

Blood Screening & Seroprevalence in the U.S.

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U.S./Canadian Transfusion Cases

Year	Location	Donor Origin
1987	California	Mexico
1989	New York City Manitoba	Bolivia Paraguay
1993	Houston	unknown
1999	Miami	Chile
2000	Manitoba	German/Paraguayan
2002	Rhode Island	Bolivian



Seroprevalence: US Blood Donors

Collection Area	# Donations Tested	Number Positive (%)	Overall Rate
Alabama	6,013	0 (0)	NA
Los Angeles	1,311	6 (0.48)	1/550
Los Angeles	77,967	147 (0.19)	1/7,500
Miami	25,352	20 (0.08)	1/9,000
SW/West	13,309	14 (0.11)	NA
Texas/Oklahoma			
Tulsa/Norman	63,056	0 (0)	NA
Wichita Falls	14,012	0 (0)	NA
Waco	23,021	3 (0.01)	1/7,700

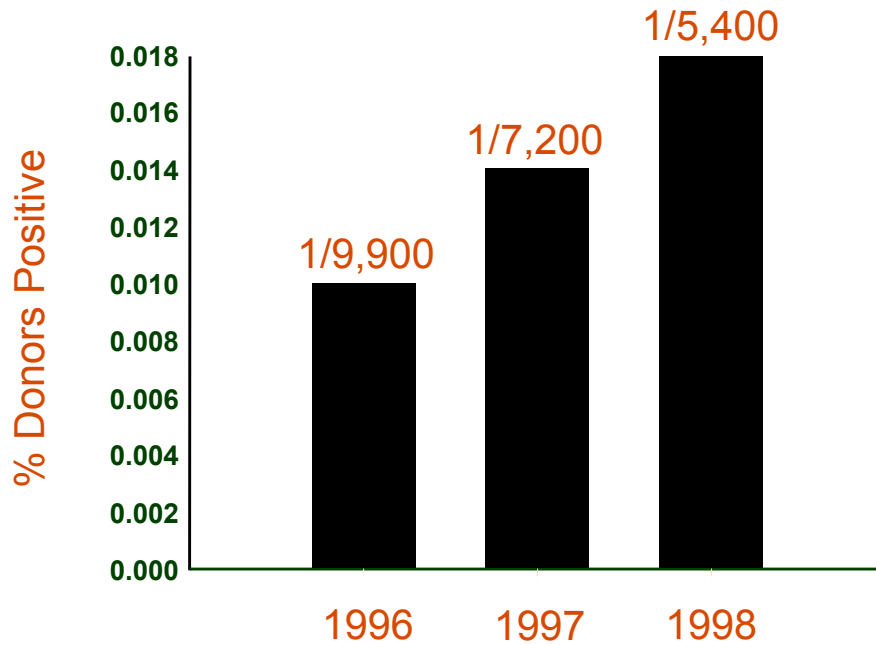


Seroprevalence Data: Los Angeles & Miami

	<u>Los Angeles</u>	<u>Miami</u>
Total no. donations	1,104,030	181,139
“Yes” to risk question	78,736 (7.1%)	25,908 (14.3%)
Number tested	77,967	25,352
EIA repeat reactive	329	75
Confirmed by RIPA	147 (0.2%)	20 (0.1%)
<i>Seropositivity rate</i>	<i>1 in 7,500</i>	<i>1 in 9,500</i>



Los Angeles Seroprevalence: 1996-98



Leiby et al., Transfusion 2002;42: 549-555



Changing Donor Demographics



Enhanced Minority Recruitment Efforts



Greater Number of At-Risk Donors



More Seropositive Donors



Greater Risk of Transfusion-Transmission

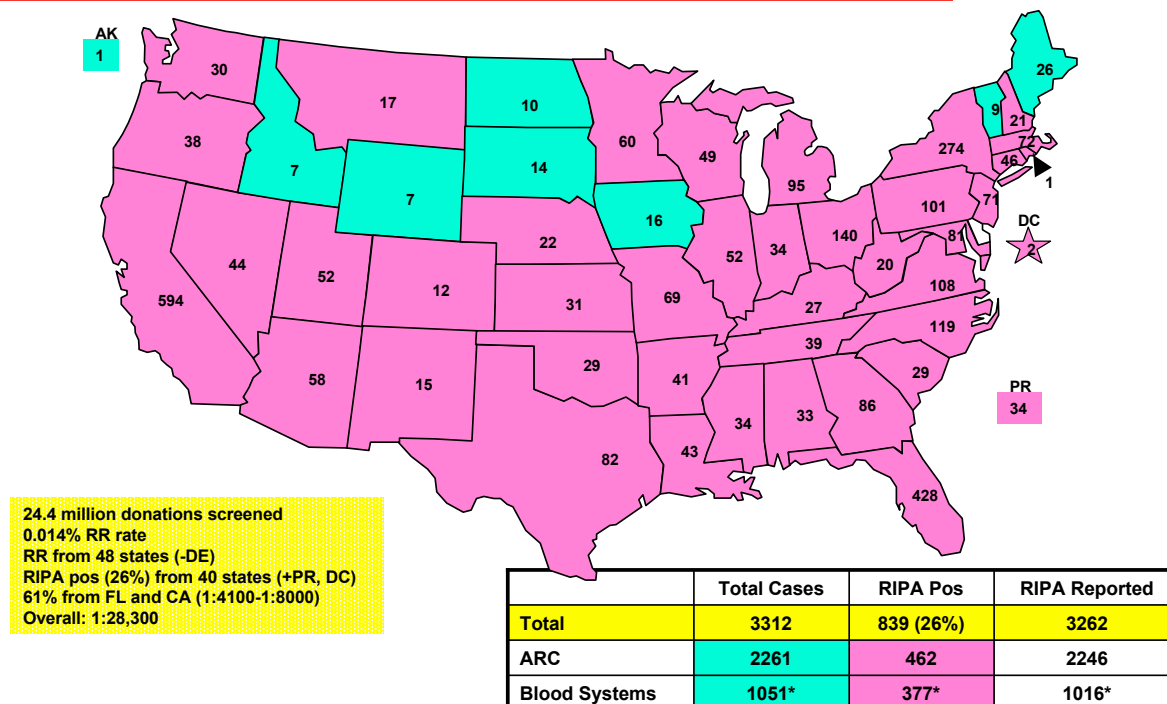


U.S. Blood Donor Screening

- initiated January 29, 2007
- universal screening
 - recent trend toward selective testing (first time and lapsed donors)
- donors initially screened by Ortho Chagas ELISA
 - if positive, tested again in duplicate
- repeat reactives confirmed by radioimmunoprecipitation assay (RIPA)
- if possible, additional samples collected from confirmed positive donors for PCR and hemoculture
- confirmed positive donors questioned for risk-factors



T. cruzi Reactive Donors (01/29/07 – 07/30/09)

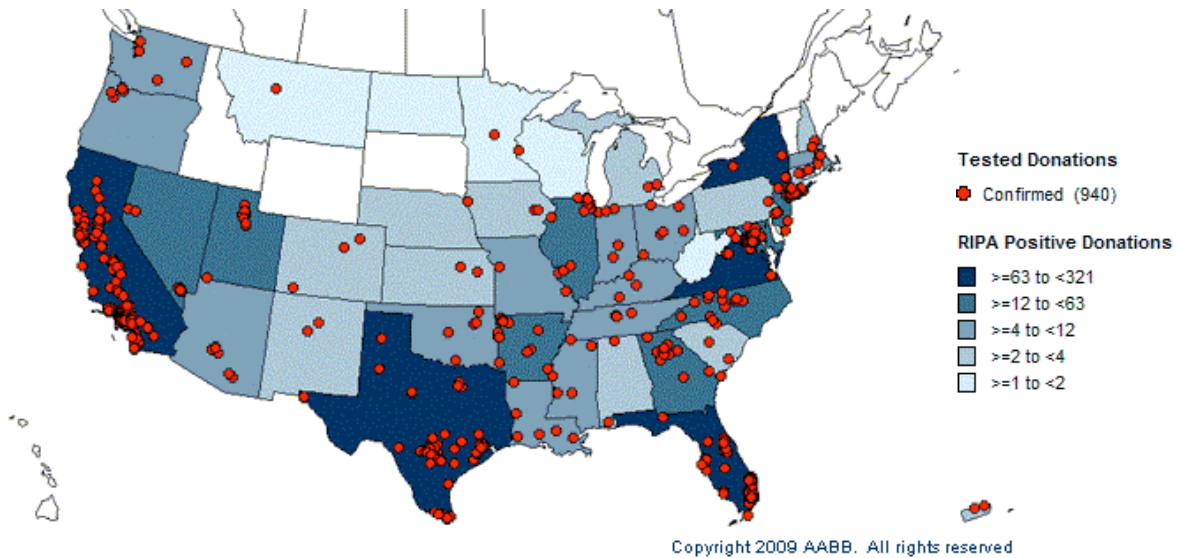


* 3 RIPA pos samples represent multiple positives from auto donor and cord blood



Confirmed Seropositives (thru 07/30/09)

Total Repeat Reactive	RIPA Positive	RIPA Negative/Ind	RIPA Pending/NT
3674	940	2586 / 52	96



Donor Demographics Through 07/30/09

RIPA Pos (N=494)

- FT donors 333 (67%)
- RPT donors 161 (33%)
- Male 264 (53%)
- Female 230 (47%)
- Country of birth (N=182)
 - Mexico 54
 - US 42
 - El Salvador 30
 - Bolivia 19
 - Guatemala 7
 - Honduras 6
 - Colombia, Argentina 5
 - Brazil 3
 - Ecuador, Nicaragua, Chile 2
 - Paraguay, Costa Rica, Somalia, Venezuela, Dominican Republic 1

RIPA Neg (N=1806)

- FT donors 542 (30%)
- RPT donors 1264 (70%)
- Male 1070 (59%)
- Female 736 (41%)
- Country of birth (N=536)
 - US 513
 - India 3
 - China, Germany, Canada 2
 - Cuba, Thailand, Taiwan, New Zealand, Barbados, Ecuador, Panama, Hungary, Venezuela, South Africa, Ukraine, Dominican Republic 1
 - Colombia 2*

*21-37 years in Colombia, 1/2 with ECG irregularities and 1 with upper GI symptoms

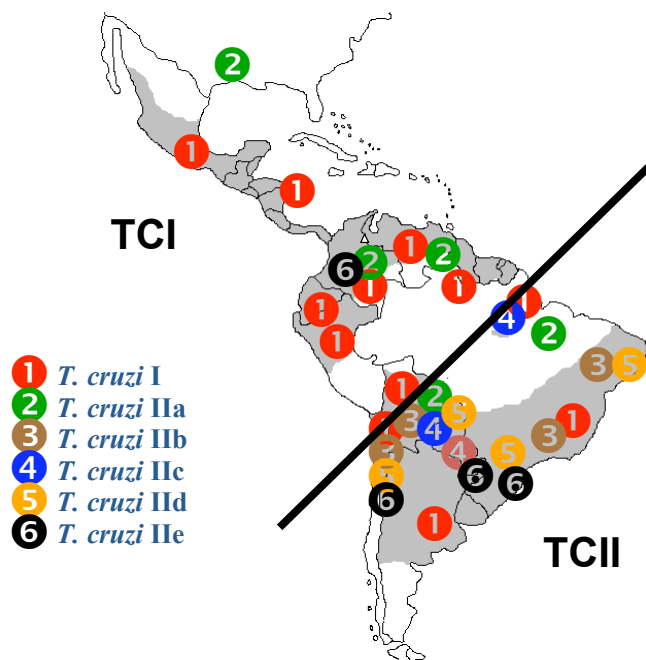


Transfusion-Transmission: South American Source?

- 5 of 6 U.S./Canadian cases implicated South American donors
 - lookback investigations have identified only 1 or 2 transmissions
 - relatively few U.S. cases given seropositive donors
- 5 of 5 Spanish cases implicated South American donors
- vast majority of seropositive donors in U.S. from Mexico and Central America
- anecdotal data suggests parasitemia higher in infections attributed to southern South American isolates
 - implications of *T. cruzi* I vs. *T. cruzi* II



Phylogenetic Lineage of *T. cruzi*



Summary

- significant number of *T. cruzi* seropositive donors identified by blood screening
- although concentrated in CA and FL, seropositive donors broadly distributed across U.S.
- autochthonous cases identified in U.S.
- rate of transfusion transmission lower than expected
 - likely related to predominance of *T. cruzi* I lineage among infected U.S. donors
- Chagas' remains a critical blood safety issue



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