



Infectious Disease Epidemiology Report

Tuberculosis, 2014



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.

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.

Methods

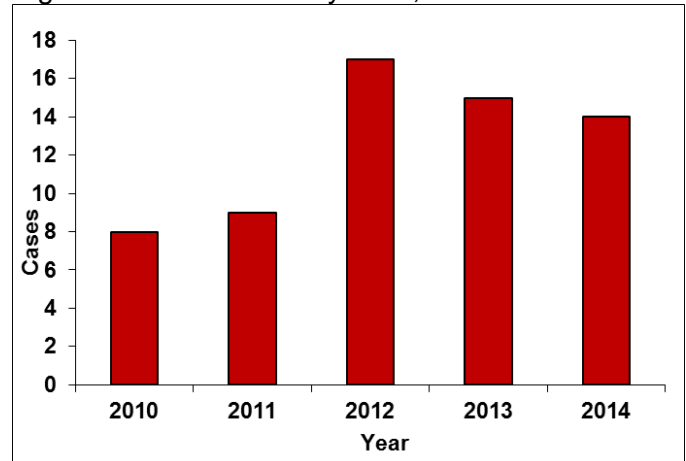
All TB cases in Maine are evaluated by a healthcare provider in consultation with a TB consultant physician; and receive case management services and directly observed therapy (DOT) by a Public Health Nurse (PHN). The TB Control Program coordinates TB clinic visits and routinely reviews case management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

A confirmed case of 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.

Results

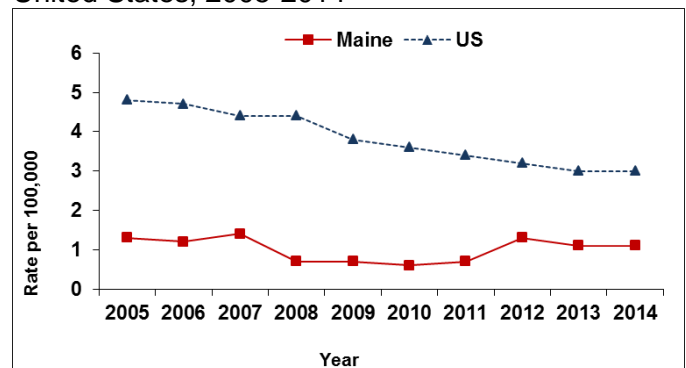
A total of 14 confirmed cases of TB were reported in 2014 (Figure 1). No cases of multi-drug resistant (MDR) TB or extensively drug resistant (XDR) TB were reported in Maine in 2014. Three cases were resistant to Isoniazid.

Figure 1. Tuberculosis by Year, Maine 2010-2014



The incidence rate of TB in Maine in 2014, 1.1 cases per 100,000 population, is less than the national rate of 3.0 (Figure 2). Nationwide, the case rate decreased from 2013 by 2.2%.

Figure 2. Incidence of Tuberculosis, Maine and United States, 2005-2014



The median age of TB cases was 38 years (range 6 - 79 years). Cases resided in five counties, Androscoggin (4), Cumberland (5), Hancock (1), Kennebec (1), and York (3).

Table 1. Clinical characteristics of TB Cases, Maine, 2014*

	Cases (%)
Pulmonary	8 (57)
Extrapulmonary	6 (43)
Both pulmonary and extrapulmonary	0 (0)
Tuberculin skin test (TST)	
--Positive TST	8
--Negative TST	3
IGRA	
--Positive IGRA	5
--Negative IGRA	1
Pulmonary cases* (N = 8)	
Abnormal chest x-ray or CT scan	8 (100)
Positive sputum culture	5 (63)
Positive sputum acid fast bacilli (AFB) smear	2 (25)
Positive bronchial fluid culture	2 (25)
Clinical definition only	2 (25)

*Patients can have multiple characteristics

Table 2. Characteristics and Risk Factors for TB Cases, Maine, 2014

	Cases (%)
Demographics	
Male	8 (57)
Female	6 (43)
Ethnicity	
Hispanic	1 (7)
Non-Hispanic	13 (93)
Race	
Asian	4 (29)
Black or African American	7 (50)
White	3 (21)
Country of origin	
U.S.	1 (7)
Foreign-born	13 (93)
In US <1 year before diagnosis	4
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	0 (0)
Excess alcohol use within past year	1 (13)
Homeless within past year	2 (25)
HIV status known	13 (93)
Incomplete LTBI therapy	3 (21)
Contact of infectious TB case	1 (7)
Diabetes mellitus	0 (0)

Sites of disease for extrapulmonary cases included four lymphatic cervical, one pleural and one case with both breast and pleural TB.

There were eight contact investigations in 2014. A total of 407 contacts were identified, 290 (71%) were evaluated. Twenty-three individuals were identified with LTBI, and 17 (74%) started treatment. One pulmonary case (both sputum smear and culture positive) attended a community college while symptomatic. Clinics were held at the school for evaluation and testing. Of the 298 contacts identified, 184 (62%) were evaluated. Seven were diagnosed with LTBI; six started therapy and four completed therapy.

In 2014, Maine received 555 reports of persons with LTBI. Eighty-eight percent of LTBI cases were diagnosed among persons who are foreign-born.

Discussion

Nationwide, the incidence of TB continues to decrease each year. In Portland, collaboration between the Tuberculosis Control Program, Public Health Nursing and homeless shelters provides TB screening. There have been two outbreaks of TB in Maine among the homeless population in the past ten years. The Public Health Nursing program continues to screen all newly arriving primary refugees for TB to facilitate case finding and treatment initiation and completion.

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/>