

BACKGROUND

Mycobacterium tuberculosis (*M. tb*)

- TB is a chronic bacterial airborne infection caused by *M. tb* complex
- In Connecticut (CT), the number of TB cases increased by 16.7% and the incidence went from 1.7 to 1.9 per 100,000 persons from 2014–2015

Laboratory proficiency

- Laboratories performing microscopy of acid-fast bacilli (AFB) and examination of less than 15 AFB smears or processing and culturing less than 20 clinical specimens per week for *M. tb* should preferably send clinical specimens to the state Public Health Laboratory (PHL)¹

Laboratory reporting – CT

- Report evidence of TB to the Department of Public Health (DPH) and local health department
- Report positive AFB smear, nucleic acid amplification test (NAAT) or culture results
- Send TB isolates to the PHL

OBJECTIVES

- Determine volume of testing & staffing
- Assess type of tests used for TB diagnosis
- Examine patterns of referral for testing to the PHL or to other labs
- Evaluate laboratories' reporting practices
- Compare results to a 2008 similar survey

METHODS

- October 2015** – sent electronic survey
 - Modified version from one sent in 2008
 - Sent to 30 hospital & commercial laboratories, and the PHL
 - Collection ended November 2015
- Data completeness:** 100% response rate

RESULTS

Table 1. *Mycobacterium tuberculosis* testing services, January 2014–June 2015

Type of test	Hospital/ Commercial (N=23) (%)
Interferon-gamma release assay	
Perform	6/30 (20)
Plan to perform	3/24 (12)
Nucleic Acid Amplification	
Yes	8/23 (34.8)
No	15/23 (65.2)
Send to the PHL	12/15 (80)
Send to other lab	3/15 (20)
Culture for <i>M. tuberculosis</i>	
Yes	14/23(60.9)
No	9/23 (39.1)
Send to the PHL	7/9 (77.8)
Send to other lab	2/9 (22.2)
Identification of acid-fast isolates	
Yes	8/14 (57.1)
No	6/14 (42.9)
Send to the PHL	5/6 (83.3)
Send to other lab	1/6 (16.7)
First-line drug susceptibility	
Yes	3/8 (37.5)
No	5/8 (62.5)
Send to the PHL	5/5 (100)

Figure. Pulmonary specimens processed for AFB, January 2014–June 2015

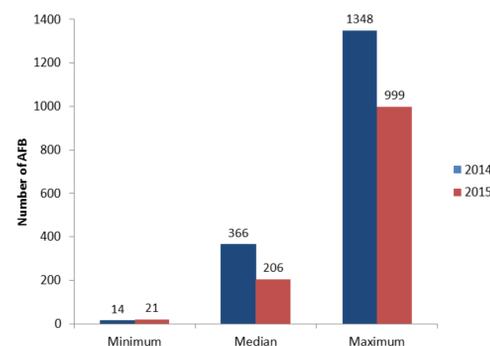


Table 2. AFB smear positive pulmonary specimens

	2014	January–June 2015
Median (range)	6 (0–350)	4 (0–175)

Table 3. Number of fulltime and rotational laboratory analysts, January 2014–June 2015

	Median (range)
Fulltime analyst	4 (0–10)
Rotational analyst	2 (0–15)

- 3 (13%) laboratories did not report findings to DPH when they referred clinical specimens to another laboratory

- Comparison of 28 labs for each survey
- Excluded 6 labs from further analysis
 - Did not participate in both survey years
 - 3 from 2008 survey, 3 from 2015 survey

Table 4. Comparison of *Mycobacterium tuberculosis* testing services, 2008 and 2015 surveys

Type of test	Survey year	
	2008 (N=28) (%)	2015 (N=28) (%)
Interferon-gamma release assay		
Perform	2/23 (8.7)	4/28 (14.3)
Missing	5/28 (17.9)	0
Plan to perform	4/18 (22.2)	3/24 (12.5)
Missing	10/28 (35.7)	0
Nucleic acid amplification		
Yes	4/17 (23.5)	6/21 (28.6)
Missing	9/26 (34.6)	0
No	13/17 (76.5)	15/21 (71.4)
Send to the PHL	6/10 (60)	12/15 (80)
Send to other lab	4/10 (40)	3/15 (20)
Missing	3/13 (23.1)	0
Culture for <i>M. tuberculosis</i>		
Yes	15/26 (57.7)	13/21 (61.9)
No	11/26 (42.3)	8/21 (38.1)
Send to the PHL	7/9 (77.8)	7/8 (87.5)
Send to other lab	2/9 (22.2)	1/8 (12.5)
Missing	2/11 (18.2)	0
Identification of acid-fast isolates		
Yes	7/15 (46.7)	7/13 (53.8)
No	8/15 (53.3)	6/13 (46.2)
Send to the PHL	7/8 (87.5)	5/6 (83.3)
Send to other lab	1/8 (12.5)	1/6 (16.7)

CONCLUSIONS

- The majority of labs processed or tested specimens for TB, but more specialized testing was performed at only at a few labs
- Timeliness of reporting was identified as a potential area for improvement
- More labs performed IGRA, NAAT, culture, and identified acid-fast isolates in 2015 when compared to 2008 data
- Labs sending clinical specimens to an outside laboratory referred specimens to the PHL more frequently in 2015

RECOMMENDATIONS

- Labs should always report evidence of TB disease to DPH
- Labs should preferably refer clinical specimens to the PHL for specialized testing or if they cannot maintain proficiency
- Labs should consider contacting the DPH and the PHL if technical assistance is needed

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REFERENCES

- Association of Public Health Laboratories. *Mycobacterium tuberculosis*: Assessing your laboratory, 2013.

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