



Infectious Disease Epidemiology Report



Tuberculosis, 2016

Background

Tuberculosis (TB) is caused by the bacteria *Mycobacterium tuberculosis*. The bacteria are spread through the air by droplets when a person with infectious TB coughs, talks, sings, or sneezes. Tuberculosis is only infectious when the disease is in the lungs (pulmonary) or larynx. Extrapulmonary disease occurs outside of the lungs or larynx and is not infectious. Latent tuberculosis infection (LTBI) occurs when the body's immune system keeps the bacteria under control and inactive, so that disease does not develop. Individuals with LTBI are not symptomatic and not infectious to others.

Methods

Two tests are available to screen for tuberculosis. The TB skin test, called the tuberculin skin test (TST), has been used for many years. A newer blood test called interferon gamma release assay (IGRA) is also available. Neither test differentiates between latent or active TB. All positive results require additional evaluation.

Maine monitors the incidence of active TB through mandatory reporting by health care providers, clinical laboratories, and other public health partners. Although not reportable, Maine also monitors LTBI diagnoses.

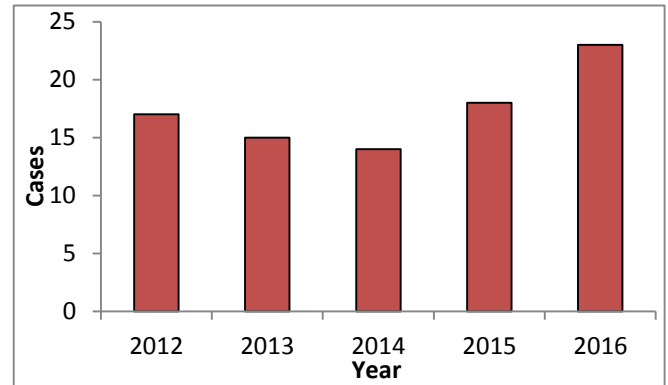
All TB patients in Maine are evaluated by a healthcare provider in consultation with a TB consultant physician and receive case management services and directly observed therapy (DOT) by a Public Health Nurse (PHN). Maine's TB Control Program routinely reviews case management with PHN and the Medical Epidemiologist. The cases are also reviewed with TB Consultants at quarterly meetings.

A patient with confirmed TB must meet either clinical criteria or be laboratory confirmed with one of the following tests: isolation of *M. tuberculosis*; demonstration of *M. tuberculosis* by polymerase chain reaction (PCR); or demonstration of acid-fast bacilli when a culture has not been or cannot be obtained. Positive cultures for *M. tuberculosis* complex are tested for drug resistance.

Results

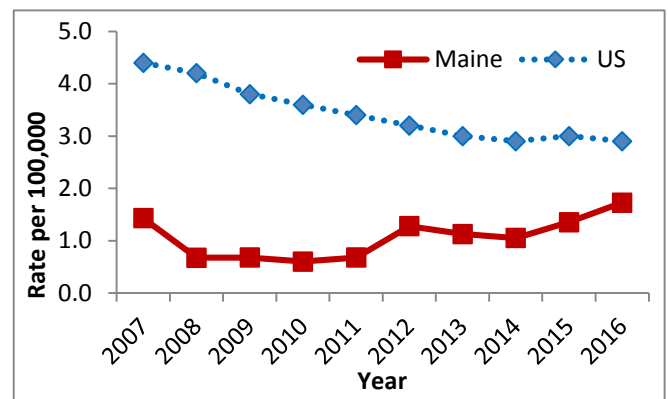
A total of 23 confirmed patients with active TB disease were reported in 2016 (Figure 1). Of these, two were resistant to isoniazid and one was resistant to pyrazinamide.

Figure 1. Number of Tuberculosis Cases by Year, Maine, 2012-2016



The incidence rate of TB in Maine in 2016, 1.7 cases per 100,000 persons, was less than the national rate of 2.9 (Figure 2). Nationwide, the case rate decreased from 2015 by 3.3%.

Figure 2. Incidence of Tuberculosis, Maine and United States, 2007-2016



The average age of TB cases was 45 years (range 20 - 86 years). Cases resided in five counties, Androscoggin (10), Aroostook (1) Cumberland (8), Hancock (1), Kennebec (1), and York (2).

Table 1. Clinical characteristics of TB Cases, Maine, 2015*

	Cases (%)
Pulmonary	16 (70)
Extrapulmonary	3 (13)
Both pulmonary and extrapulmonary	4 (17)
Tuberculin skin test (TST)	
--Positive TST	6
--Negative TST	3
IGRA	
--Positive IGRA	9
--Negative IGRA	1
--Indeterminate IGRA	2
Pulmonary involvement* (N = 19)	
Abnormal chest x-ray or CT scan	19 (100)
Positive sputum culture	6 (67)
Positive sputum acid fast bacilli (AFB) smear	4 (44)
Positive bronchial fluid culture	1 (11)
Clinical definition only	2 (22)

Table 2. Characteristics and Risk Factors for TB Cases, Maine, 2015

	Cases (%)
Demographics	
Male	7 (30)
Female	16 (70)
Ethnicity	
Hispanic	1 (4)
Non-Hispanic	22 (96)
Race	
Asian	5 (22)
Black or African American	11 (48)
White	7 (30)
Country of origin	
U.S.	4 (17)
Foreign-born	19(83)
--In US <1 year before diagnosis	10
Risk Factors*	
Resident of long term care facility at time of diagnosis	0 (0)
Injected drug use in past year	0 (0)
Non-injected drug use in past year	1 (4)
Excess alcohol use within past year	1 (4)
Homeless within past year	2 (11)
HIV status known	19 (83)
--HIV co-infection	3
Incomplete LTBI therapy	2 (9)
Contact of infectious TB case	3 (13)
Diabetes mellitus	2 (9)

*Patients can have multiple characteristics

Sites of disease for extrapulmonary cases included bone marrow, cerebral spinal fluid, eye, lymph node, and pancreas.

There were seventeen contact investigations in 2016. A total of 616 contacts were identified, 505 (82%) were fully evaluated. Fifty-one individuals were newly identified with LTBI, and 38 (75%) started treatment. One individual was diagnosed with active tuberculosis.

In 2016, Maine received 551 reports of persons with LTBI. 50 (9%) were contacts to infectious TB patients; 48 (9%) lived in a congregate setting. 478 (87%) were treated with isoniazid.

Discussion

After a one year increase, the incidence of TB nationwide has begun to decrease once again. Maine has continued to see an increase in cases, reaching a 13-year high.

Early identification, reporting, prevention, and targeted education about TB, as well as detection and treatment of LTBI, are necessary to prevent the spread of disease. The evaluation and treatment of TB disease is more costly than LTBI treatment.

All suspected or confirmed cases of active TB must be reported immediately to the Tuberculosis Control Program at Maine CDC by calling 1-800-821-5821. Reporting of LTBI cases is encouraged. The state Health and Environmental Testing Laboratory (HETL) provides all confirmatory TB testing for the state.

Additional information about tuberculosis is available at:

- Maine CDC: www.maine.gov/idepi
- Federal CDC: <http://www.cdc.gov/tb/>
- World Health Organization: <http://www.who.int/tb/en/>