University of Arkansas for Medical Sciences

#### **INTRODUCTION<sup>1</sup>**

- Disease
- American countries (American trypanosomiasis)
  - States<sup>c</sup>
- febrile illness
- cardiomyopathy or gastrointestinal disease
- enzyme strip assay
  - universal *T. cruzi* donor screening



- Recipient asymptomatic prior to notification from donor OPO of positive *T. cruzi* EIA
- Consulted Center for Disease Control (CDC) Division of Parasitic Diseases (phone: 404-718-4745)
  - Monitoring via blood smear and whole blood T. cruzi PCR<sup>1</sup>
    - Weekly for 3 months
    - Every 2 weeks for 1 month
    - Monthly for a minimum of 2 more months
  - Testing can only be completed at the CDC laboratory and must be preapproved
  - Results sent to local health department, coordination required to obtain results
  - Pre-emptive treatment is not recommended<sup>1</sup>
  - Treatment to be started if/when recipient becomes positive for *T. cruzi*<sup>1</sup>
- First two samples drawn post-operative day 5 and 10 arrived to the CDC laboratory >8°C after being sent on ice
- Recipient remains asymptomatic at 25 days post-transplant

# **Trypanosoma cruzi** Transmission Risk in Liver Transplantation Anna Miller Rebich, PharmD; Darby Derringer, PharmD, BCTXP Department of Pharmacy, University of Arkansas for Medical Sciences, Little Rock, AR

• Third sample drawn post-operative day 16 resulted negative, fourth sample drawn post-operative day 24 is pending results

#### DISCUSSION

#### Testing:

- Limited ability to do additional testing on donor that is not complete OPO
  - Given donor demographics and lack of confirmatory testing, possible that positive EIA was false
- Tissue biopsy *T. cruzi* PCR is validated only for heart tissue
  - *T. cruzi* has affinity for muscle tissue
  - Unlikely to find *T. cruzi* in liver tissue
- If positive T. cruzi status is known prior to transplant, recipients sh provide informed consent<sup>1</sup>
  - Transplantation of T. cruzi positive heart allografts is unaccept
- Intense coordination between medical team, organization laborate health department, and CDC are required
- Specific specimen requirements must be met for timely testing to a

Treatment:

	Dose	Duration	Adverse Effects	Place in Therapy	FDA Approval Date
<b>Benznidazole</b> <sup>2</sup>	5-7 mg/kg/day in 2 divided doses	60 days	Rash, cytopenias, neuropathy	First line	August 2017
Nifurtimox <sup>3</sup>	10 mg/kg/kg/day in 3 divided doses	90 days	Nausea/vomiting, tremors, weakness	Second line	August 2020

- Prophylactic treatment of recipients of *T. cruzi* positive organs is not recommended due to potential for severe adverse effects<sup>1</sup>
- Despite FDA approval of both agents, neither is available for purchase through UAMS' drug wholesaler
  - Prior to FDA approval these were only available through the FDA via an Investigational New Drug Application

## CONCLUSIONS

- Guidelines for recipient monitoring and management must be followed in this case, although it is likely to be a false positive, due to lack of availability of confirmatory donor testing
- The CDC Division of Parasitic Diseases is a valuable and necessary resource to manage potential *T. cruzi* exposure through organ transplantation and to assist with obtaining treatment if required
- Expected that more OPOs will begin universal donor screening for *T. cruzi*, leading to increased volumes of similar cases • OPOs must report all positive *T. cruzi* testing to recipient hospitals and the CDC
- Intense coordination is required between all involved parties to ensure appropriate monitoring is executed

### REFERENCES

- La Hoz RM, Morris MI, et al. Tissue and blood protozoa including toxoplasmosis, Chagas disease, leishmaniasis, Babesia, Acanthamoeba, Balamuthia, and Naegleria in solid organ transplant recipients Guidelines from the American Society of Transplantation Infectious Diseases Community of Practice. Clin Transplant. 2019;33(9):e13546. Benznidazole [package insert]. Guadalajara, Spain: Laboratorios Liconsa S.A.; 2017.
- Lampit (nifurtimox) [package insert]. Whippany, NJ: Bayer HealthCare Pharmaceuticals Inc; 2020
- Leyria J, Philip R, Orchard I, Lange AB. Gonadulin: A newly discovered insulin-like peptide involved in ovulation and oviposition in Rhonidus prolixus, a vector of Chagas disease. Insect Biochem Mol Biol. 2022;150:103848. Taylor MC, Lander N, Yoshida N. Editorial: Unravelling T. cruzi Bioology. Front Cell Infect Microbiol. 2020;10:382.
- Triatomine Bug FAQs. CDC Centers for Disease Control and Prevention website. Updated April 3, 2023. Accessed October 20, 2023.

ted by	Specimen Requirements	Collect in purple top (EDTA) tube		
IT IS		≥2.2 mL whole blood (adult)		
		Not completely hemolyzed		
hould		Stored refrigerated ≤7 days		
ptable <sup>1</sup> ory,		Sent with form CDC 50.34		
		Shipped same or next day as etiologic agent on ice to maintain temperature 2-8°C to arrive M-F		
occur				