Annual Tuberculosis Report
Oregon 2011

Oregon Health Authority
Public Health Division
TB Program
November 2012

Oregon Health Authority

Table of Contents

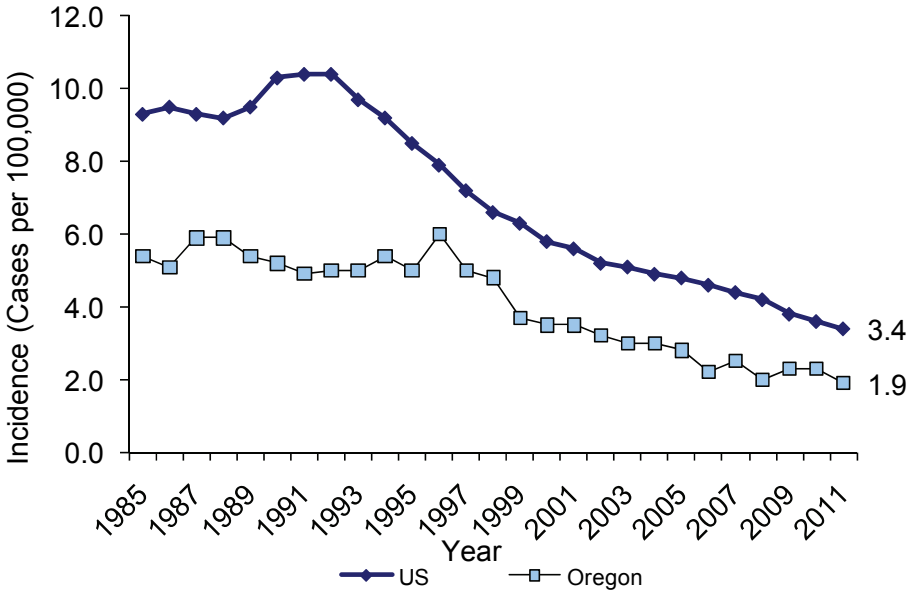
Charts

Tuberculosis incidence

Tuberculosis (TB) disease incidence has been dropping, both nationally and in Oregon, for over a decade. National rates continued to decline, reaching a low of 3.4 cases per 100,000 persons in 2011. Oregon's 2011 TB disease rate also decreased to its lowest point, at 1.9 cases per 100,000 persons.

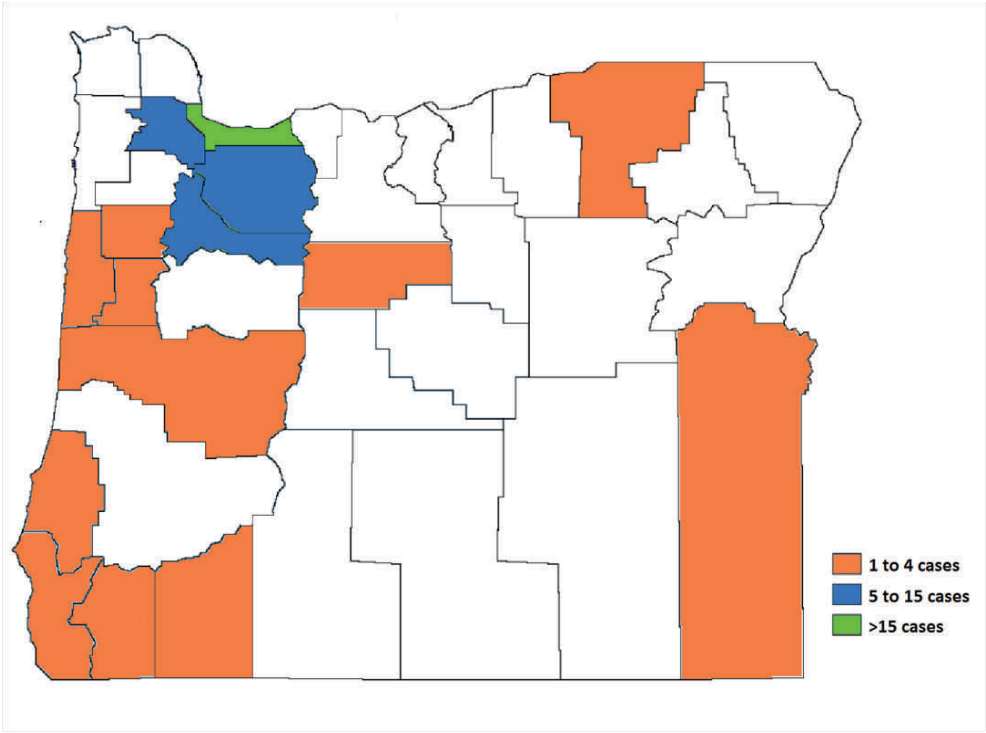
There were 74 cases in Oregon in 2011, compared to 87 cases in 2010.

Chart 1. TB Incidence in the US and Oregon, 1985-2011



Tuberculosis cases by county

Chart 2. TB Cases by County, Oregon 2011



The majority of Oregon's TB disease cases in 2011 were from Multnomah, Washington, Clackamas and Marion counties.

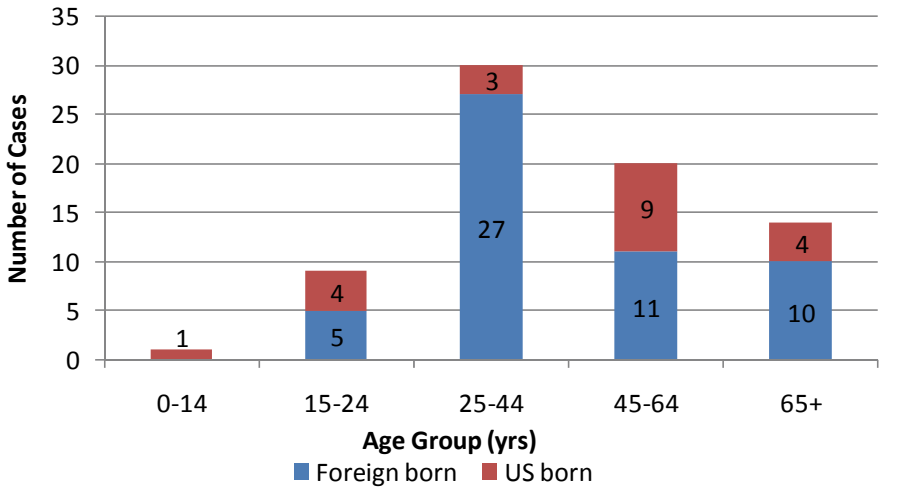
During 2011, 74 cases of TB disease were reported in Oregon. The four counties with the most cases were Multnomah (n=27), Washington (n=14), Clackamas (n=9), and Marion (n=8). Overall, fifteen counties reported at least one TB case in 2011.

Tuberculosis by age group

In 2011, most TB disease cases occurred in adults 25 years of age or older. The 25-44 year old age group contained the largest percentage of cases (41%), with 30 cases. The mean age was 44.7 years (range of 12-88 years) and median case age was 41.5 years.

There was one case of pediatric TB disease reported in 2011 in a US-born child. The percentage of adult foreign-born cases was highest among 25-44 year olds (90%).

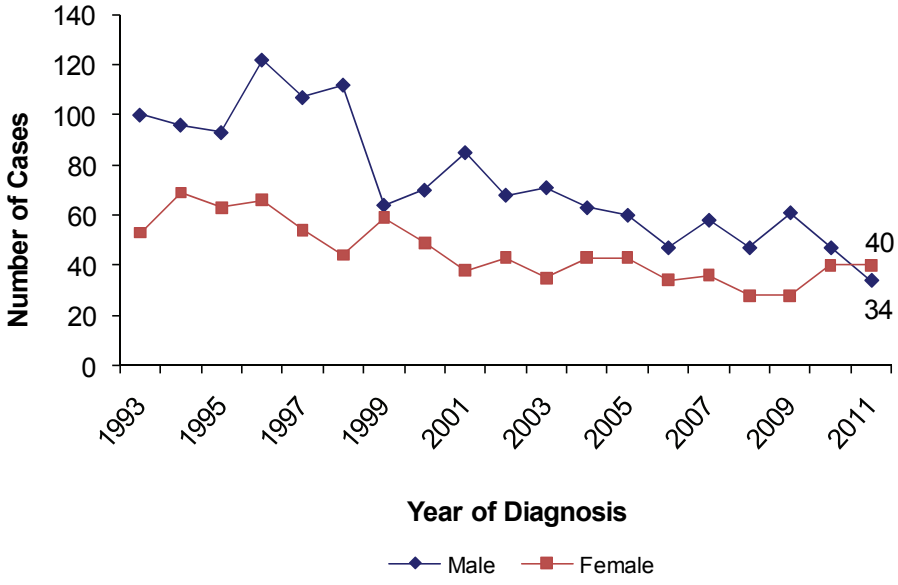
Chart 3. Number of TB Cases by Age Group and Foreign-born, Oregon 2011



Tuberculosis by sex

TB disease incidence historically has been higher among males than females. Possible reasons for this finding may include differences in access to care, underlying susceptibility to TB, or distribution of TB risk factors, such as homelessness and substance abuse. However, in 2011, females comprised 54% (n=40) of all TB cases in Oregon.

Chart 4. Number of TB Cases by Sex, Oregon 1993-2011



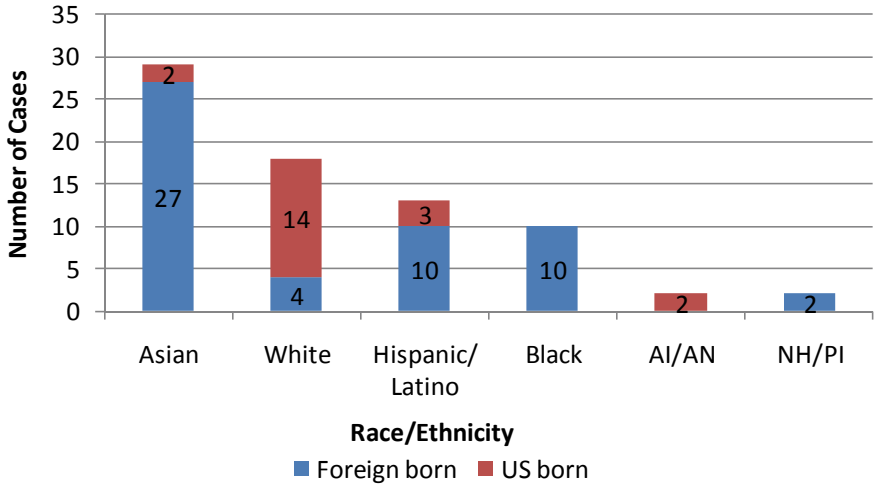
TB disease incidence is usually higher among males than females; in 2011, more cases were diagnosed in women.

Tuberculosis by race/ethnicity

During 2011, 29 cases (39%) of TB disease occurred among people self-identifying as Asian. Eighteen cases were reported among non-Hispanic whites (24%), while 10 cases identified as non-Hispanic black (14%). Two cases identified as Pacific Islander (NH/PI=Native Hawaiian/Pacific Islander), and two cases identified as American Indian (AI/AN=American Indian/Alaska Native). Hispanic or Latino ethnicity was reported for 13 cases (18%), regardless of race.

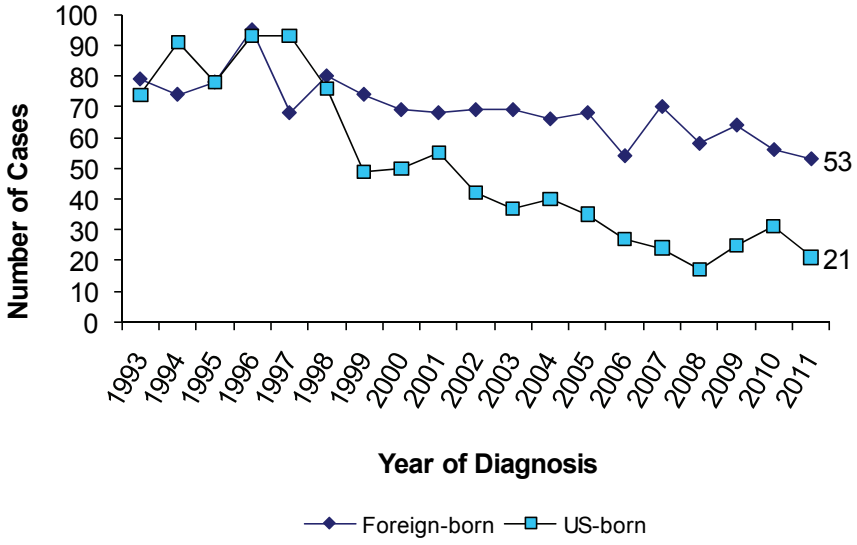
Chart 5. Number of TB Cases by Race/Ethnicity, Oregon 2011

The percentage of foreign-born cases varied by race/ethnicity. All AI/AN and most non-Hispanic white cases listed the United States as their country of birth. Most, but not all, of the remaining cases in other race/ethnicity groupings were born outside of the United States.



TB cases by place of origin

Chart 6. Number of TB Cases in Foreign-Born and US-Born Residents, Oregon 1993-2011



In 2011, 72% of Oregon's TB cases were among foreign-born persons.

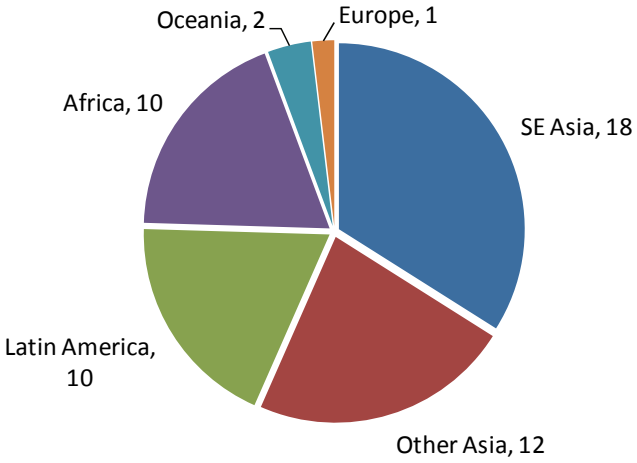
In Oregon, the number of cases among US-born persons has generally decreased over time. 2008 marked the lowest number of US-born cases (n=17). Since 2008, percentages of TB cases among foreign-born persons has ranged from 64% to 77%. In 2011, 53 cases (72%) were among foreign-born persons.

Tuberculosis by region of birth

Chart 7. Percentage of Foreign-Born Cases by Region of Birth, Oregon 2011

In 2011, 72% of Oregon's TB disease cases were reported to be foreign-born (n=53).

- In 2011, 57% (n=30) of foreign-born cases were from Asia, an increase from past years (in 2010, 41% (n=23) of foreign-born cases were from Asia, similar to 2009 (42%, n=27)). Cases born in SE Asia included ten cases from Vietnam, four from the Philippines, and one each from Cambodia, Laos, Myanmar and Thailand. Other Asian-born cases included six from China, and one each from Armenia, Bhutan, India, South Korea, Pakistan, and Turkmenistan.



- There were fewer cases from Latin America in 2011 (19%, n=10) compared to 2010 (29%, n=16) and 2009 (42%, n=27) This included seven cases from Mexico, and one each from Guatemala, El Salvador, and Puerto Rico.

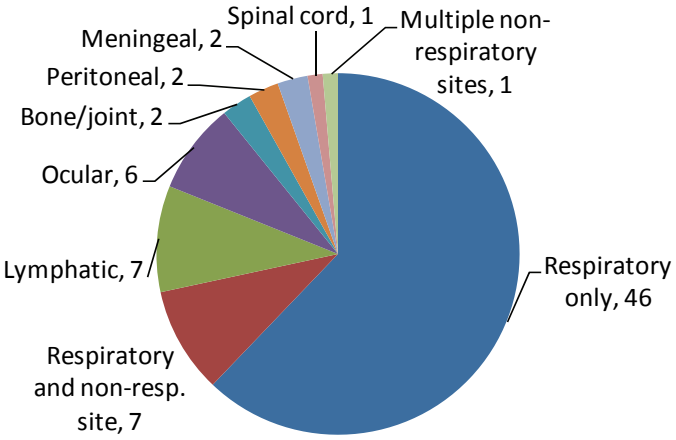
- Ten cases were from Africa (19%), similar to 2010 (20%, n=11), and an increase from 2009 (8%, n=5). Cases born in Africa came from Somalia (n=4), Ethiopia (n=3), Niger (n=1), Rwanda (n=1) and Zimbabwe (n=1).

- One case was originally from Europe (Romania).

- Two cases were from the Pacific Islands; one was from the Marshall Islands, and one was from Micronesia.

Tuberculosis cases by major site of disease

Chart 8. Reported Major Site of Disease, Oregon 2011

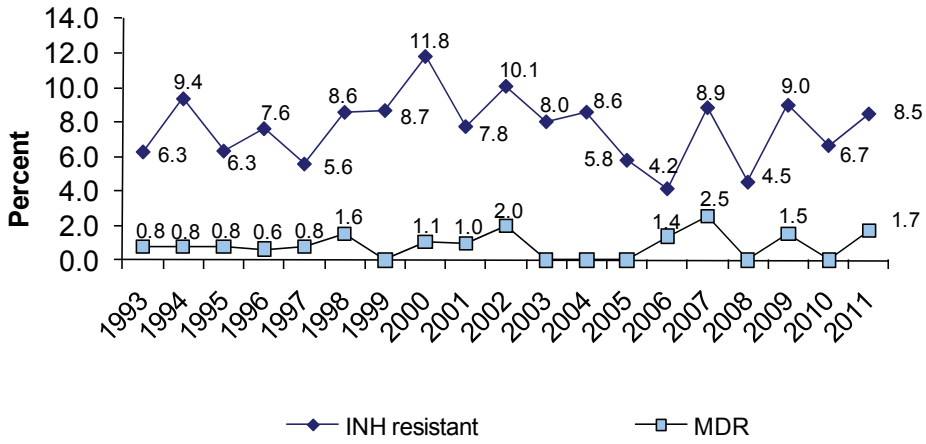


In 2011, 46 (62%) of Oregon's 74 TB disease cases reported a respiratory site of disease only (this includes any combination of pulmonary, pleural, or laryngeal disease). Another 7 cases (9%) had both respiratory and non-respiratory sites of disease. There were 7 lymphatic cases (9%) and 6 cases that had ocular TB (8%).

Among the 53 cases with any type of respiratory involvement, 27 (51%) were sputum-smear positive. Sputum-smear positivity as well as cavitation on chest x-ray are strong indicators of infectiousness; 11 of the 74 cases (15%) had chest x-rays read as cavitary (all pulmonary cases).

Drug resistance and TB

Chart 9. INH Drug Resistance and MDR Levels , Oregon 1993-2011



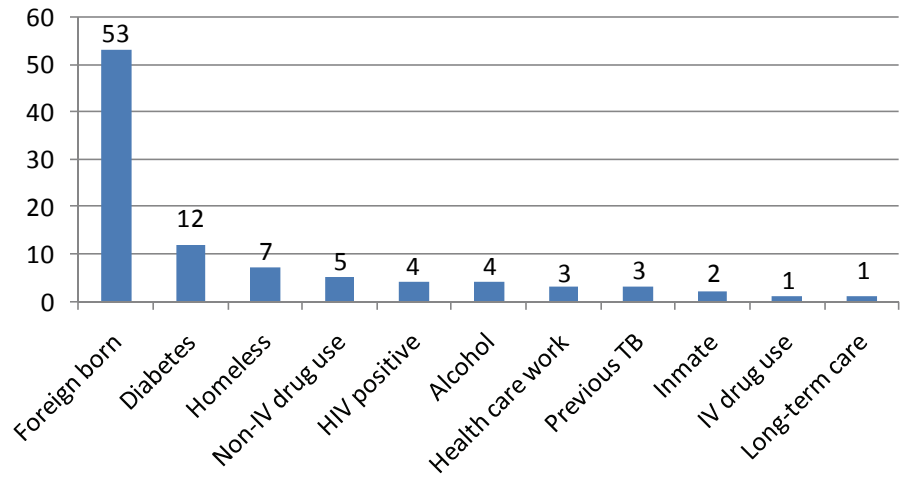
Isoniazid (INH) drug resistance levels in Oregon TB disease cases have ranged from 4% to 12% over time. In 2011, 8.5% of cases for whom susceptibility testing was performed were resistant to INH (5 of 59 cases with drug susceptibility testing results*). The US average is similar, at 9.5% (2011 data**).

Since 1993, only 16 cases of multi-drug resistant TB disease (MDR TB, or TB that is resistant to at least both INH and rifampin) have been reported in Oregon; 15 (94%) were among foreign-born persons. The MDR TB rate in the US was 1.6% in 2011**, similar to Oregon's rate. One MDR case was reported in Oregon in 2011 (1.7%).

*INH and MDR resistance numbers are not mutually exclusive
**http://www.cdc.gov/tb/statistics/reports/2011/table36.htm

Risk factors and tuberculosis disease

Chart 10. Risk factors for TB Disease, Oregon 2010

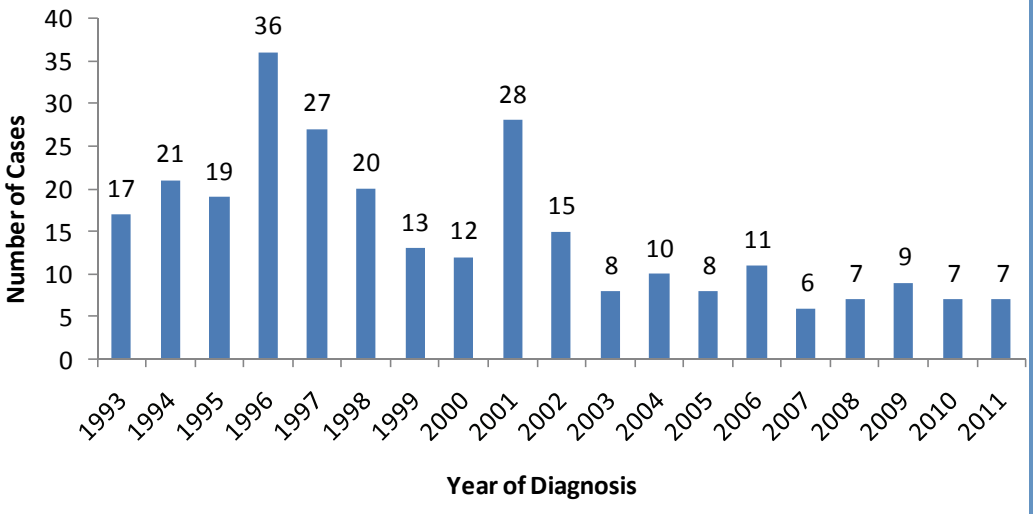


The most prevalent risk factor among Oregon's TB disease cases is foreign birth.

In 2011, the most common risk factor among Oregon's TB disease cases remained foreign-born status, found in 72% of all cases (n=53). Twelve cases reported diabetes as a medical risk factor (16%). About 9% of cases were homeless, while 7% reported non IV drug use in the year prior to diagnosis. Four cases were HIV positive (5%), and four reported excess alcohol use. Three cases had a previous diagnosis of TB, and three cases worked in a health care setting. Two cases were incarcerated at diagnosis. One was diagnosed in a long term care facility, and one reported IV drug use. Risks are not mutually exclusive.

Tuberculosis in the homeless

Chart 11. Number of Homeless Cases, Oregon 1993-2011



Overall, the number of Oregon TB disease cases among the homeless has been decreasing. In 2011, 7 cases (9% of all cases) reported homelessness in the year prior to diagnosis.

A spike in the number of homeless cases occurred in 2001, due to a homeless shelter outbreak in Lane County; 18 of the 28 homeless cases that year were from Lane County. Cases with the 2001 Lane County outbreak strain continue to arise sporadically. Genotyping has confirmed that one of the seven homeless cases in 2011 is a likely match to this outbreak strain.

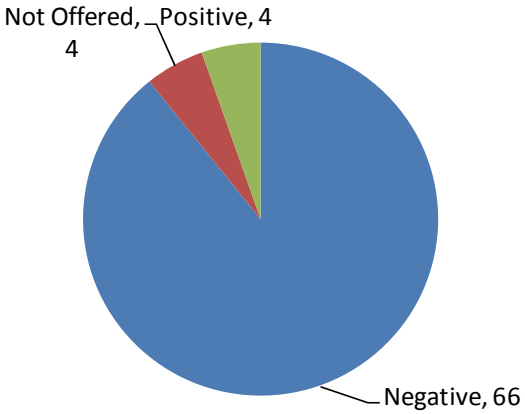
HIV and tuberculosis

HIV status was obtained for 70 of the 74 (95%) TB disease cases reported in Oregon in 2011. Four cases (5%) were HIV positive, which is slightly below the estimated national rate for TB/HIV coinfection (6% in 2011*).

HIV status was not obtained for four individuals. Included among those not offered testing were three hospitalized cases that were deceased shortly after TB diagnosis, and one not offered a test by a provider.

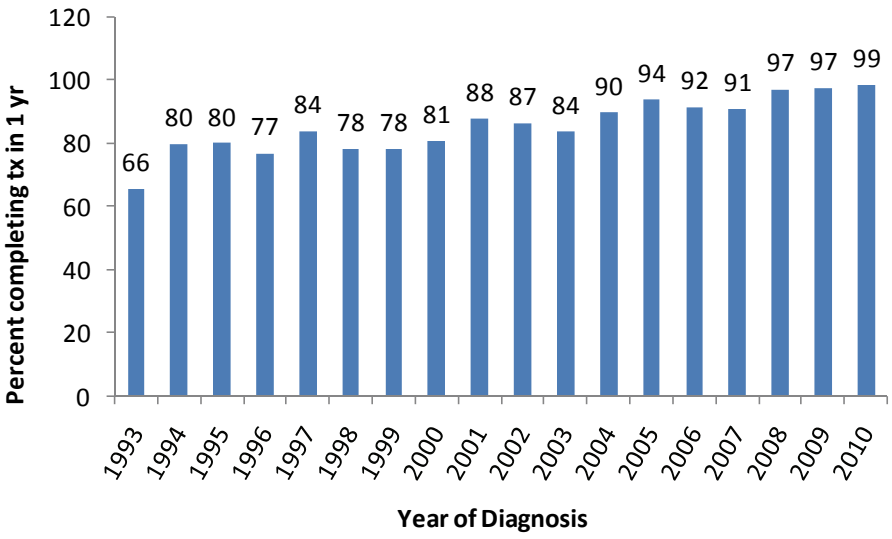
*http://www.cdc.gov/tb/statistics/reports/2011/table12.htm

Chart 12. TB Cases by HIV Status, Oregon 2011



Completion of TB treatment

Chart 13. Percent Completion of Treatment within 1 Year for Eligible Cases, Oregon 1993-20010



In 2009, 97% of eligible cases completed treatment within one year. In 2010, 99% of eligible cases* completed treatment within one year (2010 data are provisional).

Patients who died before starting or during treatment were excluded from the calculation. Patients with resistance to rifampin, patients with meningeal TB (regardless of age) and children under the age of 15 with disseminated TB (defined as miliary and/or positive blood culture), were also excluded due to expected longer duration of treatment. Patients moving out of the country while on treatment are now also excluded from the calculation.

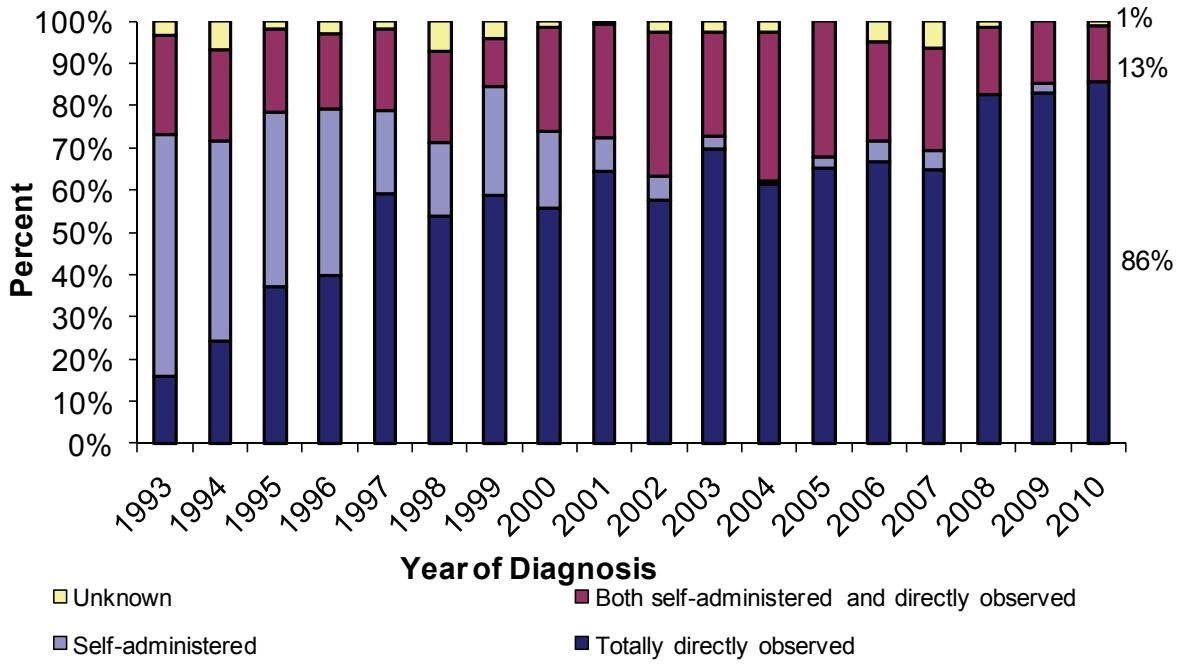
*Patients included in the chart above are patients for whom less than one year of treatment was clinically indicated.

Delivery of TB Therapy

Directly observed therapy, or DOT, is the standard of care in Oregon for treatment of TB. The use of self-administered therapy alone for treatment of TB disease has decreased since 1993, dropping from 47% to 0% in 2010. Use of directly observed therapy has increased over the years.

In 2010, 86% (n=71) of all cases starting therapy (n=83) received full DOT, and another 13% (n=11) received a combination of both DOT and self-administered therapy. One case is marked unknown, as treatment completion is still pending. This is preliminary data, and will be updated next year.

Chart 14. Mode of TB Therapy, Oregon 1993-2010



Technical Notes:

The data presented in this report come from Oregon's Tuberculosis Information Management System (TIMS, data through 2008) and the Oregon Public Health Epi User System (Orpheus, data collected starting in 2009). Data are as of November 2012.

Percentages may not sum to 100 due to rounding.

Age is calculated based on date case is reported to the local health department.

Surveillance Case Definition for Oregon:

1. **Laboratory Case Definition**
   a. Isolation of M. Tuberculosis Complex from a culture of a clinical specimen, using an FDA approved test
   or
   b. Demonstration of M. Tuberculosis from a clinical specimen using FDA approved Nucleic Acid Amplification Test (NAAT) (a positive test means that the probe detected ribosomal RNA of the M. tuberculosis complex in the clinical specimen)
      i. Genprobe® MTD (Mycobacterium Direct Test) of respiratory specimen
      ii. Amplicor® Mycobacterium Tuberculosis Test of respiratory specimen
2. **Clinical Case Definition***
   a. Full diagnostic evaluation
      i. Tuberculin Skin Test (TST) or Interferon Gamma Release Assay (IGRA) test
      ii. Chest X-ray/imaging
      iii. Clinical specimens for culture/NAAT
      iv. Risk factor evaluation: host factors (e.g. documented immunosuppression) and environmental factors (e.g. contact to an active case, born in a country with endemic TB, travel to endemic country)

   and
   b. Lab test indicative of infection
      i. Positive TST **and/or**
      ii. Positive IGRA or
      iii. Negative TST or IGRA with reason for not positive (immunosupression)

   and
   c. Signs or symptoms compatible with TB disease
   and
   d. Improvement of signs or symptoms after treatment with 2 or more anti-TB drugs

* Factors including pretest risk, other potential diagnoses, opportunity to improve on TB treatment, and site of disease (pulmonary vs extrapulmonary) may also considered in the decision to count a clinical case.

For more information on tuberculosis in Oregon, please visit our website at:

http://www.healthoregon.org/tb

TB Controller
Heidi Behm, RN, MPH
Heidi.Behm@state.or.us

TB Registrar
Gayle Wainwright, CMA
Gayle.Wainwright@state.or.us

TB Epidemiologist
Lindsey Lane, MPH
Lindsey.M.Lane@state.or.us

Oregon Health Authority