

# ***Annual Tuberculosis Report Oregon 2007***

Oregon Department of Human Services  
Public Health Division  
TB Program  
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## Table of Contents

### Charts

Chart 1	TB Incidence in the US and Oregon, 1985-2007.....	page 3
Chart 2	TB Cases by County, Oregon 2007.....	page 3
Chart 3	Number of TB Cases by Age Group, Oregon 2007.....	page 4
Chart 4	Number of TB Cases by Sex, Oregon 1993-2007.....	page 4
Chart 5	Number of TB Cases by Race/Ethnicity and Percent Foreign-Born, Oregon 2007.....	page 5
Chart 6	Number of TB Cases in Foreign-Born vs US-Born Residents, Oregon 1993-2007.....	page 5
Chart 7	Percentage of Foreign-Born Cases by Region of Birth, Oregon 2007.....	page 6
Chart 8	Reported Major Site of Disease, Oregon 2007.....	page 7
Chart 9	INH and MDR Drug Resistance Levels, Oregon 1993-2007.....	page 7
Chart 10	Risk Factors for TB Disease, Oregon 2007.....	page 8
Chart 11	Number and Percent of Homeless Cases, Oregon 1993-2007.....	page 8
Chart 12	TB Cases by HIV Status, Oregon 2007.....	page 10
Chart 13	Percent Completion of Treatment within 1 Year for Eligible Cases, Oregon 1993-2006...	page 10
Chart 14	Mode of TB Therapy, Oregon 1993-2006.....	page 11

### Tables

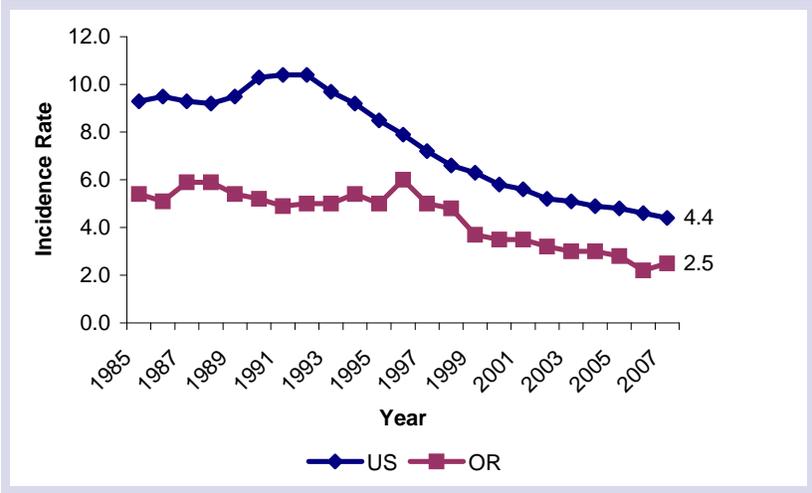
Table 1	Estimated Incidence of TB by Place of Birth, Oregon 2007.....	page 6
Table 2	TB Outbreaks in the Workplace, Oregon 2007.....	page 9

## Tuberculosis incidence

For the past decade, tuberculosis (TB) incidence has been declining in both the US and Oregon. The case rate for Oregon is consistently lower than the national rate; in 2007, Oregon's 94 cases accounted for an incidence of 2.5 per 100,000 population compared to the national of 4.4. Oregon's incidence rate increased slightly from last year's all time low of 2.2 cases per 100,000 (based on 81 cases).

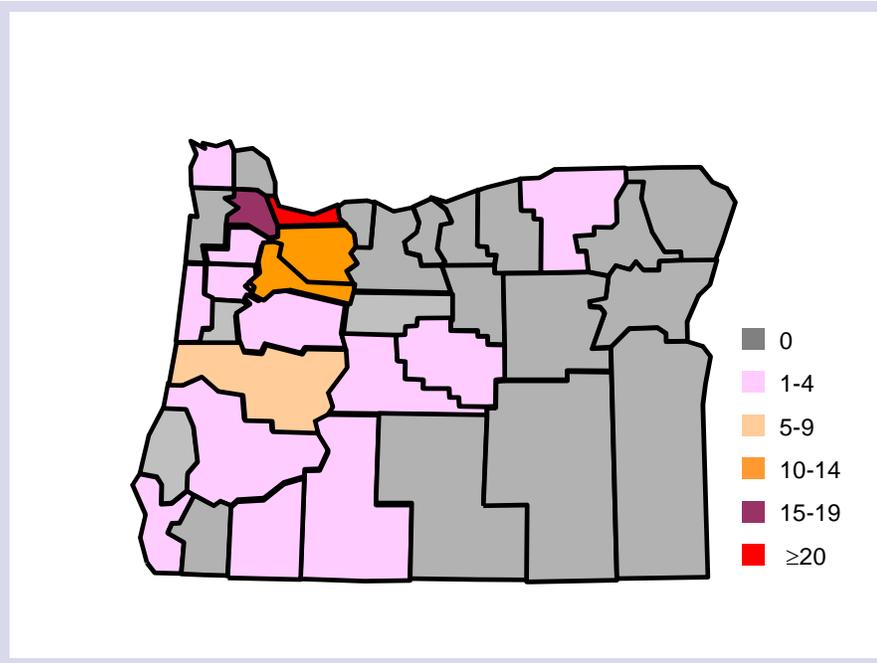
In the US, a peak in incidence occurred in the early 1990's due to a decrease in funding for TB coupled with a rise in TB cases related to the HIV epidemic. Since then the rate has been steadily declining.

**Chart 1. TB Incidence in the US and Oregon, 1985-2007**



## Tuberculosis cases by county

**Chart 2. TB Cases by County, Oregon 2007**



*The majority (61%) of Oregon's TB cases in 2007 were from the Portland Metro Counties : Multnomah, Washington, and Clackamas*

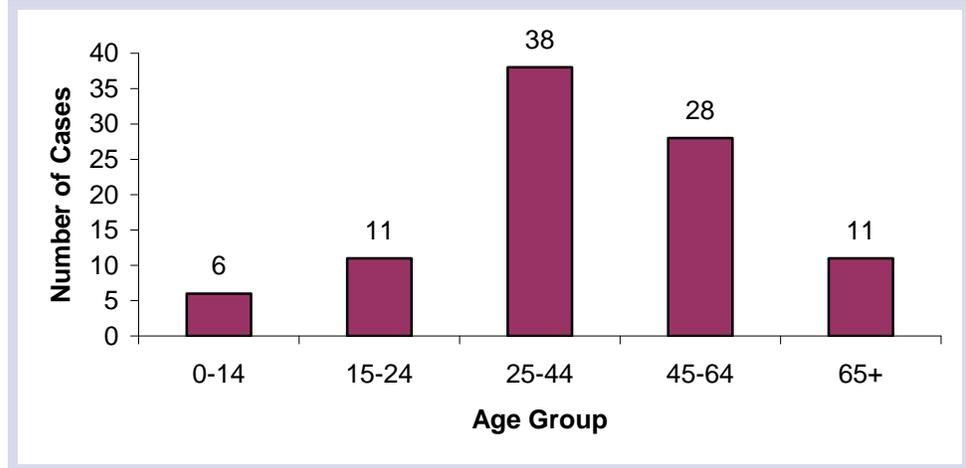
During 2007, 94 cases of TB were reported in Oregon. As in previous years, the majority of cases (61%) were from the Portland Metro counties: Multnomah (n=28), Washington (n=17), and Clackamas (n=12). Marion and Lane counties had 10 and 8 cases, respectively. Elsewhere in the state TB occurs relatively sporadically; 12 counties reported from 1 to 4 cases, while the remaining 19 counties reported 0 cases.

## Tuberculosis by age group

Chart 3. Number of TB Cases by Age Group, Oregon 2007

In 2007, most cases occurred in adults  $\geq 25$ . The 25-44 year old group represented the largest percent of cases (40%), with 38 cases. The mean and median ages were 42 and 39 respectively.

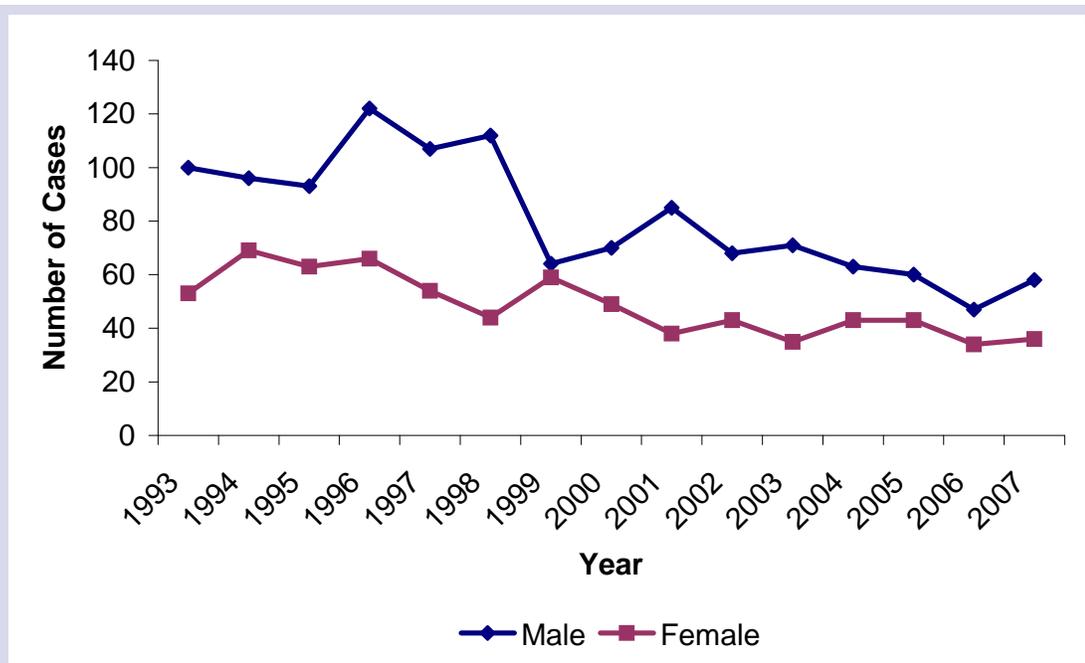
Six cases of pediatric TB were reported in 2007. Five of the 6 pediatric cases were among foreign-born children.



## Tuberculosis by sex

TB incidence historically has been higher among males than females, although this gap appears to be narrowing. In 2007, males represented 61% (n=58) of all TB cases in Oregon. The predominance of TB among males has also been seen in the US and globally. This finding may be due to differences in access to care, underlying susceptibility to TB, or distribution of TB risk factors, such as homelessness and substance abuse.

Chart 4. Number of TB Cases by Sex, Oregon 1993-2007

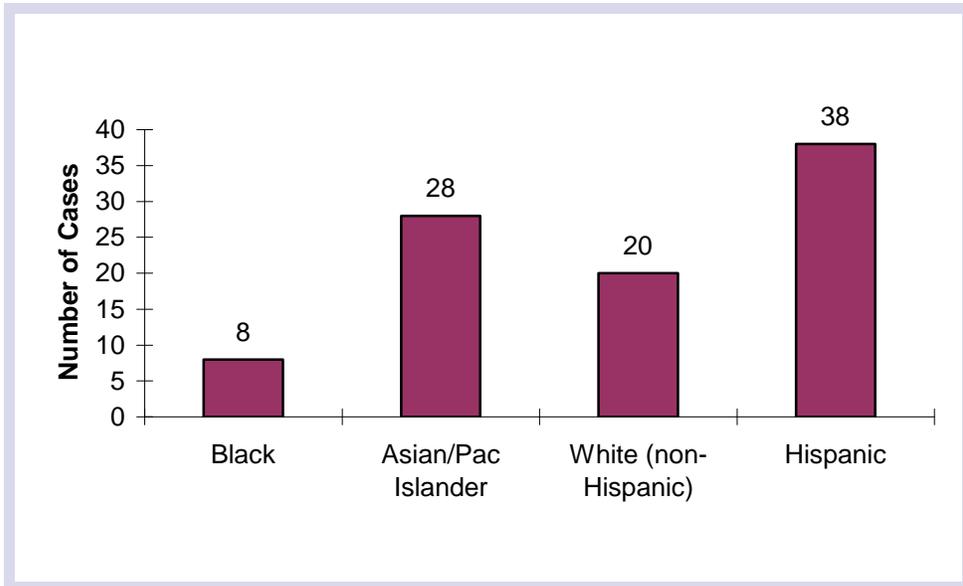


*TB incidence is higher among males than females*

## Tuberculosis by race/ethnicity

During 2007, the highest number of TB cases was seen among Hispanics (of any race), with 38 of the 94 cases reporting Hispanic ethnicity (39%). Asian/Pacific Islanders represented the second highest proportion of TB cases, at 30% (28/94). Twenty cases of TB were reported among whites, and only 8 cases were reported among blacks. Percent foreign-born varied by race/ethnicity. Cases among whites were predominantly US-born,

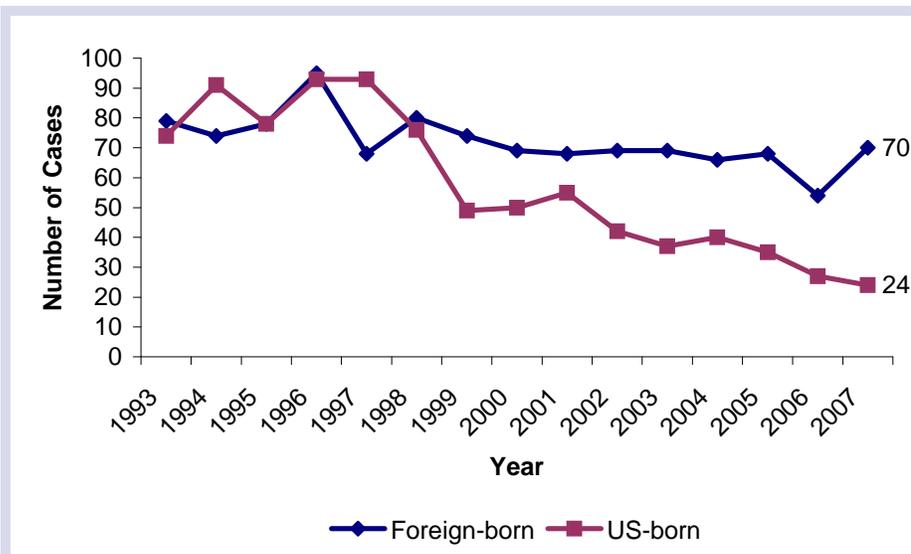
**Chart 5. Number of TB Cases by Race/Ethnicity, Oregon 2007**



whereas cases among the other racial/ethnic groups were predominately foreign-born. In fact, every case in the Asian/Pacific Islander group was foreign-born, and most among the Hispanic racial/ethnic group were foreign-born( 87%); 63% of blacks and 20 % of whites were foreign-born.

## TB cases by place of origin

**Chart 6. Number of TB Cases in Foreign-Born vs US-Born Residents, Oregon 1993-2007**

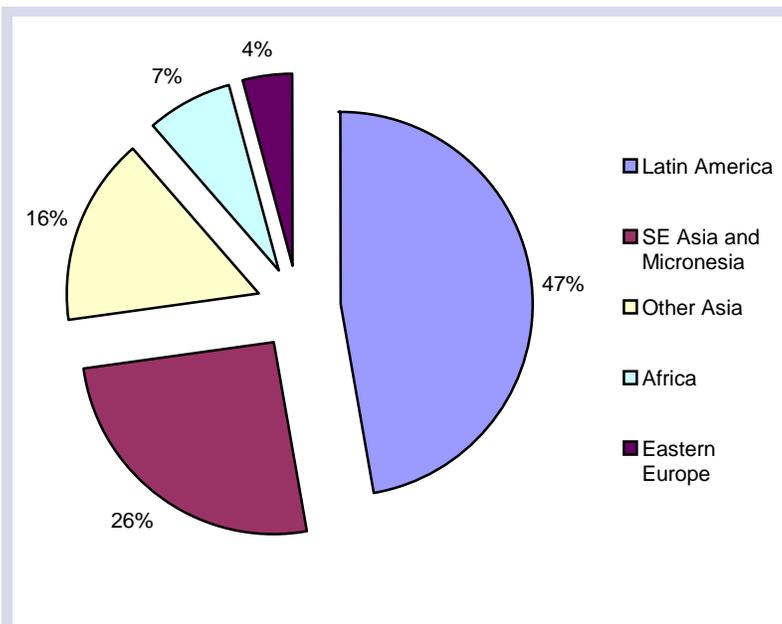


*In 2007, 3/4 of Oregon's TB cases were foreign-born.*

In Oregon, the number of cases among US-born has been decreasing. However, the case count among foreign-born has remained relatively stable. This has resulted in an increasing proportion of Oregon's TB cases occurring in the foreign-born population. In 2007, 70 (75%) of the 94 TB cases were among foreign-born persons, for the highest proportion to date.

## Tuberculosis by region of birth

**Chart 7. Percentage of Foreign-Born Cases by Region of Birth, Oregon 2007**



In 2007, 70 foreign-born cases were reported in Oregon, representing 75% of all cases. Nearly 50% of the foreign-born cases (n=33) were from Latin America. Of these, the majority (85%) were from Mexico (n=28). Over a quarter of Oregon's foreign-born cases were from Southeast Asia and Micronesia, with 6 cases from Laos, 4 from the Philippines, 3 from Vietnam, 2 from Indonesia and 1 from Cambodia. Two cases were from Micronesia. "Other Asia" which contributed 16% of the foreign-born cases, consisted of cases from China (n=6), India (n=3), Taiwan (n=1), and Nepal (n=1). The African cases (n=5) were from Ethiopia, Liberia, Nigeria, and Somalia. Three cases were from Eastern Europe (Russia and the Ukraine).

**Table 1. Estimated Incidence of TB by Place of Birth, Oregon**

Incidence rates among Oregon's foreign-born mimic the rates observed in their native countries. TB rates are the highest among African-born residents in Oregon, with an estimated rate of 114 cases per 100,000 persons. Likewise, according to the WHO 2004 TB report, incidence rates in Africa are among the highest in the world. The rate among Southeast Asian and Micronesian-born in Oregon is also high, at an estimated 45 cases per 100,000 persons. The incidence rate among Latin American-born Oregonians is relatively low, at 19 per 100,000.

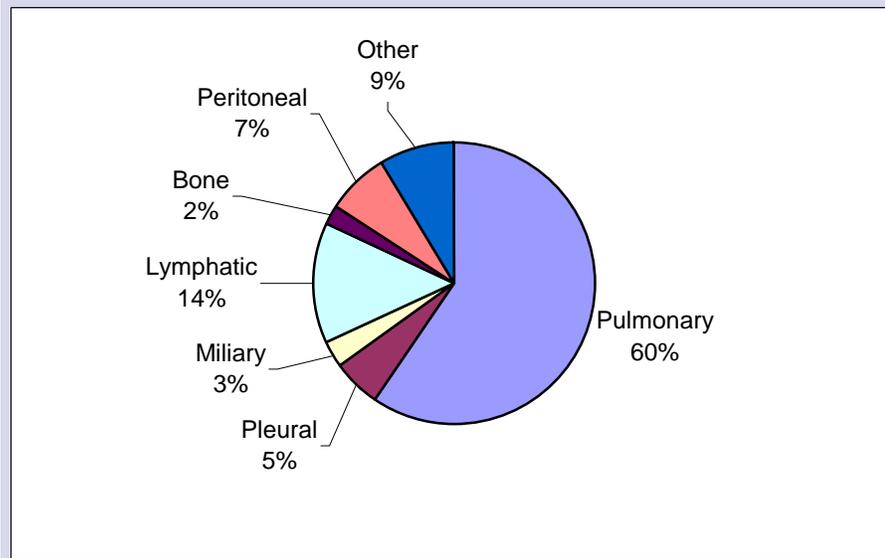
Region of Birth	N	TB rate per 100,000 persons (Oregon)
Africa	5	114
SE Asia+Micronesia	18	45
Other Asia	11	26
Latin America	33	19
Europe	3	5

\*Denominator data from the 2006 American Community Survey

## Tuberculosis cases by major site of disease

The primary site of disease for the majority of Oregon’s TB cases in 2007 was pulmonary, at 60% (n=58). Five percent were pleural and 3% were miliary. The remaining were extrapulmonary, including lymphatic.

**Chart 8. Reported Major Site of Disease, Oregon 2007**



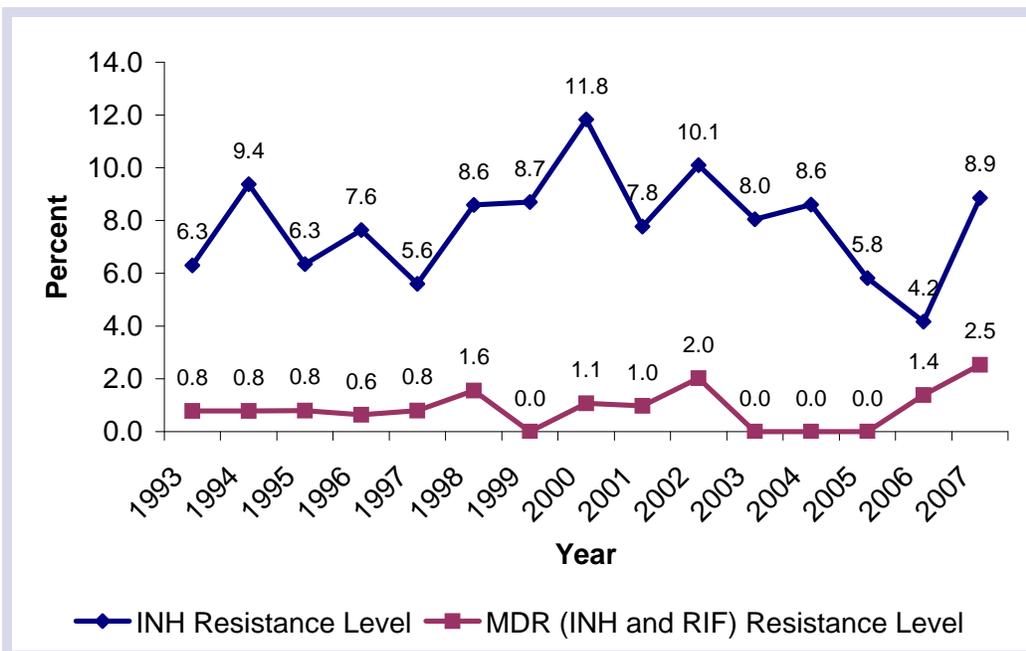
Among the pulmonary, 45% were sputum-smear positive; one of the 3 miliary cases was also sputum-smear positive. Sputum-smear positivity as well as cavitation on chest x-ray are strong indicators of infectiousness; 14 of the 94 cases had chest-x-rays read as cavitary (13 pulmonary, 1 miliary).

## Drug resistance and TB

**Chart 9. INH and MDR Drug Resistance Levels, Oregon 1993-2007**

Isoniazid, or INH, resistance levels in Oregon have ranged from 4% to 12%. In 2007, 8.9% of cases for whom susceptibility testing was performed were resistant to INH. The US average is similar, at 8% (2006 data).

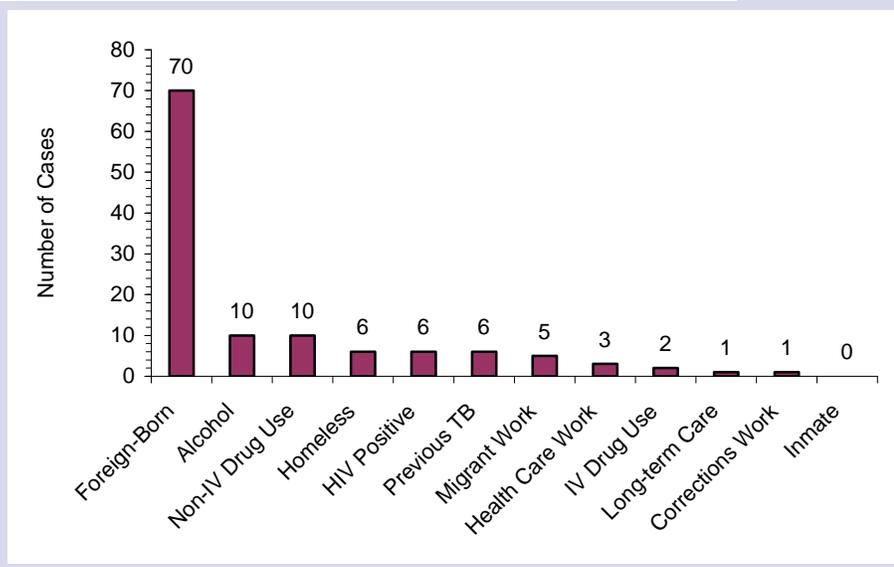
Since 1993, only 14 cases of multi-drug resistant (MDR) TB (that is, TB which is resistant to two or more first line drugs) have been reported in



Oregon; 13 (93%) were among foreign-born. Both cases in 2007 were foreign-born. The percent of Oregon cases that are MDR ranges from 0 to 2.5%. These data are similar to US levels (1.1% last year).

## Risk factors and tuberculosis disease

Chart 10. Risk factors for TB Disease, Oregon 2007



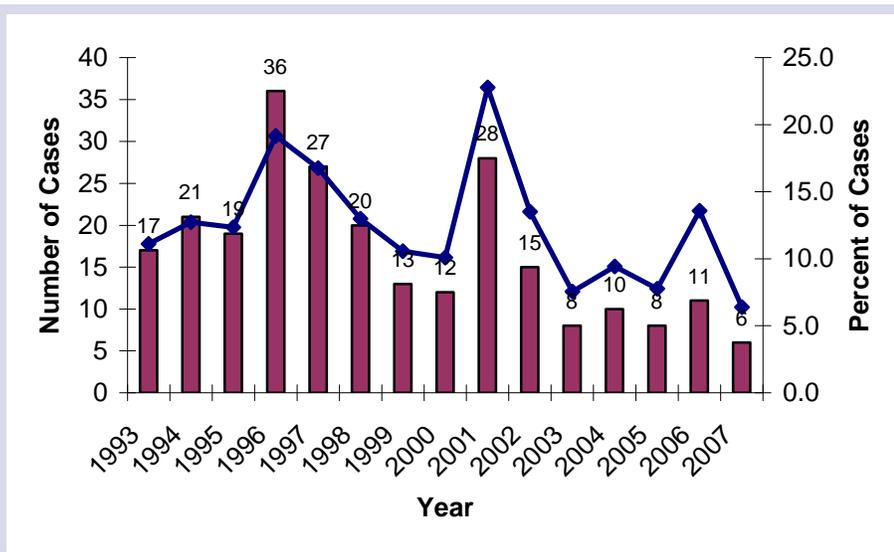
*The most prevalent risk factor among Oregon's TB cases is foreign birth.*

In 2007, the most common risk factor by far among Oregon's TB cases was being foreign-born, accounting for 75% of all cases. About 10% of cases reported excess alcohol and non-IV drug use. Six cases were homeless, 6 were HIV positive and 6 had a previous diagnosis of TB. Five cases were migrant workers and 3 were health care workers (all foreign-born). No cases were observed among inmates in correctional settings, although one case occurred in a corrections worker.

## Tuberculosis in the homeless

Overall, the number of TB cases among the homeless has been decreasing in Oregon. In 2007, 6 cases were reported among homeless, which represents only 6.4% of the total case count for the year.

Chart 11. Number and Percent of Homeless Cases, Oregon 1993-2007



A homeless shelter cluster occurred in Linn county, which accounted for 2 of the 6 homeless cases for the year.

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 2 of the 6 homeless cases in 2007 match the 2001 Lane County outbreak strain.

## TB outbreaks in the workplace

**Table 2. TB Outbreaks in the Workplace, Oregon 2007**

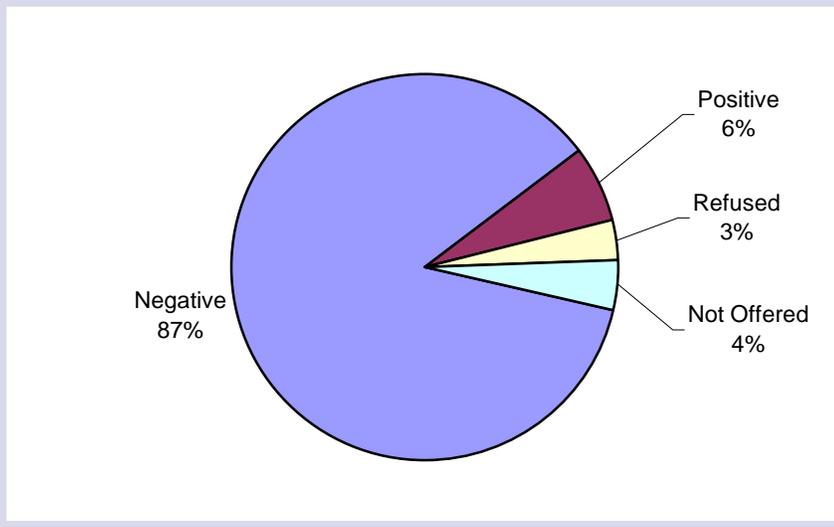
Worksite	Index Case Characteristics	# Skin Tested and Read	# TST positive (%)	# Secondary cases at the worksite
Meat Packing Plant	cavitary, smear positive	77	45 (58%)	1
Call Center	cavitary, smear positive	621	91 (15%)	3

During 2007, two large workplace outbreaks occurred in Oregon. The first took place at a meat packing plant in Oregon. The index case of this outbreak was cavitary, smear positive and likely infectious for many months due to a delayed diagnosis. At the packing plant, 77 contacts were skin tested and read; 45 (58%) were TST positive. One secondary TB case from was identified in a female co-worker.

The second large worksite investigation involved a call center in Washington County. Again, the index case was cavitary, smear positive. At the call center, 621 employees were skin tested and read; 91 (15%) were TST positive. To date, 3 secondary cases from the workplace have been identified.

## HIV and tuberculosis

**Chart 12. TB Cases by HIV Status, Oregon 2007**

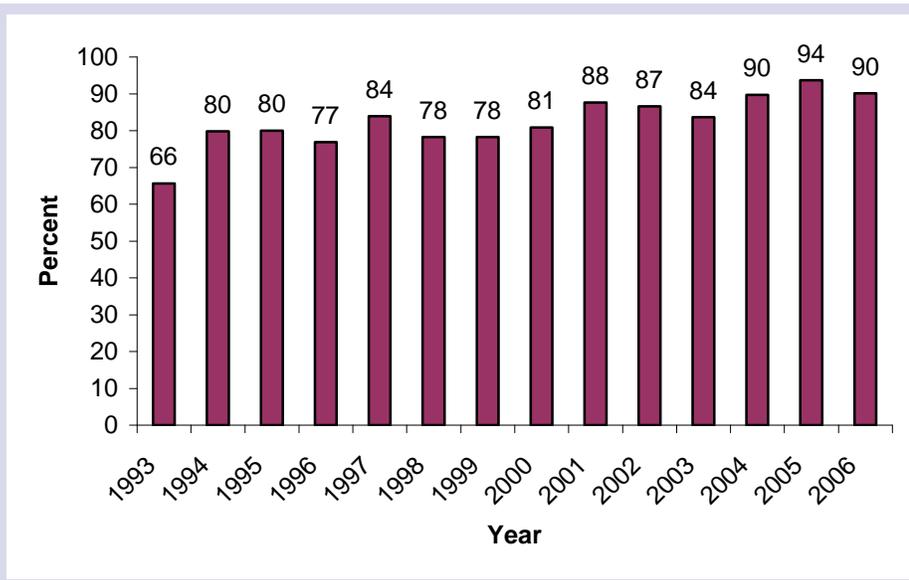


HIV status was obtained for 87 of the 94 (93%) TB cases reported in Oregon in 2007. Six (6%) were HIV positive, which is consistent with national data (7% in 2005).

Status was not obtained for 7 individuals: 3 refused testing and 4 were “not offered” testing. Two of the 4 “not offered” testing were deceased at diagnosis.

## Completion of TB treatment

**Chart 13. Percent Completion of Treatment within 1 Year for Eligible Cases, Oregon 1993-2006**

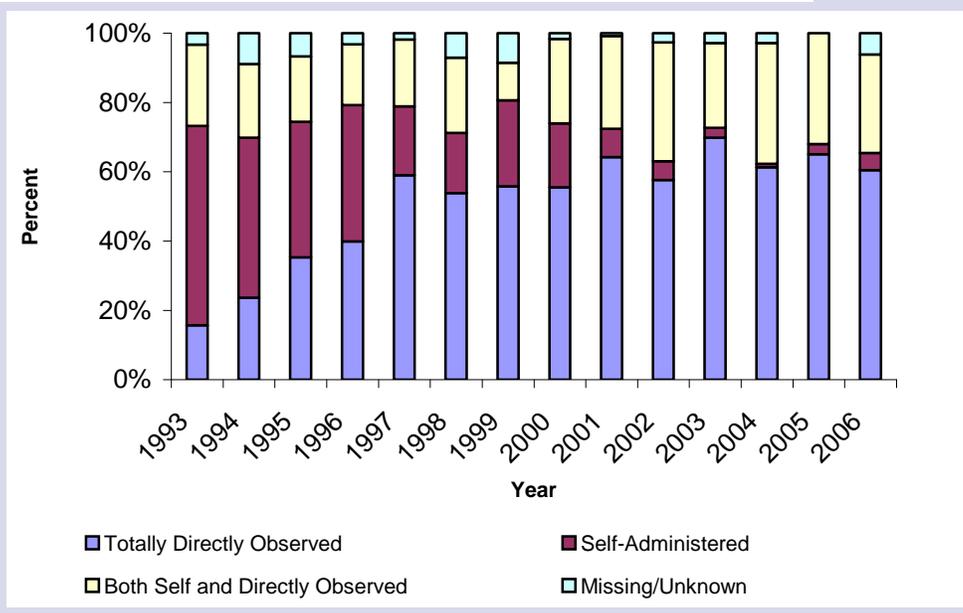


In 2005, 94% of eligible cases completed treatment within 1 year. Data for 2006 are preliminary.

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

## Delivery of TB therapy

Chart 14. Mode of TB Therapy, Oregon 1993-2006



*Directly Observed Therapy (DOT) is the standard of care in Oregon*

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 has decreased since 1993, dropping from 47% to just 4% in 2006. Use of directly observed therapy has increased over the years. In 2006, 49% received full DOT, and another 41% received a combination of both DOT and self-administered therapy.

### **Technical Notes:**

The data presented in this report came from Oregon's Tuberculosis Information Management System (TIMS). Data are as of March 25th 2008.

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® MTB (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 Quantiferon (QFT) 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 county endemic with TB, travel to endemic country)
- and**
- b. Lab test indicative of infection
  - i. Positive TST **and/or**
  - ii. Positive QFT or
  - iii. Negative TST or QFT with reason for not positive (immunosuppression)
- 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 be considered in the decision to count a clinical case.

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FOR MORE INFORMATION ON TUBERCULOSIS OR TB IN OREGON, PLEASE VISIT  
OUR WEBSITE AT  
[www.oregon.gov/DHS/ph/tb/index.shtml](http://www.oregon.gov/DHS/ph/tb/index.shtml)

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