Use of the California Immunization Registry (CAIR) for LTBI Surveillance

Janice Westenhouse, MPH, Jennifer Flood, MD, MPH, Pennan M. Barry, MD, MPH

Tuberculosis Control Branch, California Department of Public Health

Background

- California Immunization Registry (CAIR) covers the majority of California's population
- Used voluntarily by public and private health care providers
- Can be used to record results of tuberculin skin tests (TST), interferon gamma release assays (IGRA) and chest radiographs (CXR) for tuberculosis (TB)
- Allows results to be accessed as patients change providers or locations
- TB elimination efforts increase need to use existing electronic systems to monitor trends in LTBI testing and treatment.

Objective

- To investigate the potential of CAIR for use as part of an LTBI surveillance system
- Describe the LTBI records currently in CAIR

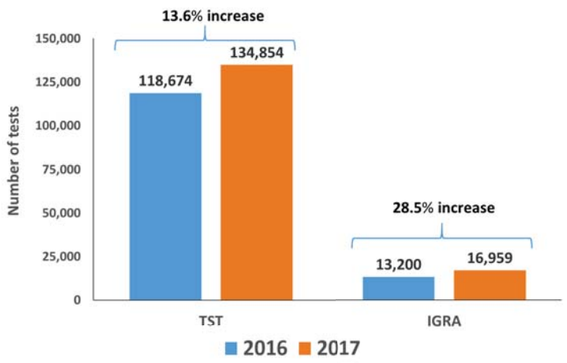
Methods

- CAIR records with data in any LTBI test field for 2016-2017 were analyzed.
- TB records were analyzed by age, test type, test result, and provider location.

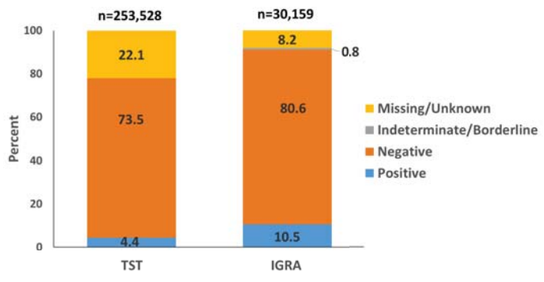
***Acknowledgments*: We thank the staff of the Immunization Control Branch of the CA Department of Public Health for providing the CAIR data, and Saul Kanowitz of TB Control Branch for assistance with data management.**

Results

Test Types by Year, 2016–2017



TST and IGRA Results, 2016–2017



Counties of Providers Reporting TB Test Results in CAIR

	n (%)
Counties with TB record in CAIR	47 (77)
TB records where Provider County = missing	140,171 (49)
Provider County reported	143,516 (51)
Los Angeles	54,107 (38)
Other Counties	89,409 (<1– 5%/county)

Test Results and Patient Characteristics, 2016–2017

	TST n (%)	IGRA n (%)
Test Characteristics		
Unique Individuals (est.)	259,293	
Total tests	253,528	30,159
IGRA Test Type		
Quantiferon		26,988 (89.5)
T-Spot		3,171 (10.5)
Test Year		
2016	118,674 (90.0)	13,200 (10.0)
2017	134,854 (88.8)	16,959 (11.2)
Test Interpretation		
Positive	11,252 (4.4)	3,154 (10.5)
Negative	186,305 (73.5)	24,308 (80.6)
Indeterminate	--	94 (0.3)
Borderline	--	139 (0.5)
Missing/Unknown	54,064 (21.3)	2,464 (8.0)
Chest Radiograph of those w/ Positive TST/IGRA		
Abnormal	39 (0.4)	59 (1.9)
Normal	2,835 (25.2)	1,699 (53.9)
Missing	8,378 (74.5)	1,396 (44.3)
Patient Characteristics		
Age, median (range)	15 (0, 96)	29 (0, 96)
Country of Birth		
United States*	250,695 (98.9)	26,181 (86.8)
Other country	2,740 (0.1)	3,970 (13.2)
Missing	93 (0.04)	8 (0.03)

***Default option in CAIR**

Test Results by Age Group, 2016–2017

	TST Positive	IGRA Positive	IGRA Indeterminate
Age Group	n (%)	n (%)	n (%)
0-4	635 (1.6)	12 (0.8)	7 (0.5)
5-14	2,345 (4.4)	184 (3.1)	15 (0.3)
15-24	2,296 (6.1)	312 (6.3)	15 (0.3)
25-44	3,215 (7.6)	1,279 (14.0)	19 (0.6)
45-64	2,362 (10.7)	1,094 (22.0)	30 (0.6)
65+	396 (10.8)	279 (27.2)	8 (0.8)

Conclusion

- CAIR was widely used to report a large volume of LTBI results including for adults.
- Improved quality of data such as country of birth, and addition of fields such as LTBI treatment and risk factors for TB will increase its utility for LTBI surveillance.
- Additional information on provider location will help target efforts to increase use of CAIR for LTBI reporting.

Limitations

- Missing data in some TB fields made it difficult to fully understand the utilization of CAIR by health care providers, and characteristics of the persons tested.
- Reason tested, risk factors for TB, and information on treatment were not available and limit interpretation of the data.
- Lack of information on key fields hinder assessment of the LTBI care cascade.

Next Steps

- Additional fields, including the TB risk assessment and treatment for LTBI have been proposed for inclusion in CAIR.
- Outreach to providers can increase the utility of CAIR as a reporting mechanism for LTBI electronic reporting.
- Investigate test practices for persons with >1 test: multiple TSTs, IGRA after TST, etc.

For more information, please contact:
janice.westenhouse@cdph.ca.gov