

Jonathan Todd, PhD, MSPH<sup>1</sup>, Jon Puro, MHA-PA<sup>1</sup>, Matthew Jones, MS<sup>1</sup>, Jee Oakley, MPH<sup>1</sup>, Laura Vonnahme, MPH<sup>2</sup>, and Tracy Ayers, PhD, MS<sup>2</sup>  
<sup>1</sup>OCHIN, Inc., Portland, OR; <sup>2</sup>Centers for Disease Control and Prevention, Division of TB Elimination, Atlanta, GA

### Introduction

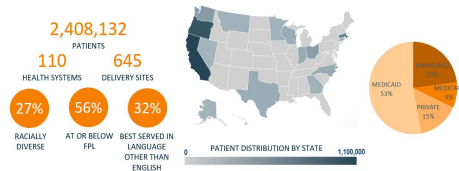
- Latent Tuberculosis (TB) Infection (LTBI) occurs in individuals infected with *Mycobacterium tuberculosis* without signs and symptoms or radiographic or bacteriologic evidence of active TB.
- 80% of TB cases in the US are a result of LTBI reactivation.
- LTBI is diagnosed using a tuberculin skin test (TST) or blood tests called Interferon Gamma Release Assays (IGRA) which include QuantiFERON®-TB test (QFT) and T-SPOT®.TB test (T-Spot).
- Targeted testing and treatment of LTBI is necessary to prevent progression to active TB and is a critical component of the national TB elimination campaign.

#### Study Aims:

- Assess the feasibility of using OCHIN electronic health record (EHR) data as a surveillance tool to better understand TB/LTBI in community health centers.
- Identify/assess the ability to use preferred language as a proxy for identifying Non-US-born persons that are at risk for LTBI.
- Describe TB/LTBI diagnostic testing in community health centers.
- Examine factors associated with being identified as a LTBI case.

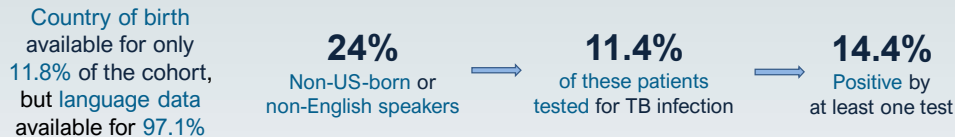
### Setting

- OCHIN, Inc. is one of the largest health information technology and innovation networks in the United States.
- Most (95%) OCHIN member clinics are not for profit serving vulnerable populations, with high proportions of Community Health Centers (CHCs) and Federally Qualified Health Centers.
- OCHIN is comprised of patient-level EHR data from 645 clinics in 20 states. There are 2,408,132 distinct patients with a visit within the last 3 years.

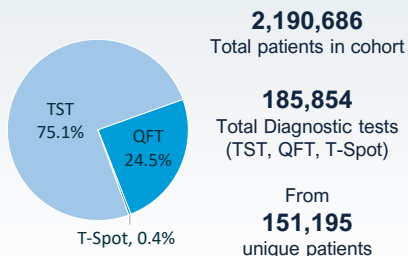


### Findings

#### Country of Birth vs. Language



#### TB Screening Results



#### LTBI Classification

Algorithm Classification	N (%)	Rate/100,000
Definite LTBI	9,412 (0.43)	429.6
Probable LTBI	17,397 (0.79)	794.1
Possible LTBI	7,128 (0.33)	325.4

#### Risk Factors associated with being identified as having LTBI

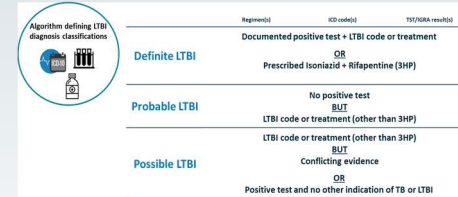
(models adjusted for age, sex, and homeless status)

Risk Factor	Adjusted Odds Ratio (aOR)	95% Confidence Intervals
Non-English Language as Preferred Language	4.20	4.09 – 4.32
HIV Diagnosis	3.09	2.84 – 3.35
Ethnicity/Race		
Non-Hispanic Asian Race	5.17	4.94 – 5.40
Non-Hispanic Black Race	3.02	2.91 – 3.13
Native Hawaiian/Other Pacific Islander	3.35	2.92 – 3.84
Non-Hispanic White	Referent	Referent

### Methods

**Study Population:** Patients with at least one encounter during January 1, 2012 - December 31, 2016 (N=2,190,686)

**Design:** Using existing EHR variables related to LTBI diagnosis codes (ICD9/10), diagnostic results, and prescriptions ordered we classified patients as having LTBI. We excluded 2,505 patients who were classified as having TB disease.



**Statistical Analysis:** To examine factors associated with LTBI, we performed multivariable logistic regression, with a referent group of all cohort patients not classified as having LTBI. TB disease cases were excluded.

### Limitations

- Analysis is limited to readily available structured EHR variables and misclassification is possible.
- EHR lacks complete data on lab reporting, treatment completion, and medication dispensing. These could provide additional information for TB/LTBI identification.
- Sample not generalizable to all CHC patients, clinics, and states.
- We did not include chest x-rays and culture results.

### Conclusions

- EHR data sources like OCHIN provide a valuable and unexplored resource for identifying individuals with TB or LTBI.
- Improvements are needed to increase testing of high-risk patients.
- Among those tested, TST was the most frequently used test despite recommendations that IGRAs are preferred.
- Primary care EHRs could benefit from EHR-based clinical decision support tools to increase patient care and TB prevention.