A Plan to Screen All Marshallese in Arkansas for Tuberculosis: Progress, Challenges, and Opportunities

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Background

An emerging strategy to reduce tuberculosis (TB) transmission in low-incidence settings involves community-based latent TB infection (LTBI) screening and treatment of populations who have a high risk of contracting TB and developing active TB disease.[1,2] What can hinder or enable these efforts?

Context:
- Since 1986, 8,000–15,000 people from the Republic of the Marshall Islands have moved to Arkansas for social and economic opportunities[3]
- Marshallese are excluded from US-bound immigration health evaluations, including TB screening[4]
- With 25 cases in 2017, TB incidence in Arkansas among the Marshallese was estimated to be 166–312/100,000 population, with additional outbreaks in 2004 and 2014[5]
- LTBI prevalence was estimated to be 30% in Marshallese

Program Strategy:
- In 2014, Arkansas Department of Health (ADH) initiated a plan to conduct community-based LTBI screening of all Marshallese residents in Springdale, AR, by 2019
- An outreach clinic with dedicated TB nurses and Marshallese TB disease intervention specialists (DIS) was established

Problem: Program data indicate that screening rates have not reached expected targets, with only 1,999 of the estimated 15,000 Marshallese receiving a tuberculin skin test (TST) or interferon-gamma release assay (IGRA) as of July 2018

Objective: To describe program progress and identify implementation barriers

Methods

Study Design and Implementation: Sequential explanatory design was used to first quantitatively assess program monitoring data for baseline screening rates: these rates served as the basis for subsequent qualitative assessment through in-depth, semi-structured key informant interviews using a purposive sample

Setting: ADH Bates Outreach Clinic and participant homes in Springdale, AR during June–July of 2018

Key Informants: Two Marshallese families who participated in the ADH screening program, a Marshallese community leader, two TB nurses, and two Marshallese TB disease intervention specialists (DIS)

Data Sources: Program monitoring and screening data; de-identified, semi-structured interview data

Analyses:
- Quantitative data were analyzed in Tableau Desktop 10.5 (Tableau Software Inc., Seattle, WA)
- Content and thematic analysis of qualitative data were performed
- Spatial data were analyzed in ArcGIS 10.5 (ESRI)

Results

Figure 1. Ratios of observed to expected number of people screened for LTBI per year: Jan 2014 – May 2018.

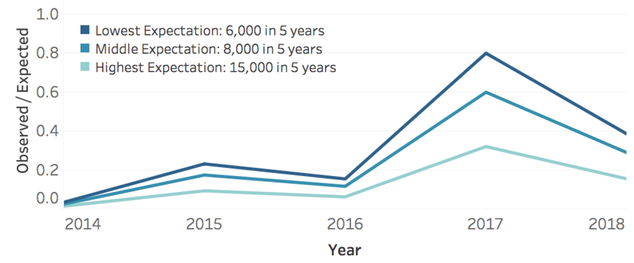


Figure 2. Number of people screened for LTBI per month among Marshallese in Northwest Arkansas: Jan 2014 – May 2018.

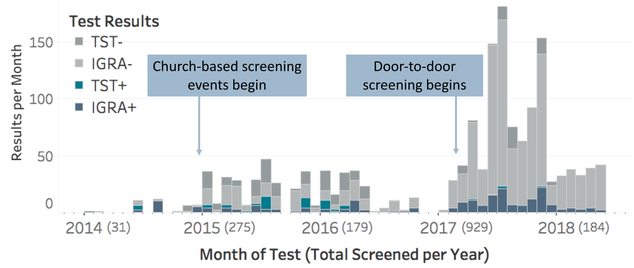
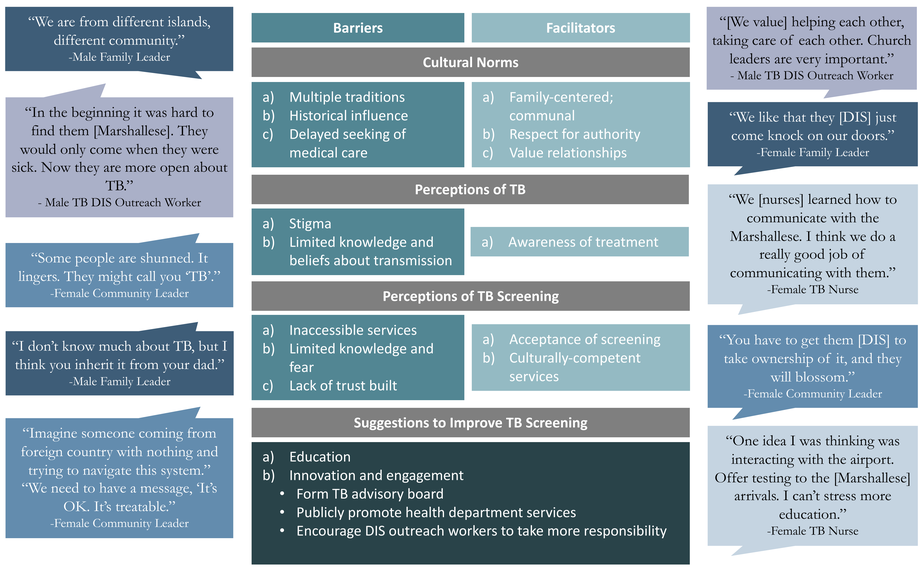


Figure 3. Results of semi-structured interviews: Key themes and responses demonstrating barriers and facilitators to TB screening.



Results (*continued*)

Figure 4. LTBI care cascade from Jan 2014 – Jul 2018 among Marshallese in Northwest Arkansas.

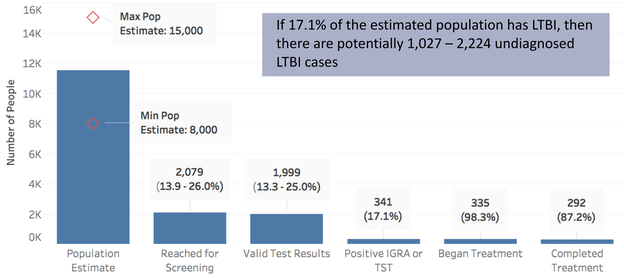
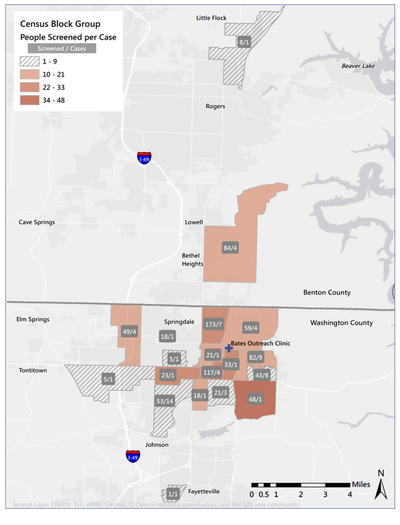


Table 1. Results from screening by test type and year among those with valid results: Jan 2014 – May 2018, N (%).

Test Result		2014	2015	2016	2017	2018
IGRA	+	18 (62.1%)	28 (18.8%)	26 (25.5%)	120 (13.9%)	16 (8.7%)
	-	11 (37.9%)	121 (81.2%)	76 (74.5%)	746 (86.1%)	168 (91.3%)
	Total	**29**	**149**	**102**	**866**	**184**
TST	+	4 (40.0%)	29 (23.0%)	13 (16.9%)	5 (7.9%)	0
	-	6 (60.0%)	97 (77.0%)	64 (83.1%)	58 (92.1%)	0
	Total	**10**	**126**	**77**	**63**	**0**

Figure 5. Number of people screened for LTBI per active TB case from Jan 2014 – May 2018, by census block group.



Discussion

Key Results:
- No year since 2014 has met the targets originally set by the program, though screening increased in 2017 with the initiation of a door-to-door campaign (Fig. 1, 2)
- Test positivity rates decreased over time, with less than 20% LTBI positivity during the door-to-door phase (Fig. 2; Table 1)
- Interviews revealed barriers and facilitators to LTBI screening, along with suggestions for increasing screening rates (Fig. 3)
- The largest gap in care is in the screening phase (Fig. 4)
- Five of 17 census block areas with known Marshallese TB cases had < 10 people screened per active TB case (Fig. 5)

Limitations:
- Lack of reliable denominator data to determine true rates
- Non-random interview sample could be non-representative
- Interviews with families were conducted with DIS as translators, which could have led to interviewer bias or effect

Interpretation:
- Reaching the community for screening has the most potential for improvement
- Qualitative analysis contributed to the understanding of LTBI screening trends among the Marshallese
- The identified barriers to screening may be considered non-modifiable or modifiable

Contextual Factors:
- Staffing delays and prioritization of other public health concerns (e.g. mumps outbreak) could have also slowed screening

Generalizability:
- These findings may be extended to TB programs in other US states serving Marshallese communities similar to the Arkansas Marshallese community

Conclusions and Recommendations

Conclusions:
- Although monitoring data showed an increase in the number of people screened and a decrease in test positivity rates, modifiable and non-modifiable barriers prevented full realization of program goals for screening

Recommendations:
- Increase TB program-community interaction, engage the community by establishing a TB advisory board and design innovative educational interventions with Marshallese input

Acknowledgments and References

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