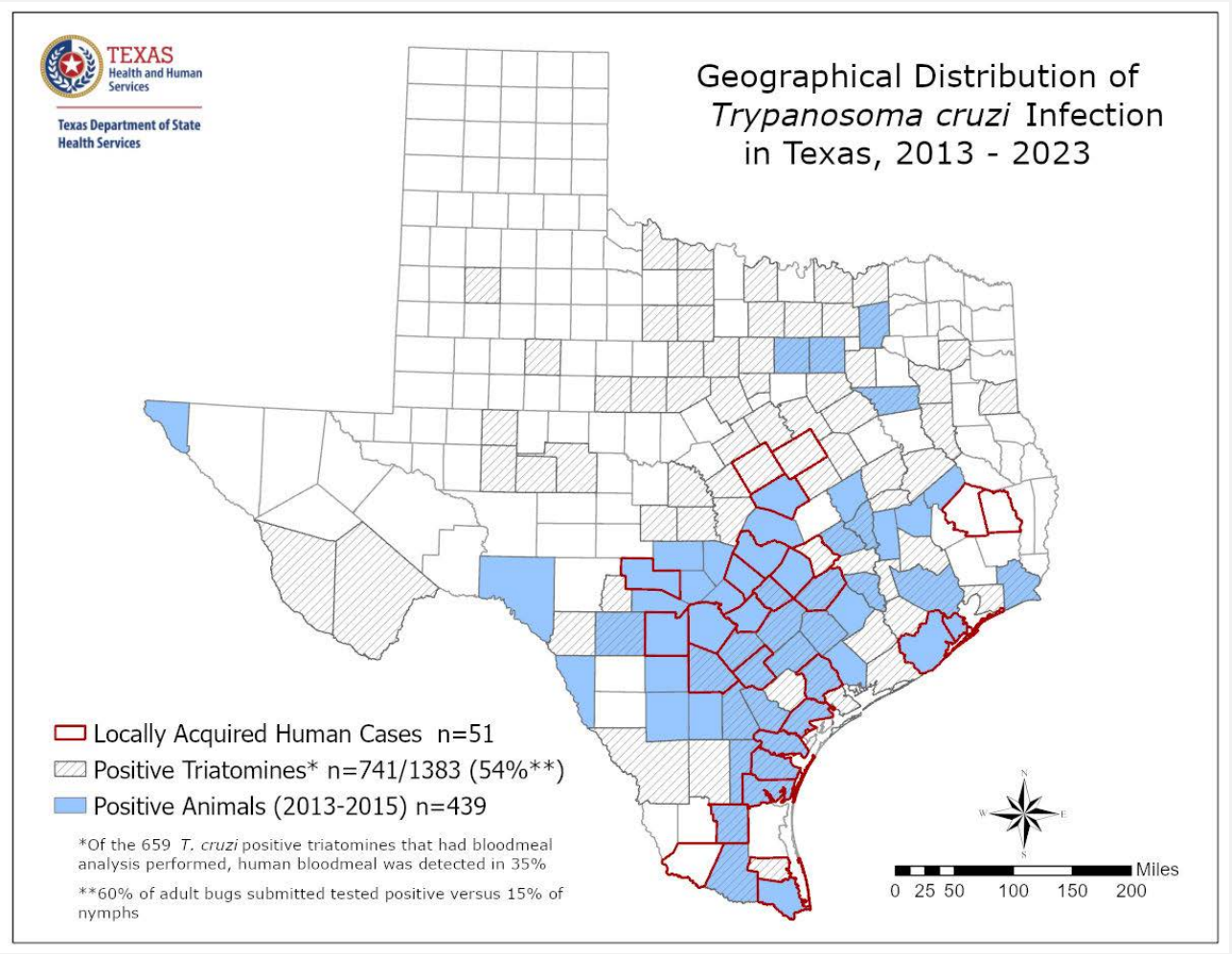
# Chagas Disease Reporting in Texas

- The effort to add Chagas disease to the list of notifiable diseases in the Texas Administrative Code (TAC), Chapter 97 began in 2011.
- Justification:
  - Chagas disease is endemic in Mexico, including the border states.
  - Testing of blood donors in the U.S. suggests that Chagas disease transmission is occurring in the southwestern United States.
  - Surveillance in Texas indicates the presence of the *T. cruzi* organism, competent vectors, and positive wildlife reservoirs.
  - There is a need for more public education on Chagas disease as a public health threat.
- Adding Chagas disease to the list of notifiable conditions will allow state and local public health agencies to better characterize the scope of the disease in Texas, to increase awareness in both the general public and health care industry of infection risk, to identify public health risks posed by human carriers, and to identify effective methods of risk reduction.
- Chagas disease in humans and animals became reportable in 2013.

# Chagas Disease in Texas, 2013-2023

Texas DSHS has been conducting surveillance for Chagas disease in Texas for over 10 years.

- Locally acquired human cases have been detected in 30 counties.
- Chagas disease was reported in over 400 mammals between 2013-2015, mainly dogs.
- Over half (54%) of triatomines consistently test positive for *T. cruzi.*




Available at: https://www.dshs.texas.gov/notifiable-conditions/zoonosis-control/zoonosis-control-diseases-and-conditions/chagas-disease/chagas-disease-data; last accessed on 12/3/2024.

# Human Chagas Disease Cases

*Triatoma sanguisuga* on arm - Picture courtesy of Dr. Ed Wozniak & Christina Wozniak

# Human Chagas Disease Cases, 2013-2023

Texas developed case definitions for three Chagas disease conditions: Acute, Chronic Indeterminate, and Chronic Symptomatic

- 273 Chagas Disease Cases
  - 51 acquired in Texas
  - 133 imported – primarily from:
    - El Salvador, Mexico, Honduras
  - 89 unknown

- Case Classification
  - 4 Acute
    - 3 acquired in Texas – Central & South Texas
  - 207 Chronic Indeterminate
  - 62 Chronic Symptomatic

Photo provided by Dr. Kristen Mondy, Dell Medical School

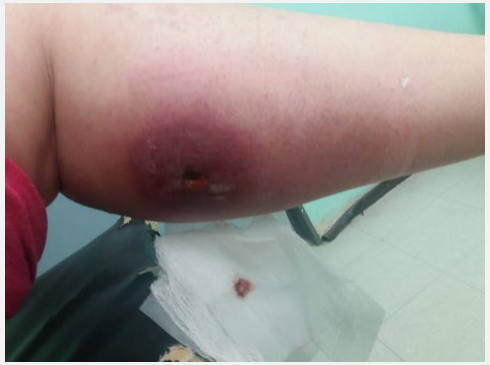


Photo provided by Dr. Tyler, Region 11 Zoonosis Control

Source: 2013-2023 Finalized NEDSS Data, Texas Residents

# Chagas Disease Vector Surveillance

*Triatoma sanguisuga* on arm - Picture courtesy of Dr. Ed Wozniak & Christina Wozniak

# Chagas Disease Vector

Triatomine bugs (also called kissing bugs, conenose bugs, or vampire bugs) are blood-feeding insects that transmit Chagas disease through its feces.



| Assassin bugs | Kissing bugs |
|---|---|
| **Subfamily Reduviinae** | **Subfamily Triatominae** |
| Predators - feed on insects | Parasites - feed on vertebrate blood |
| Can inflict painful bite defensively | Painless bite, usually while victim is asleep |
| **Not a vector of vertebrate pathogens** | **Vector for *Trypanosoma cruzi*** |

Photo provided by Dr. Edward Wozniak, previous Region 8 Zoonosis Control Veterinarian

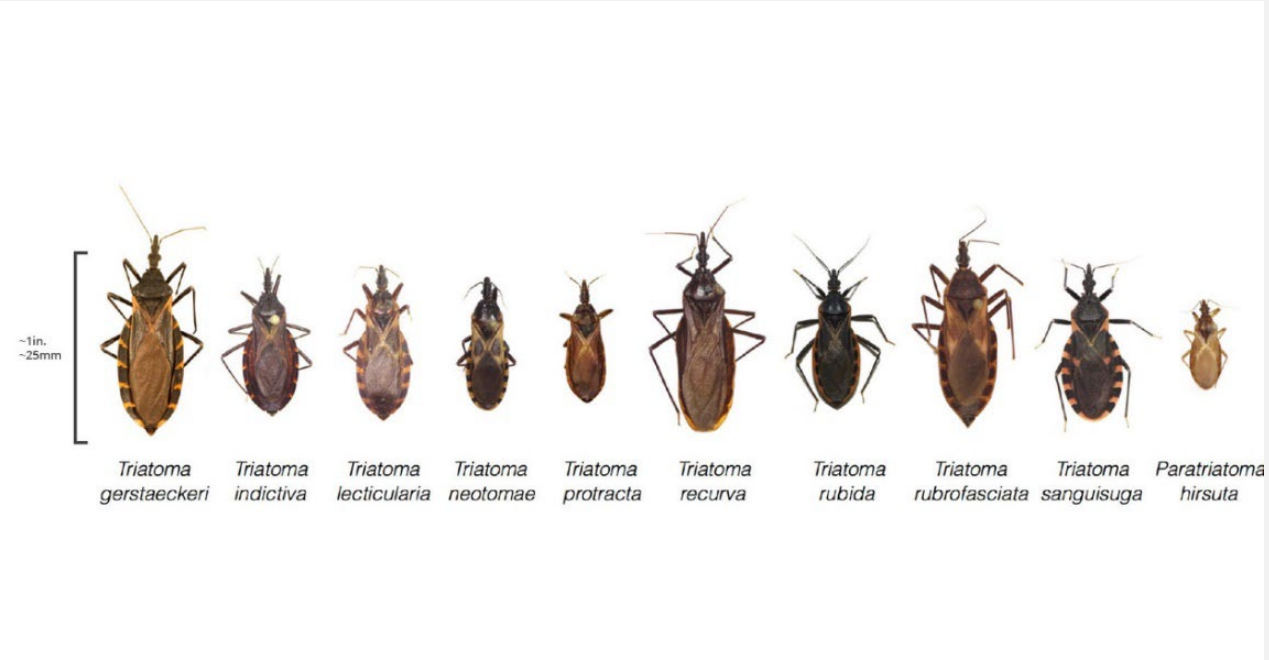
DSHS, in conjunction with CDC, provides free testing of triatomine bugs implicated in a human exposure for the parasite *Trypanosoma cruzi.*

# Triatomine Surveillance, 2013-2023*

- Six species rec'd for testing
  - *Triatoma gerstaekeri* (52%)
  - *Triatoma sanguisuga* (29%)
  - *Triatoma lecticularia* (11%)
  - *Triatoma rubida* (3%)
  - *Triatoma indictiva* (2%)
  - *Triatoma protracta* (1%)
  - *Triatoma sp.* (2%)

- 54% positive!

- Bloodmeal analysis (2015-2023)
  - 35% tested positive for human blood



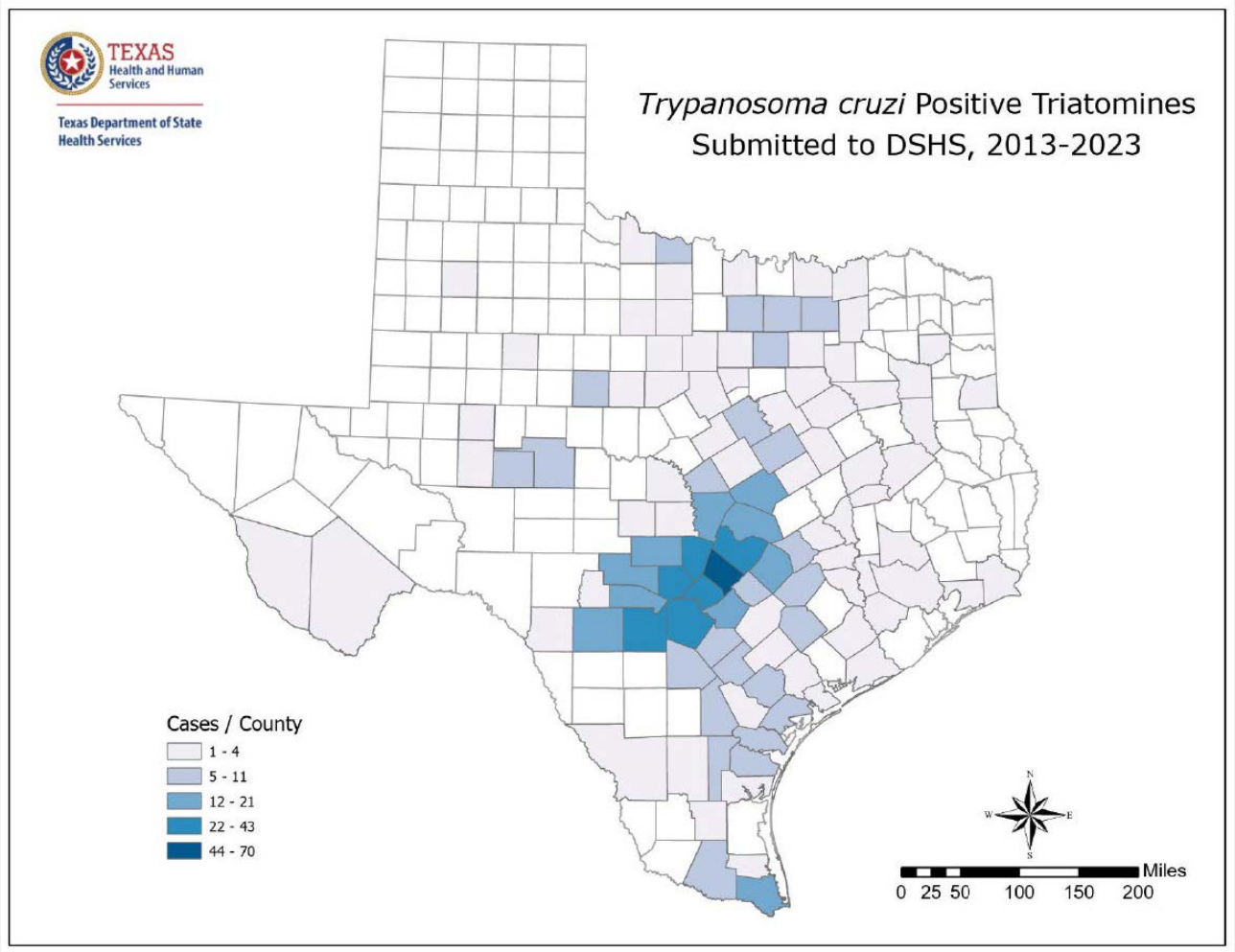

Available at: https://kissingbug.tamu.edu/; last accessed on 12/1/24

*Data from triatomines submitted to DSHS for *Trypanosoma cruzi* testing from 2013-2023

# Triatomine Surveillance, 2013-2023* (continued)

Percent positive for *T. cruzi*:

- Stage
  - Adults 60% (708/1180)
  - Nymphs 15% (30/195)
- Species
  - *Triatoma gerstaekeri*
    - 60% (433/725)
  - *Triatoma sanguisuga*
    - 41% (164/396)
  - *Triatoma lecticularia*
    - 71% (107/151)
  - *Triatoma rubida*
    - 28% (13/47)
  - *Triatoma indictiva*
    - 46% (13/28)
  - *Triatoma protracta*
    - 63% (5/8)




*Data from triatomines submitted to DSHS for *Trypanosoma cruzi* testing from 2013-2023; map created by Pat Hunt, Zoonosis Control Branch.

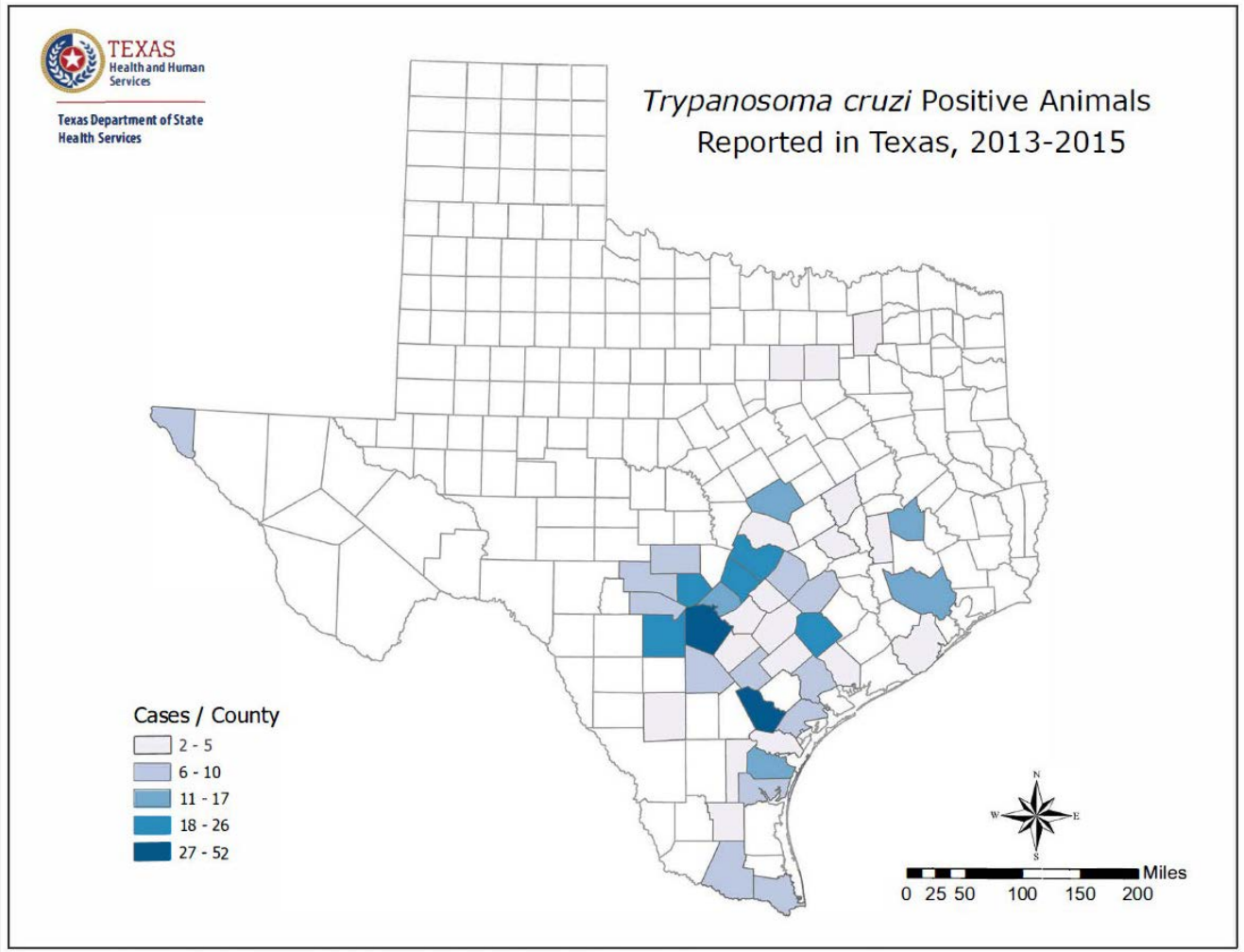
# Chagas Disease Reporting in Animals

*Triatoma sanguisuga* on arm - Picture courtesy of Dr. Ed Wozniak & Christina Wozniak

# Chagas Disease Positive Animals

- From 2013-2015, 439 animal Chagas cases were reported:
  - 431 dogs
  - 2 cats
  - 1 horse
  - 1 rat
  - 3 chimps
  - 1 walrus

Chagas disease reporting in animals discontinued in 2016




Source: Zoonotic Diseases in Animals Reports received by ZCB 2013-2015

Map created by Pat Hunt, Zoonosis Control Branch.

# DSHS Online Chagas Disease Resources

*Triatoma sanguisuga* on arm - Picture courtesy of Dr. Ed Wozniak & Christina Wozniak

# DSHS Online Chagas Disease Resources

## Chagas Disease | Texas DSHS

- Data
- Triatomine Submission and Testing
- Disease
- Transmission
- Chagas Disease Information for Healthcare Providers
- Blood Donor Testing
- Infection in Dogs and Cats
- Preventing Chagas Disease
- Resources

Available at: https://ket.org/program/deep-look/how-a-kissing-bug-becomes-a-balloon-full-of-your-blood/; last accessed on 12/2/24

# DSHS Chagas Disease (*Trypanosoma cruzi*) Exposure Assessment and Testing Guidance

Rev. 12-24

## Process 1

Person exposed or potentially exposed to a triatomine (kissing bug) and the bug or photo of the bug is available for identification

- Email the digital photo(s) to DSHS at the.vet@dshs.texas.gov
- If bug appears to be a triatomine or no photo is available, send the bug to DSHS for identification and testing (instructions and submission form are available on the DSHS Chagas page).
  - If the bug is not a triatomine, the person is NOT at risk for Chagas disease
  - If the bug tests **Positive** for *T. cruzi*, go to **Process 2** or **3**, depending on timeframe
  - If the bug tests **Negative** for *T. cruzi*, the person is NOT at risk for Chagas disease
- If the bug appears to be a triatomine, but is not available for testing and you wish to pursue clinical testing, go to **Process 2**

## Process 2

Person tests positive at a blood bank
**OR**
Person exposed or potentially exposed to a triatomine bug >8 weeks prior
**OR**
Person with onset of cardiac disease compatible with chronic Chagas disease
**OR**
Person with Chagas-positive mother or sibling
**OR**
Person potentially exposed to blood or tissue from an infected person or animal >8 weeks prior (e.g., needlestick injury, tissue transplant)

Perform serology screening at the DSHS lab (uses TWO tests that detect antibodies to different antigens) OR a commercial lab (see page 2 for lab information).

**Negative** Serology

Person does NOT have Chagas disease

**Positive** Serology @ DSHS lab OR a commercial lab that utilizes two or more tests that detect antibodies to different antigens^^ - see p. 2

Results indicate the presence of antibodies to *T. cruzi*

**Inconclusive** Serology OR a **single Positive/Reactive** screening test^- see p. 2

Public health should request that any remaining sample be forwarded to the DSHS lab & notify provider **OR** the provider can collect a new sample and send to DSHS.

- If the person tests **Positive**, visit https://www.cdc.gov/chagas/hcp/clinical-care/index.html for information on Chagas disease evaluation and treatment
- If the person tests **Negative**, the person does NOT have Chagas disease
- If the person tests **Inconclusive**, consult with Regional DSHS Zoonosis Control staff

## Process 3

Person exposed or potentially exposed to a *T. cruzi*-infected triatomine bug ≤8 weeks prior
**OR**
Person traveled to a highly Chagas-endemic area and has acute symptoms
**OR**
Person potentially exposed to blood or tissue from an infected person or animal ≤8 weeks prior (e.g., needlestick injury, tissue transplant)

- Prior to sample submission, consult with Regional DSHS Zoonosis Control staff to 1) determine if PCR testing is warranted, and 2) to discuss other testing options
- If CDC approves testing by PCR, submit the appropriate sample to the DSHS lab for routing to the testing center (see page 2 for lab information). If serologic testing (Process 2) or blood smear examination is recommended, the sample should be sent to DSHS or a commercial lab.

**Specimens testing inconclusive at DSHS will not be forwarded to CDC for confirmatory testing while Chagas Disease Serology is offline.*

# DSHS Chagas Disease (*Trypanosoma cruzi*) Exposure Assessment and Testing Guidance – Process 1

**Process 1**

Person exposed or potentially exposed to a triatomine (kissing bug) AND the bug OR photo of the bug is available for identification

- Email the digital photo(s) to DSHS at the.vet@dshs.texas.gov
- If bug appears to be a triatomine or no photo is available, send the bug to DSHS for identification and testing (instructions and submission form are available on the DSHS Chagas page).
  - If the bug is not a triatomine, the person is NOT at risk for Chagas disease
  - If the bug tests **Positive** for *T. cruzi*, go to **Process 2** or **3**, depending on timeframe
  - If the bug tests **Negative** for *T. cruzi*, the person is NOT at risk for Chagas disease
- If the bug appears to be a triatomine, but is not available for testing and you wish to pursue clinical testing, go to **Process 2**

- First step is determining if the bug is actually a kissing bug!
- Can email the.vet@dshs.texas.gov
- Link to the Texas A&M University Chagas page to view pictures of kissing bugs and non-kissing bugs located on our Triatomine Submission and Testing | Texas DSHS
- If bug is not a kissing bug, DONE!
- If bug is a kissing bug, send in for testing if possible:
  - If bug tests Negative, DONE!
  - If bug tests Positive, Process 2 or 3 provides human testing guidance.

# DSHS Chagas Disease (*Trypanosoma cruzi*) Exposure Assessment and Testing Guidance – Process 2

## Process 2 (Serology)

Person tests positive at a blood bank
**OR**
Person exposed or potentially exposed to a triatomine bug **>8 weeks prior**
**OR**
Person with onset of cardiac disease compatible with chronic Chagas disease
**OR**
Person with Chagas-positive mother or sibling
**OR**
Person potentially exposed to blood or tissue from an infected person or animal **>8 weeks prior** (e.g., needlestick injury, tissue transplant)

↓

Perform serology screening at the DSHS lab (uses TWO tests that detect antibodies to different antigens) OR a commercial lab (see page 2 for lab information).

↓

**Negative** Serology. Person does NOT have Chagas disease

→

**Positive** Serology @ DSHS lab OR a commercial lab that utilizes two or more tests that detect antibodies to different antigens^^ - see p. 2

Results indicate the presence of antibodies to *T. cruzi*

→

**Inconclusive** Serology OR a **single Positive/Reactive** screening test^- see p. 2

Public health should request that any remaining sample be forwarded to the DSHS lab & notify provider **OR** the provider can collect a new sample and send to DSHS.

↓

- If the person tests **Positive**, visit https://www.cdc.gov/chagas/hcp/clinical-care/index.html for information on Chagas disease evaluation and treatment
- If the person tests **Negative**, the person does NOT have Chagas disease
- If the person tests **Inconclusive**, consult with Regional DSHS Zoonosis Control staff

# DSHS Chagas Disease (*Trypanosoma cruzi*) Exposure Assessment and Testing Guidance – Process 3

## Process 3 (Blood smear, PCR)

Person exposed or potentially exposed to a *T. cruzi*-positive triatomine bug **≤8 weeks prior**

**OR**

Person traveled to a highly Chagas-endemic area and has acute symptoms

**OR**

Person potentially exposed to blood or tissue from an infected person or animal **≤8 weeks prior** (e.g., needlestick injury, tissue transplant)

- Prior to sample submission, consult with Regional DSHS Zoonosis Control staff to 1) determine if PCR testing is warranted, and 2) to discuss other testing options*
- If CDC agrees testing by PCR, submit the appropriate sample to the DSHS lab for routing to the testing center (see page 2 for lab information). If serologic testing (Process 2) or blood smear examination is recommended, the sample should be sent to DSHS or a commercial lab.

- If the person tests **Positive**, visit https://www.cdc.gov/chagas/hcp/clinical-care/index.html for information on Chagas disease evaluation and treatment
- If the person tests **Negative**, the person does NOT have Chagas disease

*An option not addressed here is metagenomic sequencing.

# Major Laboratories that Currently Perform *Trypanosoma cruzi* Testing

- **Texas Department of State Health Services Laboratory**
  - *Trypanosoma cruzi* IgG Antibody Immunoassay
  - Check Chagas IgG box in Section 6 of G-2A form

- **ARUP Laboratories^**
  - *Trypanosoma cruzi* Antibody, IgG
  - Test Code 0051076

- **Quest Diagnostics^**
  - *Trypanosoma cruzi* Antibody, Total
  - Test Code 13230

- **Mayo Clinic Laboratories^**
  - *Trypanosoma cruzi* Total Antibody, Enzyme-Linked Immunosorbent Assay, Serum

- **Kephera Diagnostics^^**
  - Chagatest ELISA recombinante v.3.0, TESA Immunoblot, & Infynity Biomarkers Multi-Cruzi
    - ELISA & TESA tested in parallel, reflex to Infynity assay if the two test results are discordant
  - Test Code 0051076

- **Centers for Disease Control and Prevention**
  - Chagas Disease Serology and Chagas Disease Molecular Detection (PCR) are currently offline. However, with CDC approval, **PCR** samples can be routed through the DSHS lab for testing at the Wadsworth Center parasitology lab at the New York State Department of Health.
    - Check Chagas Disease box in Section 7 of G-2A form

TEXAS Health and Human Services

Texas Department of State Health Services

Disclaimer of Endorsement: Reference herein to any specific commercial laboratory or test does not necessarily constitute or imply its endorsement, recommendation, or favoring by the Texas Department of State Health Services.

# Chagas Disease Challenges

*Triatoma sanguisuga* on arm - Picture courtesy of Dr. Ed Wozniak & Christina Wozniak

# Chagas Disease Challenges

- Triatomine misidentification common
- Triatomine testing turnaround time can be quite long
- Individuals exposed to bugs can be extremely anxious (e.g., fear they will be diagnosed too late for treatment)
- Lack of provider awareness in the United States
- Chagas testing
  - For chronic disease diagnosis, must use two or more tests that detect antibodies to different antigens
  - Commercial lab testing - high rate of false positives
  - Often difficult to get follow up testing for individuals testing positive with blood donor screening and/or commercial lab testing
- Public health reporting – case classification/investigation
  - Case definition for chronic Chagas disease is complex because no single test is sufficiently sensitive and specific
  - Difficult to ascertain “where disease acquired” for chronic cases

# Questions?

Chagas Disease Reporting in Texas

Bonny Mayes

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work cell 512-221-6850

# Chagas disease in Los Angeles County

**Dr. Aisling Vaughan**
**Acute Communicable Disease Control Program**
**Los Angeles County Department of Public Health**

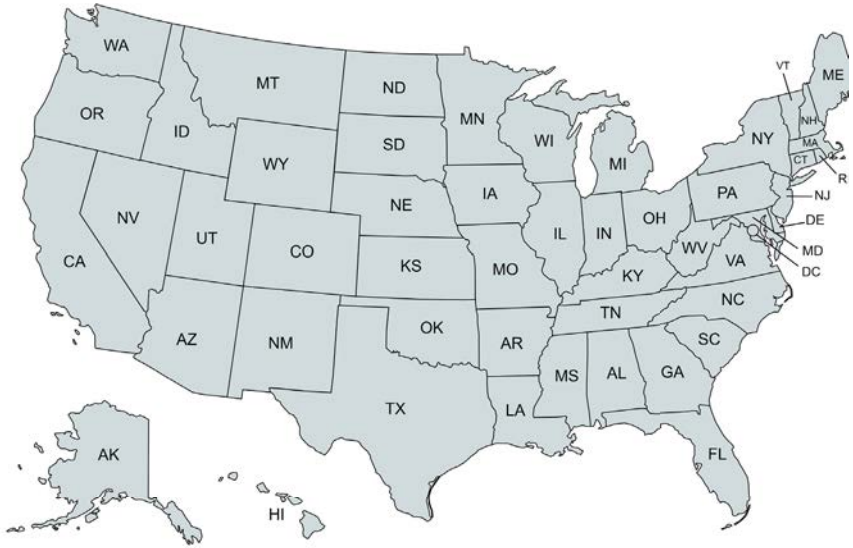
**January 6, 2025**
**ECHO Webinar**

# Chagas disease is a vector borne disease.

# Chagas disease is a neglected tropical disease endemic to Latin America.


**6–7M**

# Estimated rates of Chagas disease are high in LA.





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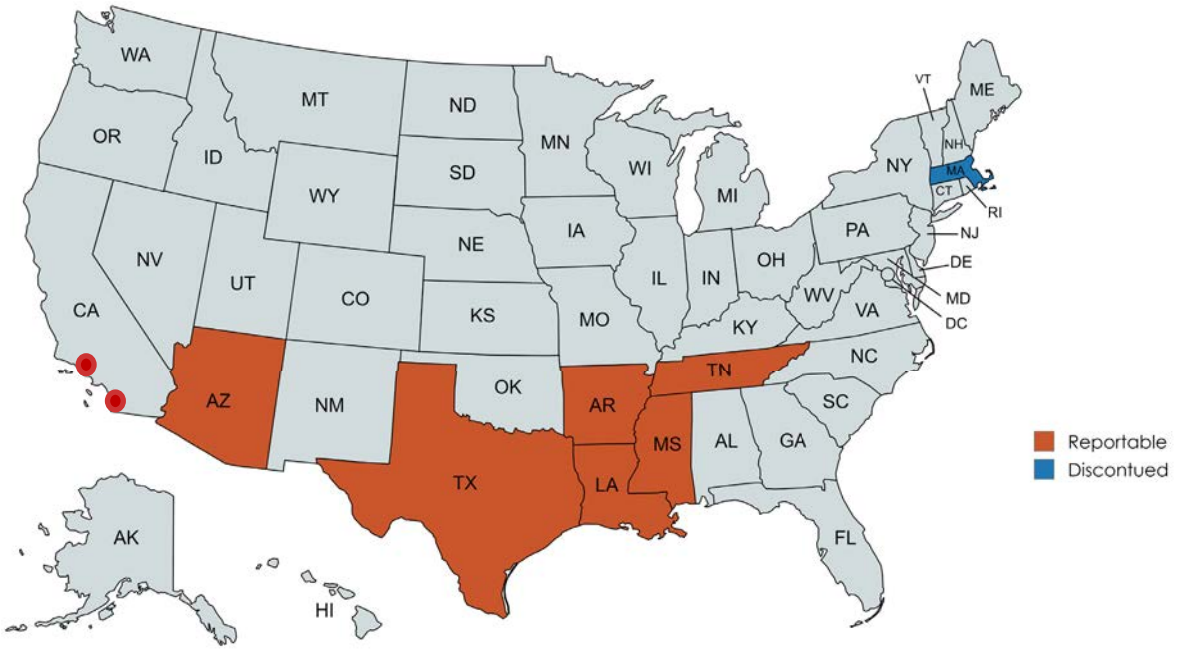
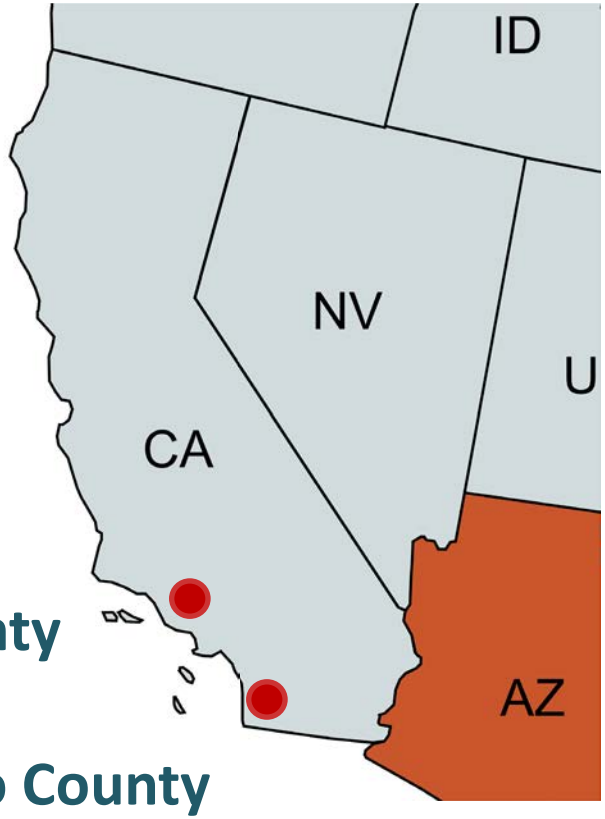
# Chagas disease is currently reportable in seven states.



# Chagas disease is currently reportable in only seven states and two local jurisdictions.




Los Angeles County

San Diego County

# Chagas disease surveillance in Los Angeles

## Chagas disease surveillance started in 2019

To monitor **incident cases**, identify **sources of infection**, ensure **linkage to care** for at-risk populations and **reduce severe health outcomes**.

- County of 10 million residents
- Large Latin American population
- Serological screenings estimate around 30,000 Latin American immigrants are infected with *T. cruzi*
- Prevalence of *T. cruzi* among LAC triatomines has been documented to be as high as 36%
- Estimated 7-14 babies have undiagnosed *T. cruzi* infection in LAC

# The Chagas disease surveillance system in Los Angeles has multiple sources of data.

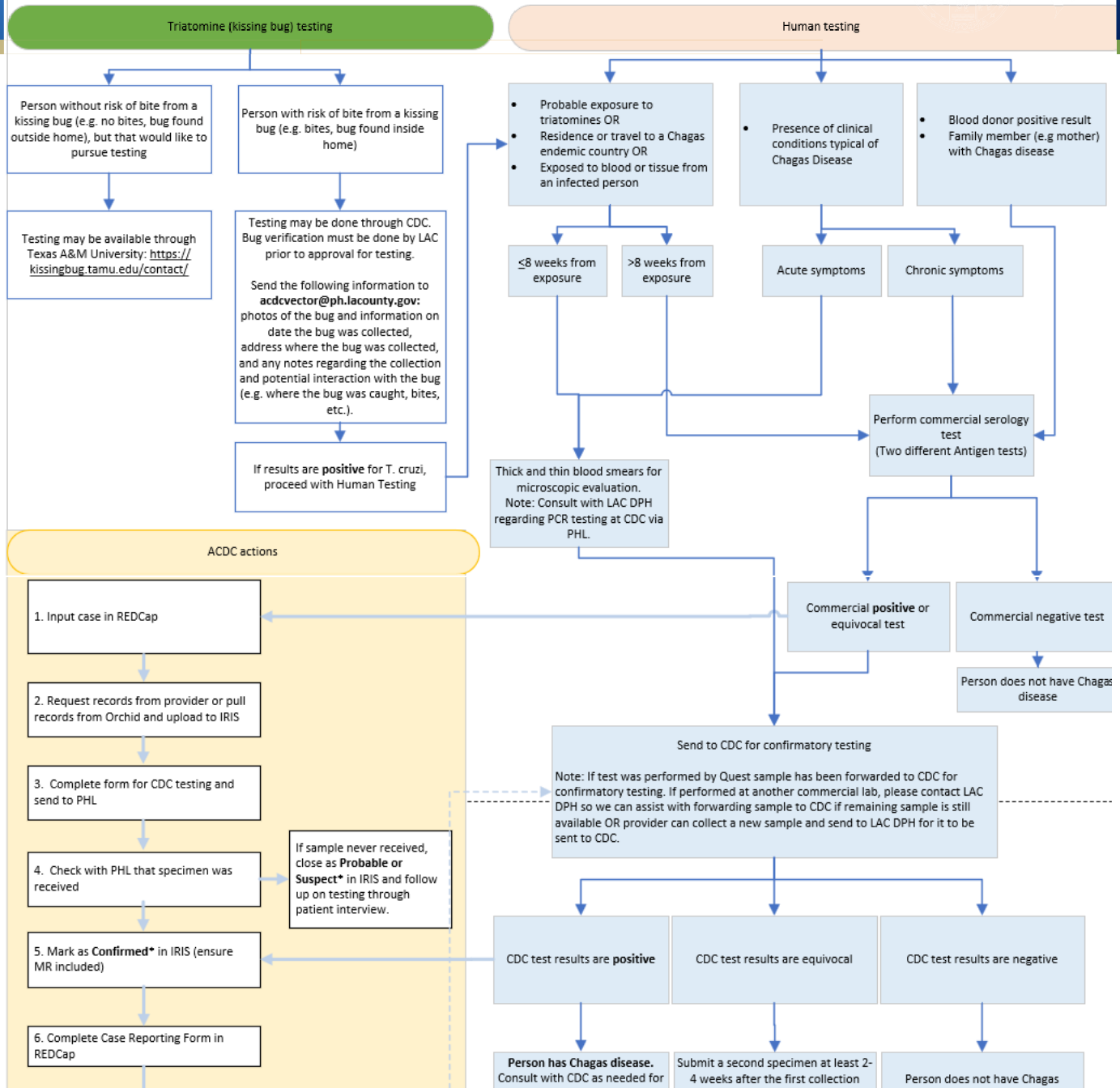
Chronic cases

Blood donor screening

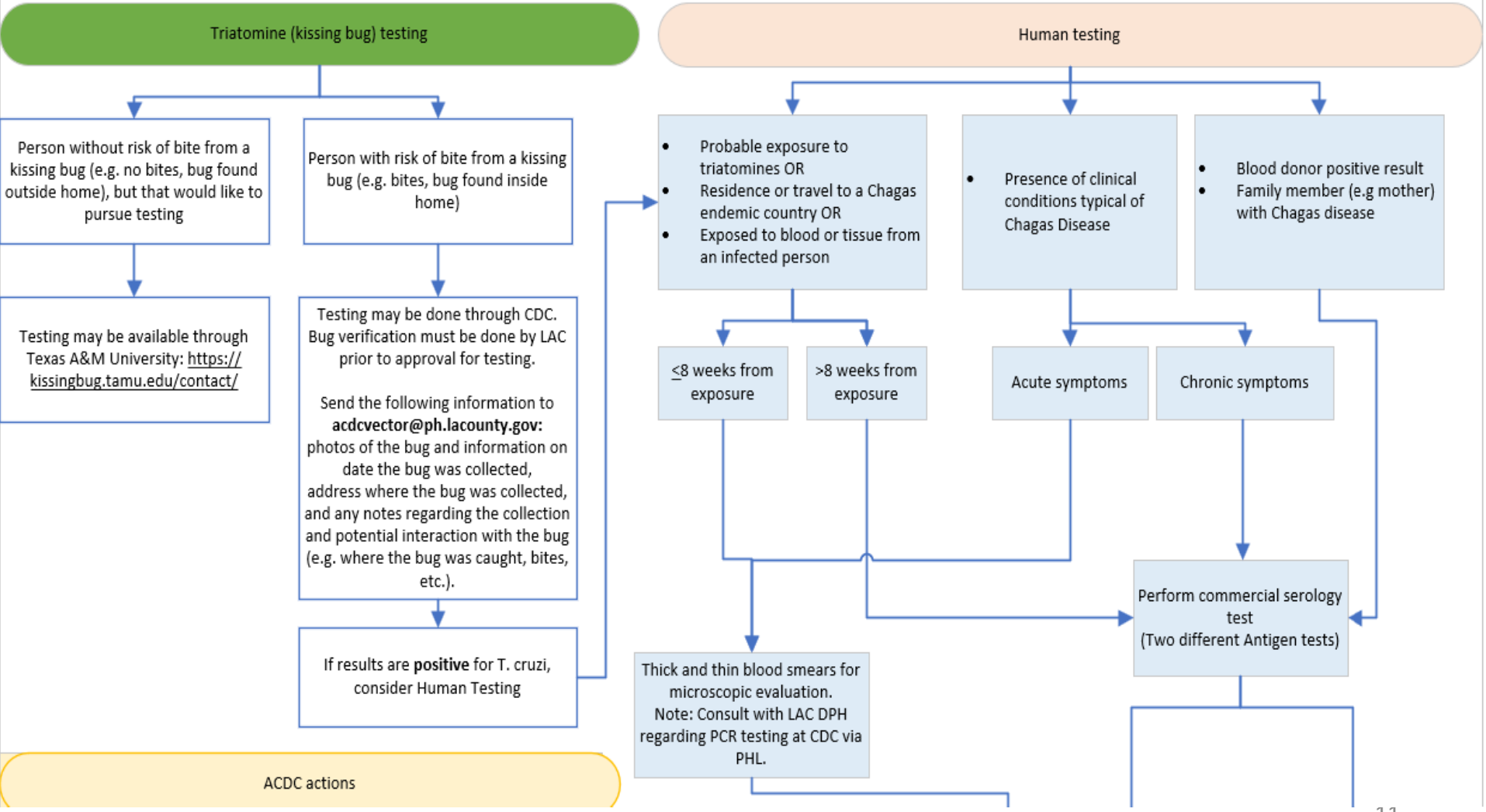

Organ donation

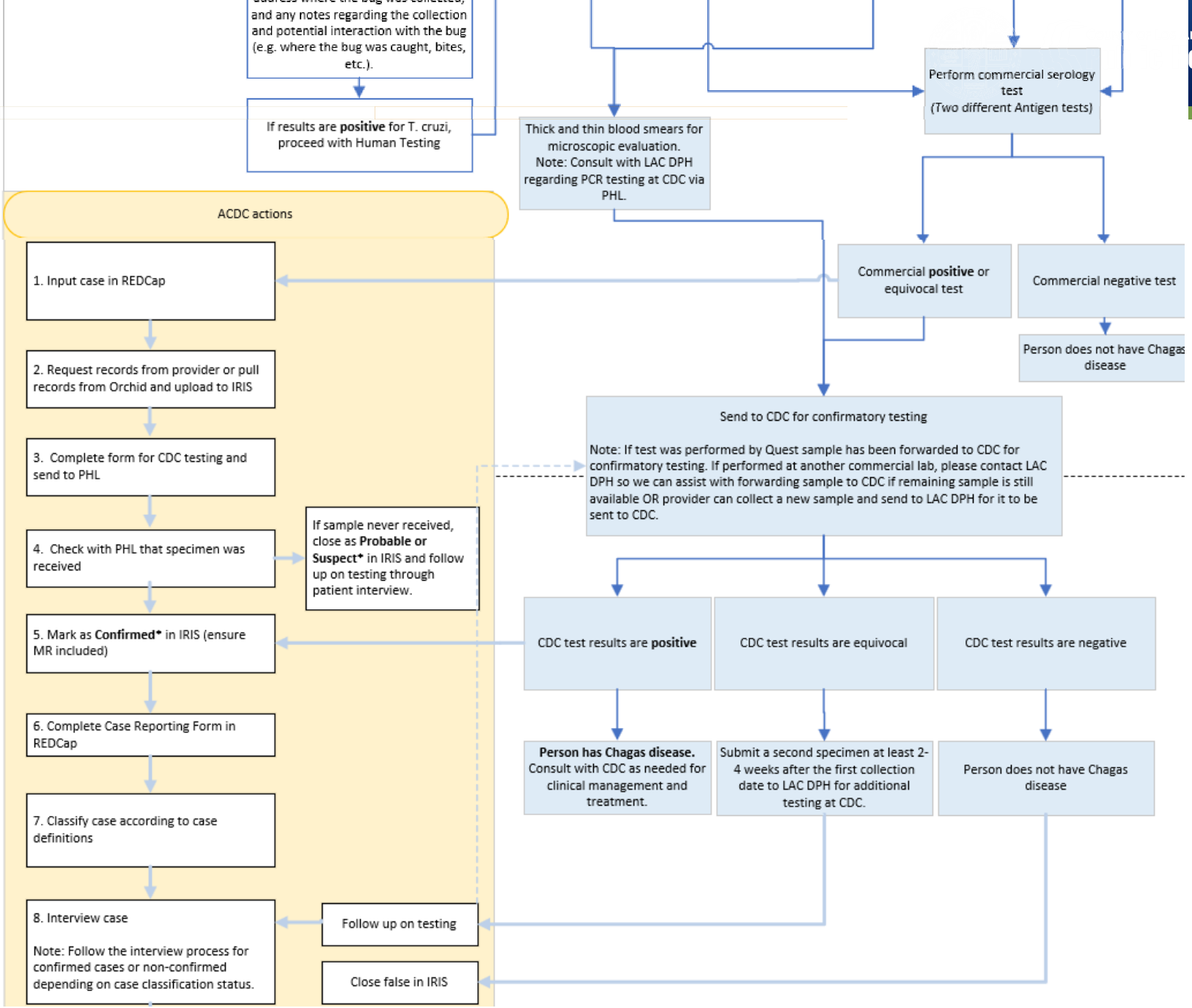
Vector surveillance

# Chagas Testing Guidance and Response in Los Angeles County



# Chagas Testing Guidance and Response in Los Angeles County




and any notes regarding the collection and potential interaction with the bug (e.g. where the bug was caught, bites, etc.).
If results are **positive** for T. cruzi, proceed with Human Testing
Perform commercial serology test
(Two different Antigen tests)
Thick and thin blood smears for microscopic evaluation.
Note: Consult with LAC DPH regarding PCR testing at CDC via PHL.
ACDC actions
1. Input case in REDCap
2. Request records from provider or pull records from Orchid and upload to IRIS
3. Complete form for CDC testing and send to PHL
4. Check with PHL that specimen was received
If sample never received, close as **Probable or Suspect*** in IRIS and follow up on testing through patient interview.
5. Mark as **Confirmed*** in IRIS (ensure MR included)
6. Complete Case Reporting Form in REDCap
7. Classify case according to case definitions
8. Interview case
Note: Follow the interview process for confirmed cases or non-confirmed depending on case classification status.
Follow up on testing
Close false in IRIS
Commercial **positive** or equivocal test
Commercial negative test
Person does not have Chagas disease
Send to CDC for confirmatory testing
Note: If test was performed by Quest sample has been forwarded to CDC for confirmatory testing. If performed at another commercial lab, please contact LAC DPH so we can assist with forwarding sample to CDC if remaining sample is still available OR provider can collect a new sample and send to LAC DPH for it to be sent to CDC.
CDC test results are **positive**
CDC test results are equivocal
CDC test results are negative
**Person has Chagas disease.** Consult with CDC as needed for clinical management and treatment.
Submit a second specimen at least 2-4 weeks after the first collection date to LAC DPH for additional testing at CDC.
Person does not have Chagas disease

**268** Chagas disease cases between 2019-2023

**180 (67%)** confirmed cases and 88 (33%) non-confirmed cases

**All cases** were chronic and median age at initial positive test was 55 years (range 17-88)

**208 cases (78%)** reported being born in a Chagas-endemic country.

**183 cases (68%)** were symptomatic with CD-associated symptoms including dilated cardiomyopathy, megacolon, and/or megaesophagus

**168 (63%)** of cases were successfully interviewed for exposure history information



**16 deaths**

**Approximately half (n=78/152**) reported triatomine exposure, 12 within LAC.

Two confirmed and four non-confirmed cases denied relevant travel or residence in CD-endemic areas, suggesting **potential local acquisition**.

**64 non-confirmed cases** (excluding blood donors) had still not received confirmatory testing since their positive test (median duration=27 months).

**One-third** of 185 (32 symptomatic and 28 asymptomatic) cases received CD treatment.

About **half** (n=43/89) of female cases had children not screened for CD.

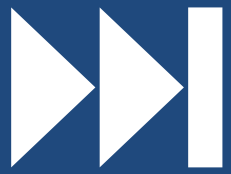
We conducted an **evaluation** to assess system performance in its first years

**Conduct literature review**

**Review surveillance system data**

**Interview partners**

**Formulate next steps**



# The evaluation identified a number of challenges

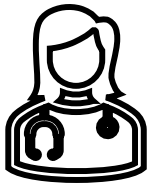
Chronic disease

Testing algorithms

Testing delays

Case definitions

Follow up



Provider awareness

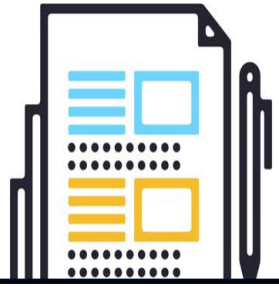
# Improving surveillance for Chagas disease

Awareness

Screening

Outreach

Automation



Reporting

Partnerships

# Acknowledgements

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Dr. Dawn Terashita

**Los Angeles County Public Health Laboratory**

**Centers for Disease Control and Prevention**

**Chagas disease surveillance system stakeholders**

# Questions?

# Chagas disease and public health surveillance in the United States

**Susan P. Montgomery, DVM MPH**
**Parasitic Diseases Branch**
**Division of Parasitic Diseases and Malaria**

January 6, 2025

# Chagas disease basics

- **Protozoan parasite *Trypanosoma cruzi* only found in the Americas**
- **Vector-borne zoonosis, many animal reservoirs**
- **Transmission**
  - Triatomine bugs – most common, bug feces contain the parasite
  - Congenital
  - Contaminated blood components, organ or tissue
  - Laboratory accidents
  - Foodborne (vector-borne)
- **Estimated 5-7 million people have Chagas disease in Latin America**
- **Cardiac and/or gastrointestinal disease in ~30% of chronically infected**

# *Trypanosoma cruzi*

DPDx

## Triatomine Bug Stages

1. Triatomine bug takes a blood meal
(passes metacyclic trypomastigotes in feces, trypomastigotes enter bite wound or mucosal membranes, such as the conjunctiva)

8. Metacyclic trypomastigotes in hindgut

7. Multiply in midgut

6. Epimastigotes in midgut

5. Triatomine bug takes a blood meal
(trypomastigotes ingested)

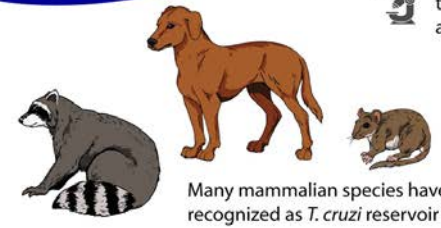
## Mammalian Stages

2. Metacyclic trypomastigotes penetrate various cells at bite wound site. Inside cells they transform into amastigotes.

3. Amastigotes multiply by binary fission in cells of infected tissues.

4. Intracellular amastigotes transform into trypomastigotes, then burst out of the cell and enter the bloodstream.

Trypomastigotes can infect other cells and transform into intracellular amastigotes in new infection sites.



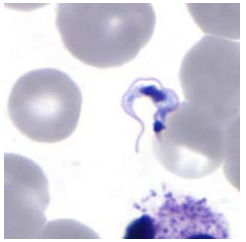
Many mammalian species have been recognized as *T. cruzi* reservoir hosts.

CDC

Infective stage

Diagnostic stage

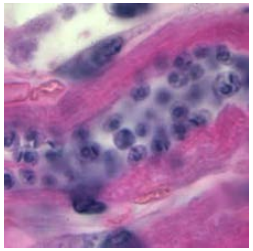
*T. cruzi* infection → **Acute phase of Chagas disease** ~8 weeks



## Chronic phase

**Indeterminate form**
No signs or symptoms of Chagas disease

Life long infection if untreated



*20 - 30% progress over years - decades*

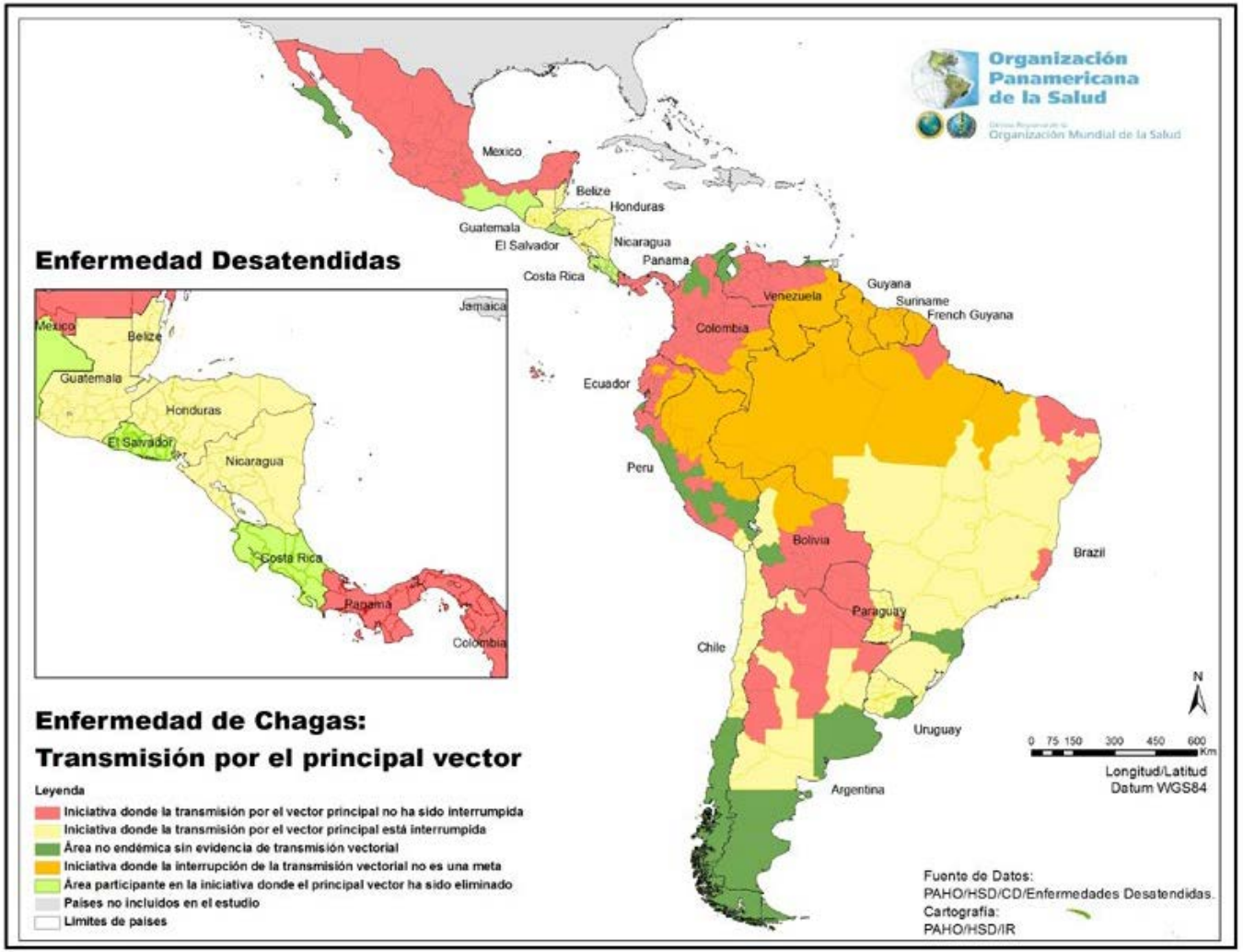
**70 - 80% remain indeterminate throughout life**

*Can reactivate if immunosuppressed*

**Determinate forms**
- Chagas cardiomyopathy &/or
- Gastrointestinal

# Who is at risk for Chagas disease in the United States

- **People who acquired the infection in endemic countries of Latin America**
  - Estimated 300,000 people with Chagas disease
- **People who acquired the infection in the United States**
  - Fewer than 200 cases documented
  - Exposed to infected vectors/ reservoirs
  - Children of infected mothers
  - Transplant recipients
  - Transfusion recipients if transfused prior to 2007
  - Laboratory staff working with vectors, reservoir species, or parasite


Organización Panamericana de la Salud
Oficina Regional de la Organización Mundial de la Salud
Enfermedad Desatendidas
Jamaica
Mexico
Belize
Guatemala
Honduras
El Salvador
Nicaragua
Costa Rica
Panama
Colombia
Mexico
Belize
Honduras
Guatemala
El Salvador
Nicaragua
Costa Rica
Panama
Venezuela
Guyana
Suriname
French Guyana
Colombia
Ecuador
Peru
Bolivia
Brazil
Paraguay
Chile
Uruguay
Argentina
Enfermedad de Chagas:
Transmisión por el principal vector
Leyenda
Iniciativa donde la transmisión por el vector principal no ha sido interrumpida
Iniciativa donde la transmisión por el vector principal está interrumpida
Área no endémica sin evidencia de transmisión vectorial
Iniciativa donde la interrupción de la transmisión vectorial no es una meta
Área participante en la iniciativa donde el principal vector ha sido eliminado
Países no incluidos en el estudio
Límites de países
N
0 75 150 300 450 600
Km
Longitud/Latitud
Datum WGS84
Fuente de Datos:
PAHO/HSD/CD/Enfermedades Desatendidas.
Cartografía:
PAHO/HSD/IR

# Triatomines in the United States

- **Eleven species found below ~40-45ºN latitude**
- **Sylvatic habitats**
- **First reported in 1800's**


USGS map viewer, Nat Geo map

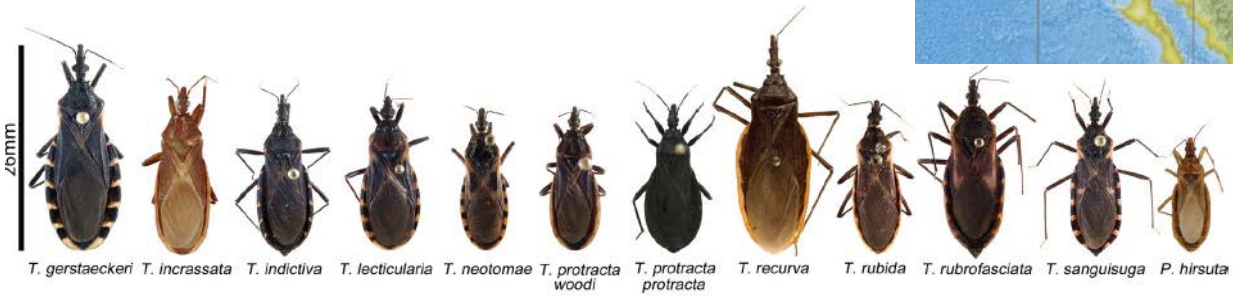



**FIG 2** Photographs of U.S. triatomine species of the genera *Triatoma* and *Paratriatoma*. Image size relative to the scale bar represents the average length of each species. The *Triatoma incrassata* photo is courtesy of E. Barrera Vargas, the *T. recurva* and *Paratriatoma hirsuta* photos are courtesy of R. Hoey-Chamberlain and C. Weirauch, and the *T. protracta protracta* photo is courtesy of G. Lawrence (DPDM/CDC). All other images are from reference 9 (photos by S. Kjos).

Bern et al. Clin Microbiol Rev 2019

# Public health surveillance

- **What is public health surveillance?**
  - the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice
- **Why and how does a disease become reportable in a state?**
  - Typically, because public health action needed
    - Outbreaks, risk of spread that threatens public health
    - Introduction of new/exotic disease
  - Unusual presentation (e.g., antibiotic resistance)
  - Depending on jurisdiction, legal action by state necessary to add to reportable condition list and legal requirement for providers/labs to report to state

# Case surveillance at the national level

- **Nationally Notifiable Diseases Surveillance System (NNDSS)**
  - Partnership with 57 state, local, and territorial health departments
  - Nationally notifiable conditions starting with 15 conditions in 1912, up to 120 conditions in 2023
- **How does a disease become nationally notifiable?**
  - Usually, the disease is already notifiable in many states
  - State and local health departments want to track cases of a disease consistently across jurisdictions and work with SMEs to draft a surveillance case definition
  - Surveillance case definitions are presented for review, revision and approval at the annual Council of State and Territorial Epidemiologists (CSTE) meeting
  - CSTE voting members can approve nationally notifiable status

https://www.cdc.gov/nndss/about/index.html

# Identifying and reporting a case

- **Patient is sick**
- **Patient seeks care from a health care provider who diagnoses cause of illness**
  - Illness is characterized by signs and symptoms
  - Laboratory testing
- **If the condition is a reportable disease in the patient's state of residence then health care provider and/or laboratory report to state**
- **The state health department collects information to classify the case using the surveillance case definition**
- **If the condition is also a nationally notifiable disease then state reports case to CDC**

# Public health surveillance for Chagas disease

- **Currently reportable in Arizona, Arkansas, Louisiana, Mississippi, Tennessee, Texas, Utah, Washington, Los Angeles County and San Diego County**
- **Epidemiologists at these health departments wrote surveillance case definitions for acute, chronic and congenital Chagas disease which were reviewed and approved by CSTE in 2024**
- **This does not mean Chagas disease has been added to the list of nationally notifiable conditions. This means states voluntarily share their case counts with CDC using the approved case categorization**

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov