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# Strong Hearts Program: the Results of a Novel Primary-care Based Diagnostic and Referral Program for Chagas Disease in East Boston, MA, USA

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## Introduction

- Chagas disease is a neglected infection caused by the parasite *Trypanosoma cruzi* that impacts ~300,000 people in the U.S.
- Untreated, Chagas can progress to irreversible cardiac morbidity or death in 20-30% of cases, yet <1% of people who are infected receive treatment in the U.S.
- The complexity of diagnostics and scarcity of follow up care remain barriers in the continuum of care.

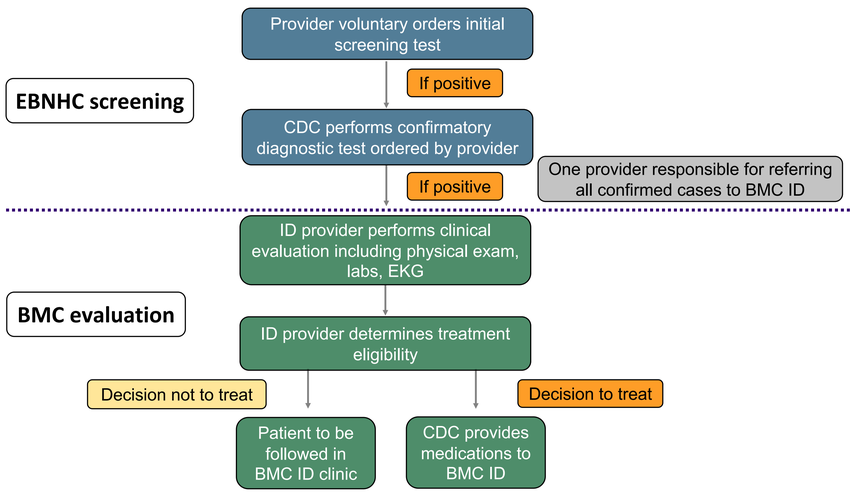
**Objective:** Describe (1) the program structure, (2) evaluate the local epidemiology, and (3) care continuum of care for Chagas disease within East Boston Neighborhood Center (EBNHC) in Boston, MA.

## Methods

**Setting:** An awareness campaign took place in the community to educate providers and patients and participation was voluntary. 14,354 patients were screened across four clinical departments participating in Strong Hearts Program from March 2017 - May 2023.

**Screening Workflow:** Patients were screened according to protocol and confirmed Chagas cases were referred to Boston Medical Center (BMC) for further evaluation and treatment if indicated (Fig. 1) .

**Figure 1. Chagas disease screening pilot workflow**




**Abstraction Approach**: Health records were abstracted for those with confirmed Chagas to identify continuum of care barriers.

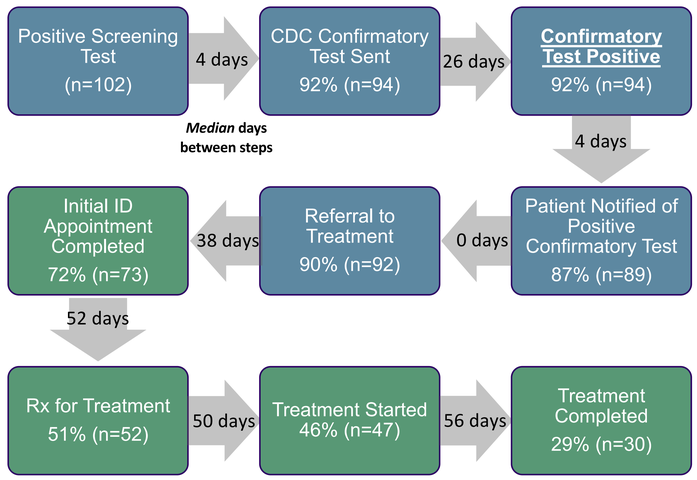
**Descriptive Analyses:** We characterized prevalence by key demographic characteristics and examined diagnostic uptake (proportions and medians).

## Results

**Table 1. Overall prevalence of Chagas infection was 0.7%; Burden was greatest for those from El Salvador and over the age of 40 yrs**

| Prevalence | Overall N=14,354 | Men (%) | Women (%) |
|---|---|---|---|
| | Col % | | |
| **Region** | | | |
| North America | 0.1 | 0.2 | 0 |
| Central America | 1.1 | 0.7 | 1.9 |
| South America | 0.07 | 0.04 | 0.1 |
| **Age** | | | |
| <20 years old | 0 | 0 | 0 |
| 20 – 29 years | 0.3 | 0.4 | 0.3 |
| 30 – 39 years | 0.6 | 0.6 | 0.6 |
| 40 – 49 years | 0.8 | 0.8 | 0.9 |
| 50 – 59 years | 2.0 | 2.7 | 1.5 |
| 60+ years | 2.7 | 2.5 | 2.8 |
| **Overall** | 0.7 | 0.7 | 0.6 |

**Figure 2. Continuum of care for Chagas confirmed patients with median days between each step of care**




Of those diagnosed with Chagas, **32% completed care.**

**Table 2. Care coordination for Chagas confirmed patients at Boston Medical Center (n=106)**

| Care Coordination for Chagas confirmed patients | Col % |
|---|---|
| **Screening department** | |
| Adult Primary Care | 64 |
| Family Health | 18 |
| OB/GYN | 8 |
| Pediatric | 1 |
| *Other | 9 |
| **Screening provider title/role** | |
| Medical Doctor (MD) | 72 |
| Nurse Practitioner (NP) | 27 |
| Certified Nurse-Midwives (CNM) | 1 |
| **Provider who coordinated shipping to CDC** | |
| Provider who ordered the screen | 46 |
| **Another provider | 54 |
| **Patient notified of confirmed positive result** | |
| Yes | 96 |
| No | 1 |
| Unknown | 3 |
| **Provider who notified patient of positive results (among n=86 who were notified)** | |
| Provider who ordered the screen | 33 |
| **Another provider | 68 |
| **Time from CDC positive confirmation to patient notification (days), median (range)[a]** | 3.0 (-26 – 152) |

*Other = clinical care outside of Strong Hearts Program's clinical departments; ** Another provider includes unknown providers; [a]Negative time interval is due to 4 patients notified prior to CDC test returning positive (based on positive screening test).

**Barriers to completion of care**:
- efforts required to obtain confirmatory results from CDC
- number of steps between referral and initial appointment
- insurance and billings issues

## Conclusion & Next Steps

- Given the significant prevalence of Chagas disease in high-risk U.S. communities, increased access to screening, confirmatory testing and diagnostics are needed.
- Chagas care by motivated primary care providers is feasible when support for confirmatory testing and care navigation is in place.

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