Chagas ECHO:
Chagas at the Primary Care Level

January 29th 2020
(World NTD day -1)

Project ECHO/UT Health San Antonio

“Chagas Disease at the Primary Care Level” Online Webinar Via Zoom January 29, 2020

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Rachel Marcus, MD Susan Montgomery, DVM Planning Committee Members

LASOCHA
Latin American Society of Chagas

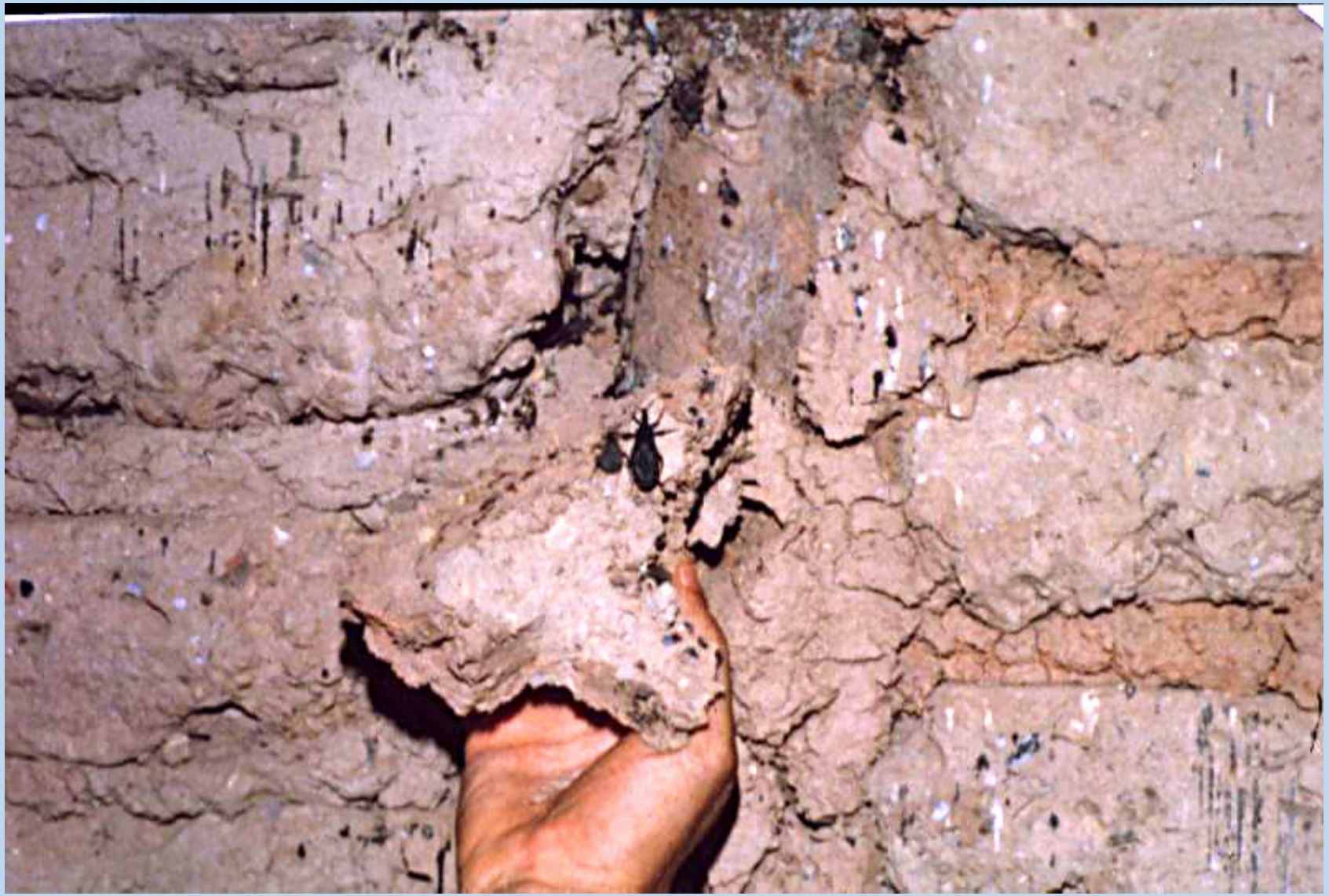
Chagas Disease: Old School

- A parasitic infection causing heart and gastrointestinal damage, chiefly transmitted by reduviid bugs to a mammalian host

- Zoonosis: over 100 reservoirs known.

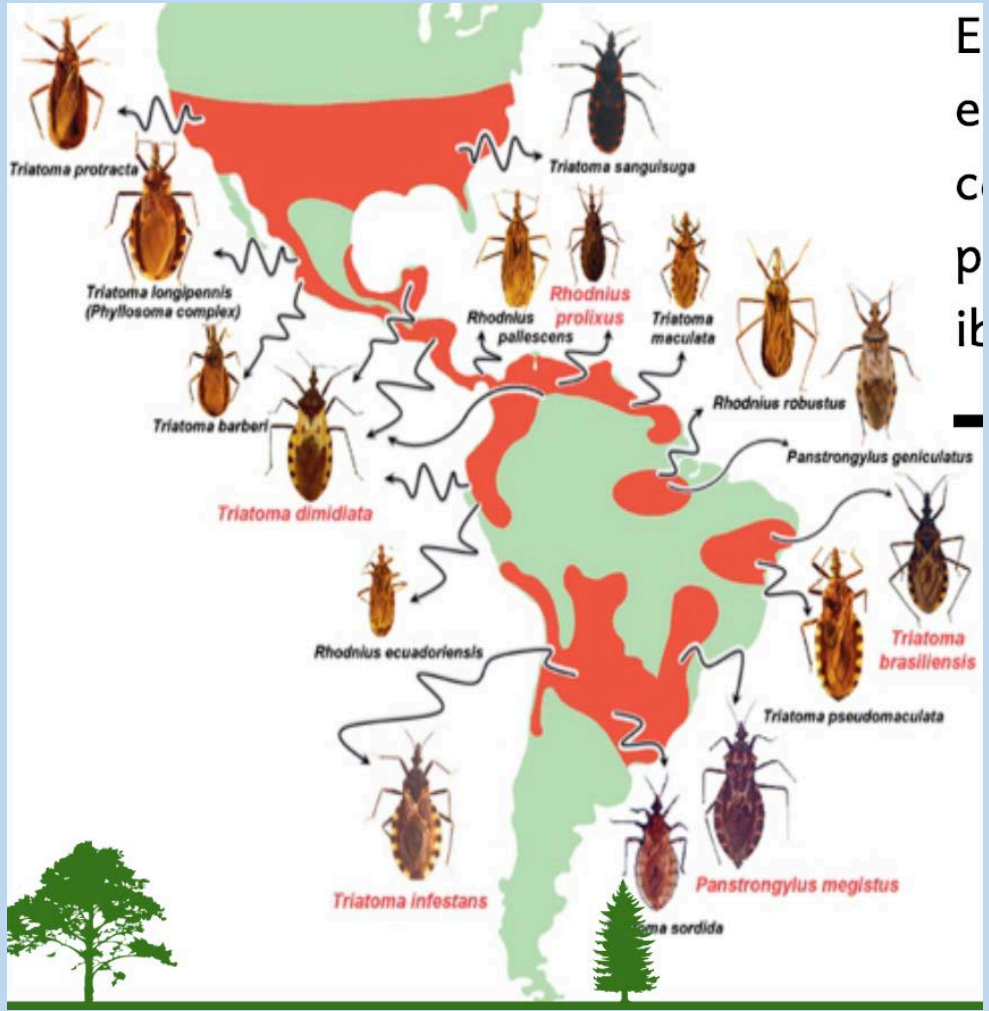
- Disease of rural poverty in non-island nations of Latin America:
  - domiciled nocturnal bug feeds on sleeping victims,
  - lives in cracks/crevices of poorly built houses/chicken coops.

Waiting for nighttime…



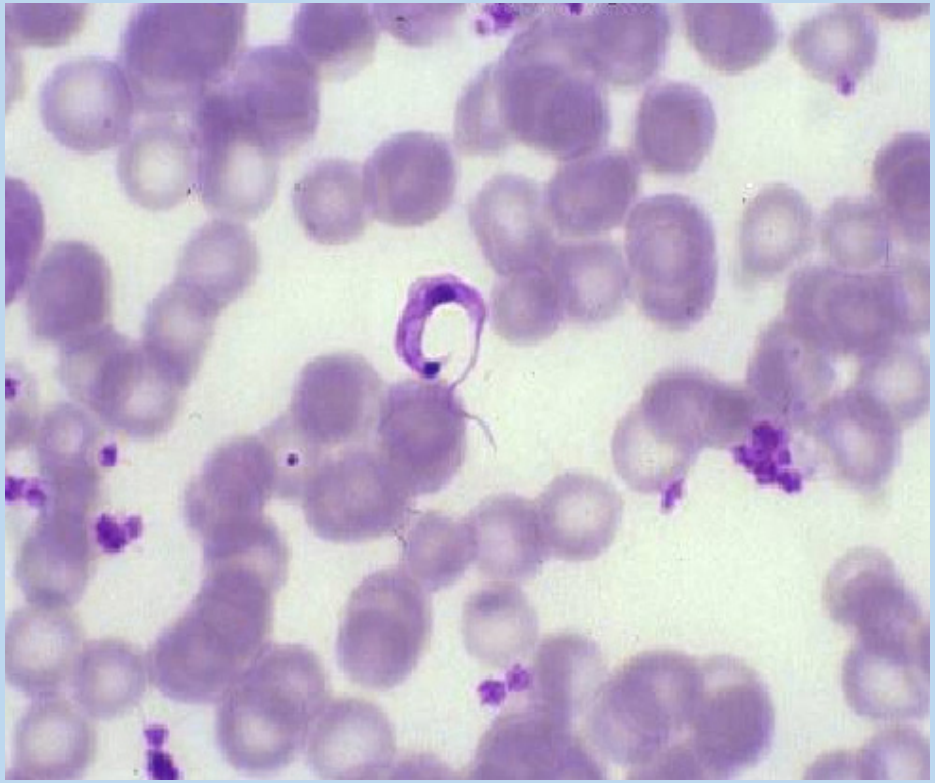
AKA: Kissing Bug, Insecto asesino, Vinchuca, Chinche, Barbeiro, Chipo, Pito

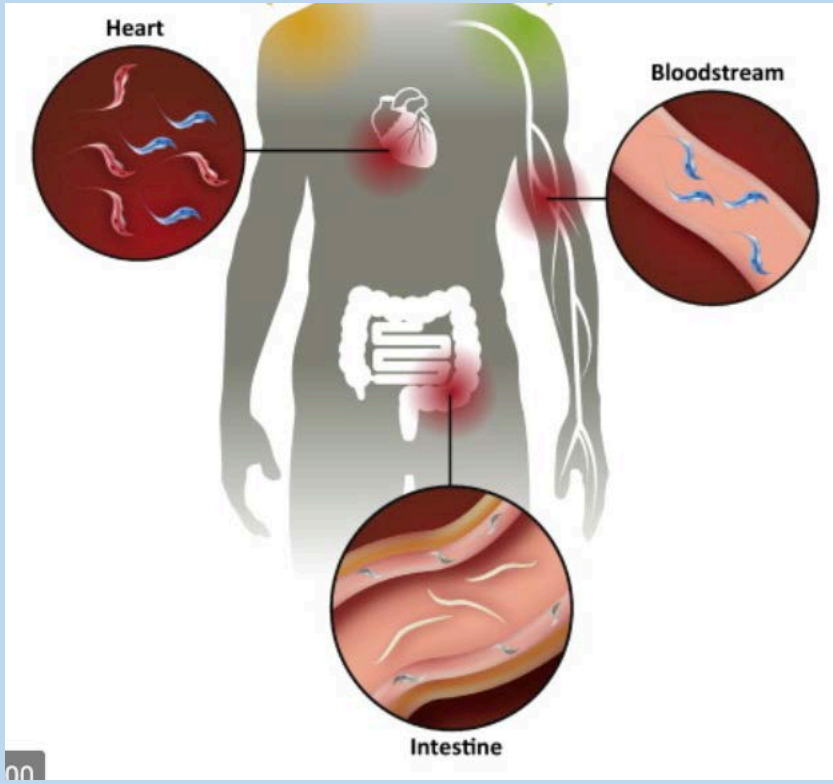
- Triatomines: Triatoma Infestans, Rhodnius Prolixus in Lat. Am., T. Sanguisuga, Gerstaeckeri, Protracta in US
- Intestine of triatomine is obligate part of parasite lifecycle.



Its gross, but this is how it gets the job done…

The parasite, Trypanosoma Cruzi, infects smooth muscle cells, autonomic nerve terminii





Transmission 2.0

- Vector control has been very effective, though not complete, but with rural to urban migration:

  Vertical transmission: 1-10% of infected moms pass to infant

  Blood transfusion: 10% transmission rate if infected product, highest risk with platelets

  Reactivation: chemical or disease-induced immunosuppression, especially HIV

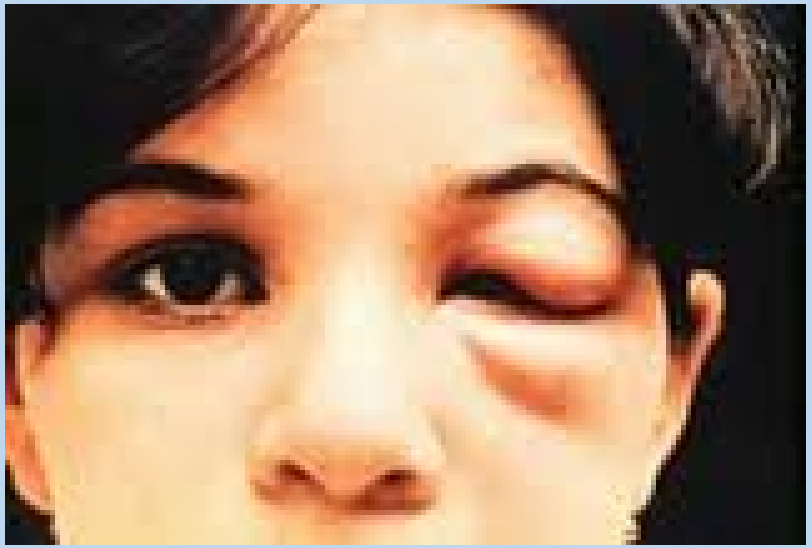
  Oral: consumption of unpasteurized juice with bug/fecal material.

  Local transmission: Uncommon (?) but does occur

- Regardless, remains a “neglected” disease of the poor.

Clinical Course: Acute Phase

- Non-specific symptoms in many, fever, malaise, adenopathy. Frequently not remembered as an adult. Lasts 6-8 wks.
- Romana's sign(10%)
- 5%< clinically important presentation with myocarditis/meningoencephalitis which in 10% can be fatal.
- Parasitemia is present/treatment with antiparasitic medications effective for "cure" in 70-90%



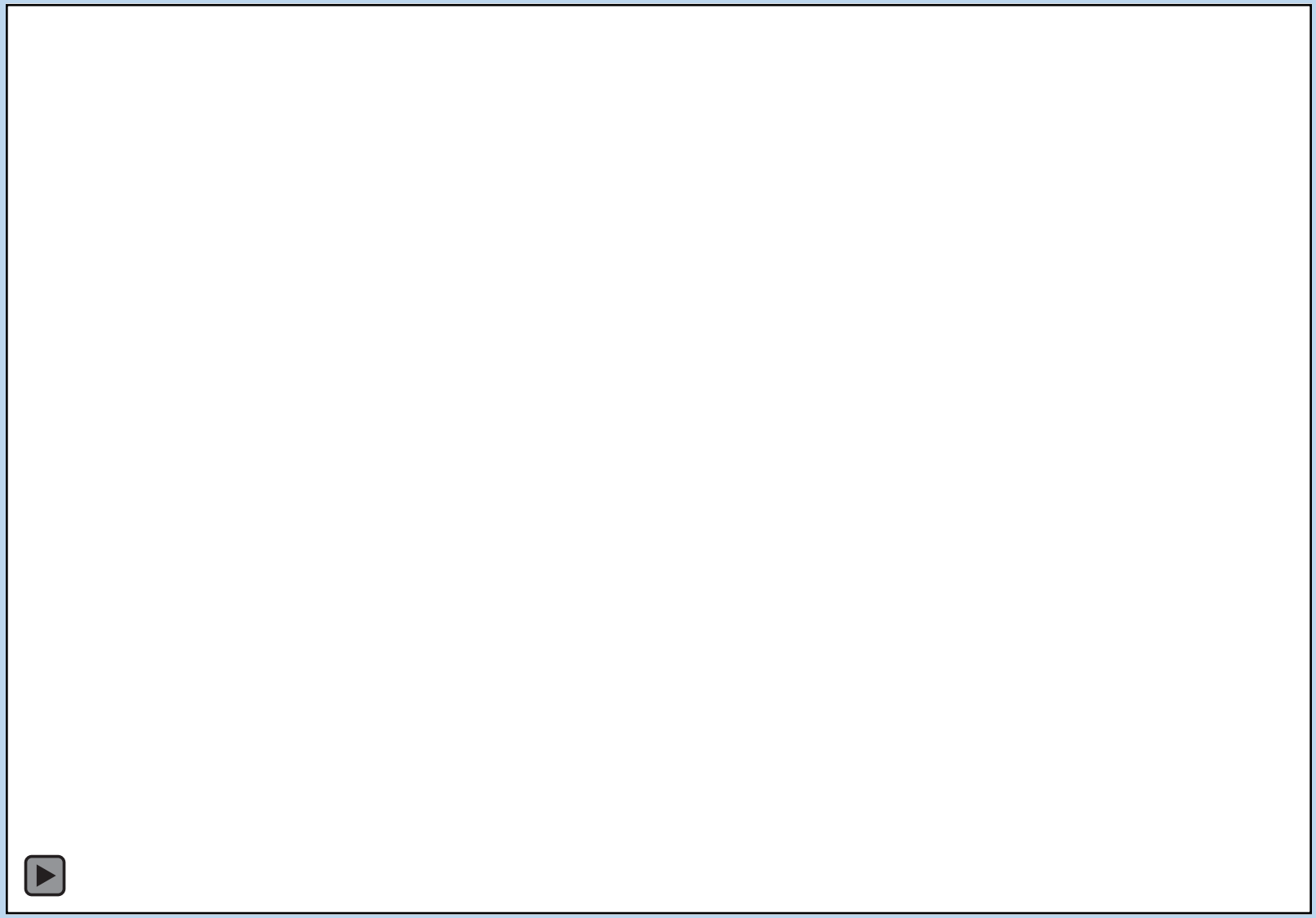
Clinical Course: Indeterminate Phase

- Virtually all untreated patients pass into this phase, no end organ manifestations
- Positive serology(2 forms) ELISAs/TESA
- End of significant manifestations of illness for 70-80% of patients, 2-5%/year progress.

Clinical Course: Chronic Phase

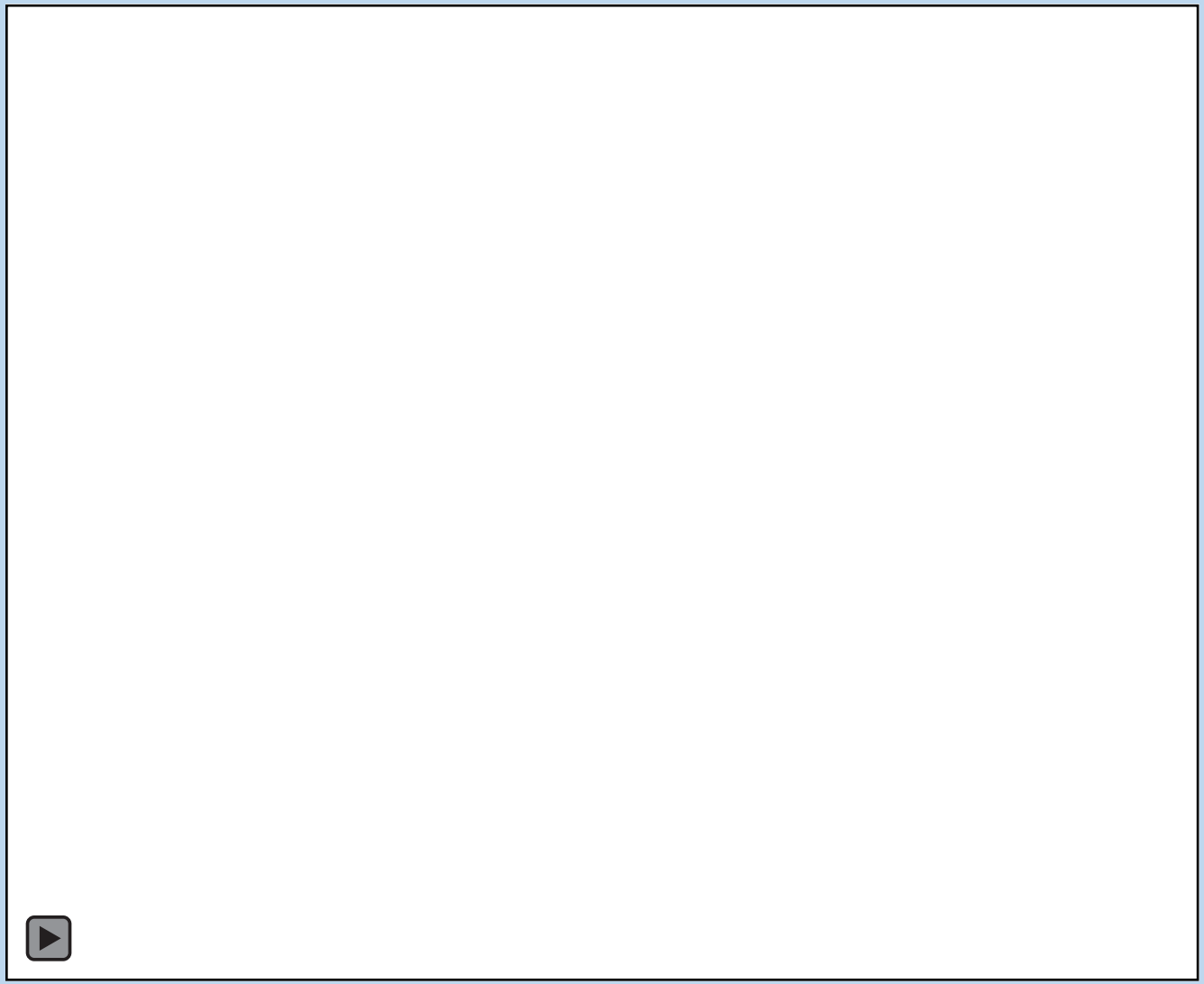
- Presents 15-30 years after time of likely infection
- 20-30% of patients progress, not clear who, although more men have significant cardiac impairment. Degree of parasitemia? Reinfection? Manual labor? Strain type? Genetic factors in immune response.
- GI manifestations in 10%, more common in South America

Chagas Cardiomyopathy: Heart Failure



CCC: Arrhythmia

- Bradyarrhythmias
- Tachyarrhythmias

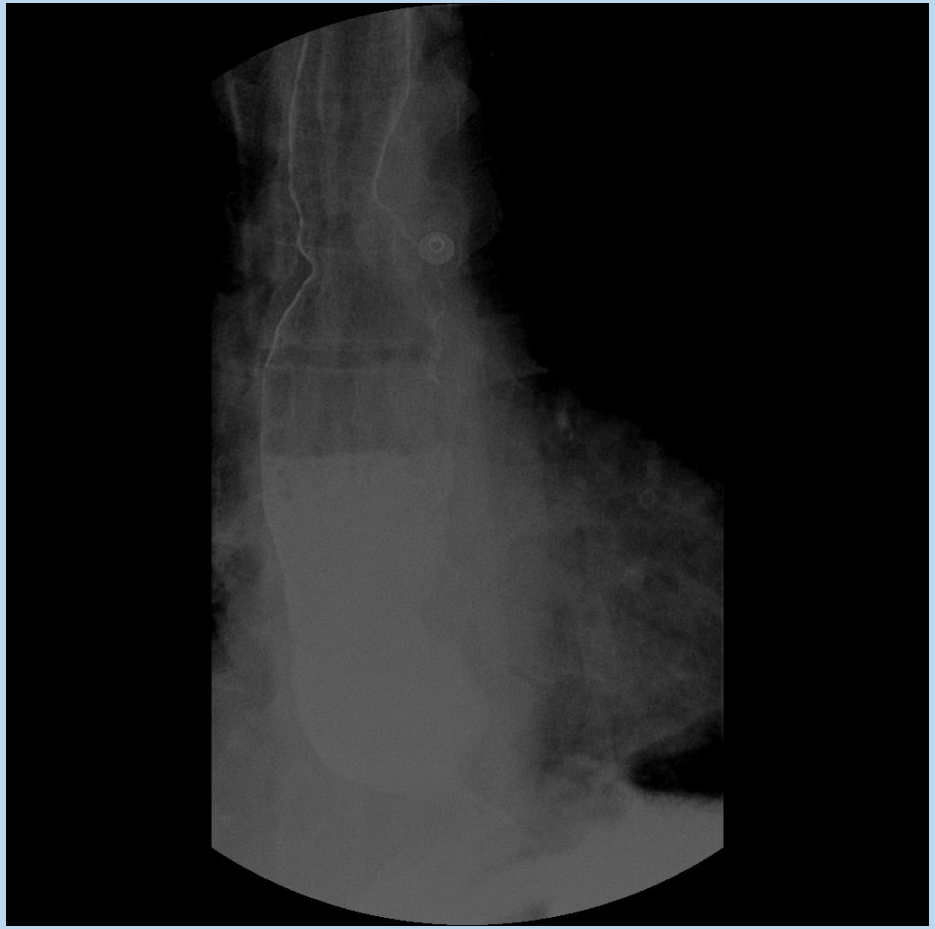


CCC: Thromboembolism

- Strokes, systemic embolism

Presentation of Chronic Phase: Gastrointestinal

- Megacolon:
  - Abdominal pain: Constipation
  - Fecal impaction, with ulceration
  - Volvulus
- Megaesophagus:
  - Chest pain: GERD
  - Dysphagia
  - Food retention
  - Malnutrition/weight loss
  - Aspiration



Testing: Serologic diagnosis*

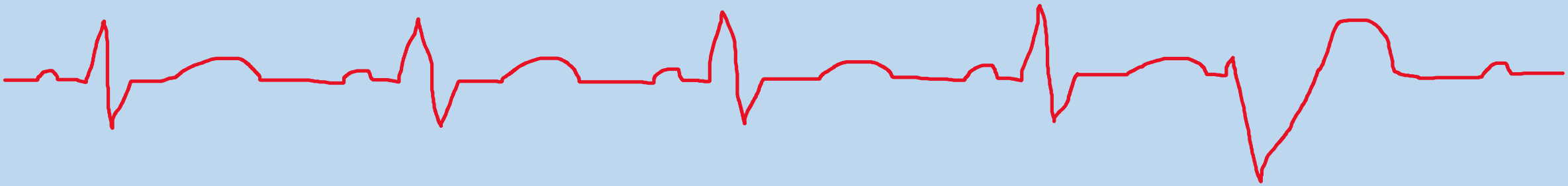
(*special exceptions: congenital/reactivation)

- Commerical lab testing is ELISA, and diagnosis should be made with positive IgG, not IgM
- Recent exposure: wait 8-10 weeks for IgG development
- Indeterminate/Chronic: IgG
- Confirm Confirm Confirm….did I mention Confirm???

My patient is confirmed positive…What do I do now?

- 12 lead ECG and echocardiogram: if normal, consider antiparasitic treatment

- If abnormal, refer to cardiology, infectious disease, preferably someone who knows about Chagas!



Antiparasitic therapy

- Benznidazole: 2 nitro-imidazole
- FDA approved
- 5-7mg/kg po in divided doses 60 days.
- Rash/wt loss/HA/late polyneuropathy/LFTs/neutropenia
- 85% finish Rx

- Nifurtimox: 5-nitrofuran
- Not FDA approved
- 8-10mg/kg divided TID-QID po x 90 days
- Only 50% complete course
- Skin, GI, psychiatric

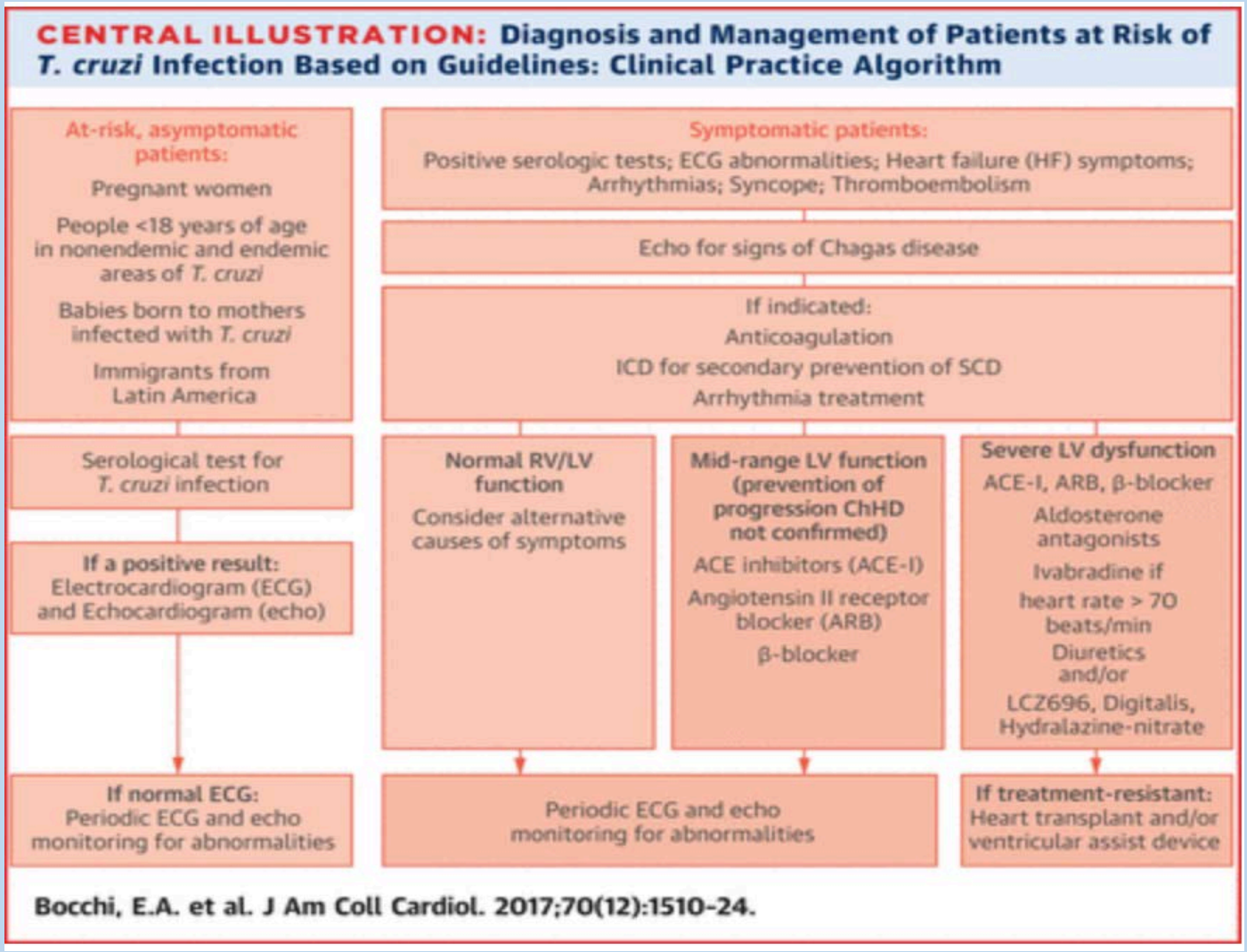
What's the data for treatment?

- Seronegativization associated strongly with rx in children
- Observational data suggests significant decrease in risk of transplacental passage in women of childbearing age
- Prospective trial suggested decrease in risk of progression associated with rx, and medication does decrease PCR positivity with modest impact on seronegativization.
- BENEFIT trial shows no advantage to benznidazole in patients with Chagas cardiomyopathy, with some caveats.

So who do we treat?

• Newborns	• YES!
• Children, recently infected	• YES!
• Reactivation disease	• YES!
• Women of childbearing age	• Yes!
• Chronically infected adults	• Yes*

Algorithm for Diagnosis and Management



So who should we test?

- Highest risk in general population: Born in Chagas-endemic country: likely @1% risk in all immigrants, but some individuals from select regions have higher risk.
- Most efficient for finding patients to treat: Women of childbearing age, treat mom and all children who test positive.
- Patients with cardiac disease from endemic countries: up to 19% of patients with non-ischemic cardiomyopathy from Lat. Am. have Chagas as the cause.
- Individuals who have tested positive on blood donor screening need testing.

Case Presentation

A 27 year old woman gets tested for Chagas

- Born in the United States to a Brazilian mother and Bolivian Father
- Travelled to Bolivia as a young adult to go camping
- Had a surgical procedure in Bolivia and got a blood transfusion
- Tested positive for T Cruzi IgG by blood banking

Questions to Consider

- 1) How did she get the disease?
- 2) After diagnosis, what are the next steps?
- 3) Should she be treated, and if so, how?

How did she get Chagas disease?

- Congenital: Mom tested negative
- Blood transfusion: “screening” in blood banks, but not complete.
- Vector born via rural exposure in Bolivia

Next steps:

- **Confirmatory serology** was obtained at the CDC which was positive for T. Cruzi infection

- **ECG** and **Echocardiography** were performed and were **normal**

Should we treat and why?

- Young age: to theoretically reduce risk of developing cardiac disease, offer serologic “cure”

- Family planning: to reduce the risk of maternal fetal transmission

Antiparasitic Treatment

- Was begun finally 3 years later, after initial laboratory and repeat cardiac testing were normal.
- Initiated benznidazole at 5mg/kg/day in divided doses.
- The patient developed a non-pruritic maculopapular rash on her trunk at day 5 which responded to dose reduction to 100mg BID and Zyrtec.
- With an attempt to increase back to 150mg BID the rash returned and she developed diffuse erythema and swelling of her face within 4 days. Treated with steroids and cessation of therapy.

Where to turn for help?

- https://www.cdc.gov/parasites/chagas/health_professionals/index.html
- https://www.mundosano.org/wp-content/uploads/2019/07/Guia-Medica-Ingles-v1.pdf