

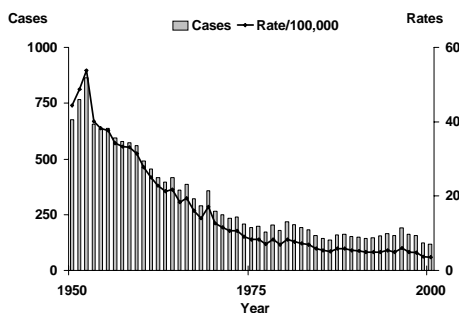
AN EPIDEMIOLOGY PUBLICATION OF THE OREGON DEPARTMENT OF HUMAN SERVICES

AN ONGOING TUBERCULOSIS OUTBREAK IN OREGON

TUBERCULOSIS (TB) is an important health risk for homeless persons and residents of inexpensive lodging houses, shelters, and common hostels. Despite a steady decline in tuberculosis (TB) in Oregon over the past 50 years (figure below), an ongoing outbreak of 17 cases of active TB in a Lane County homeless shelter illustrates that TB continues to be a challenging public health problem in this population.

People who are homeless are at significant risk for becoming infected with TB and developing active disease. The close living conditions, communal quarters, and relatively poor ventilation in many homeless shelters increase the risk of exposure to droplets and droplet nuclei. An active case of TB in a shelter can easily turn into an outbreak.¹ This issue of the *CD Summary* describes the epidemiologic investigation and the public health efforts to control the ongoing outbreak.

Tuberculosis in Oregon, 1950–2000



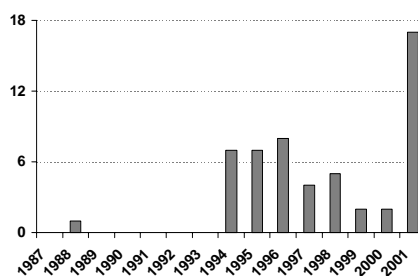
DESCRIPTION OF THE OUTBREAK

In February 2001, Lane County Health Department staff identified 12 tuberculin skin test (TST) converters, a sharp increase from the usual number, at a local homeless shelter. One shelter resident had been diagnosed with TB in November 2000, and another in February 2001.

The mission, with a staff of 11 persons, has beds for up to 250 transient men, 90 men enrolled in a shelter-sponsored work program, and 60 women (both transient and work program) per night. Mandatory

annual TB skin testing at this shelter, including follow-up diagnostic evaluation of skin test converters² and directly observed therapy (DOT) of active cases had been initiated in 1994, following a TB outbreak of 14 cases in 1994–1995. The number of active TB cases in homeless persons in Lane County decreased to 2 per year in 1999 and 2000.

TB cases in a Lane County homeless shelter, 1987–2001



After the Lane County Health Department identified two additional suspect cases at the shelter in mid-March, local health department staff contacted the state TB Program and together the agencies developed an outbreak response plan. From March 23–26, 2001, local health department staff placed TSTs on 144 residents; 129 (90%) were read. Of these 24 (19%) were known converters (see table). In addition, 3 (27%) of the 11 shelter staff had TST conversions. All persons with positive skin tests received immediate chest x-rays, which identified 8 additional suspect cases in shelter residents.

INITIAL CONTROL MEASURES

Since the outbreak in 1994, the Lane County Health Department has provided alternative housing and DOT for homeless persons diagnosed with active TB. After the March screening, the local health department

started providing immediate referral of clients with a positive TST for chest radiographs, regardless of insurance status. At this time, the shelter administration allowed local health department staff to provide on-site daily DOT for residents infected with latent TB infection (positive TST, negative chest X-ray, asymptomatic). For all residents with latent TB infection, residency at the shelter was contingent upon receiving treatment. Health department staff provided food incentives (juice and cookies) for these residents. The results of the TST screening and treatment of latent TB infection are shown below. Given the transient nature of this population, this percentage completing therapy is a good response. Other control measures included changing the shelter’s TB screening policy so that residents must have skin tests placed every 6 months instead of annually.

ONGOING CASES

Two more Lane County homeless people were diagnosed with active TB in May and June when they presented for medical care. Although these individuals had not stayed at the shelter, they were epidemiologically linked to shelter residents. Because it can take 12 weeks for an infected person to convert from a negative to a positive TST after exposure, Lane County Health Department staff conducted a second TST screening in August. This August screening identified 11 converters but no active cases. Since August, three additional cases have been identified in shelter residents. Two of these cases had returned to the shelter after an absence

Outcomes of contact investigation and treatment of latent TB

Screenings	Number of Residents		Total
	1st (3/25/2001)	2nd (8/03/2001)	
Tests placed	144	99	243
Tests read	129	90	219
TST conversions	24 (19%)	11 (12%)	35
Treatment for converters			
Started	21	7	28
Completed	13 (62%)	3 (43%)	16



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of several months. The third case had been staying at the shelter but had been missed during the March and August screenings.

SUMMARY OF CASES

Between November 2000 and November 2001, a total of 17 cases of active TB (16 were culture-confirmed) and 53 TST converters (from routine as well as mass screenings) have been confirmed in shelter residents. All cases but one were male (94%), with a median age of 48 years (range 23–59 years). Fourteen (82%) were white non-Hispanic, and 16 (94%) born in the United States. Fifteen (88%) had pulmonary TB. Only 5 (31%) of the culture-confirmed cases were sputum-smear positive. None were co-infected with HIV. All 16 isolates from culture-positive cases are susceptible to all TB drugs tested. Sixteen of the 17 cases initiated DOT with multiple TB drugs within one week of diagnosis.

HOW DID THIS OUTBREAK HAPPEN?

To determine the source of this outbreak, in May we interviewed 10 residents with active TB and 33 converters (identified from the March as well as routine screenings), and examined their shelter attendance and work program records. This information revealed that four infectious persons lived at the shelter during the period between October 2000 and April 2001. (The November case had lived at the shelter in October prior to being diagnosed with TB.) We identified no other common locations (such as prisons, other shelters, work sites) where TB transmission could have occurred.

Molecular typing (restriction fragment length polymorphism or RFLP) of the first 9 isolates revealed that the organisms from

persons linked to the shelter were identical, confirming the epidemiologic link. The RFLP pattern is distinct from the 1994–1995 outbreak in this shelter. Two cases of TB in Lane County not linked to the shelter had different patterns. Because some of the residents of the shelter are quite mobile, RFLP results will also be compared to other homeless people throughout Oregon.

TB CONTROL “TRUISMS”

This outbreak demonstrates that TB continues to be a significant risk for homeless persons and is an ongoing challenge for public health control. Key lessons are:

- TB control for members of a vulnerable and mobile population requires ongoing coordination of care between private clinicians and public health agencies.
- Management of a TB outbreak takes a high degree of coordination and collaboration between the state, county, and the shelter.
- Periodic screening must be linked to and augment ongoing medical evaluations of shelter residents who are demonstrating symptoms of illness, especially cough.
- Clinicians must have a high index of suspicion for TB. TB should be high on the differential diagnosis for high-risk persons (such as the homeless or foreign-born).
- Report suspect cases of TB to local health departments, even if the diagnosis isn't confirmed yet.

RESOURCES AVAILABLE TO CLINICIANS

- DOT provided through the local health departments is essential to complete therapy for homeless patients with

active or latent infection.

- If TB patients are lost to follow-up, local health departments can help to locate these individuals.

The guidelines for prevention and control of TB in the homeless are described by CDC and the Advisory Council for the Elimination of Tuberculosis.¹ For more information, contact your local health department or Oregon Health Services' TB Program at 503/731-4029 (<http://www.healthoregon.org/tb/welcome.htm>).

REFERENCES

1. CDC. Control of TB among homeless persons — recommendations of the ACET. *MMWR* 1992;41 (RR-5):1
2. CDC. Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection. *MMWR* 2000;49 (RR-6):22

Remicade (Infliximab) Alert Stimulates a Reminder

REMICADE is an anti-inflammatory medication prescribed for persons with rheumatoid arthritis and Crohn's disease. The FDA issued an advisory that, before starting treatment with Remicade, patients should be screened for TB and treated as appropriate. In 2001, Oregon has had one report of a diabetic patient being treated with Remicade who was diagnosed with TB and subsequently died. This serves as a reminder that patients placed on immunosuppressive therapy or who have immunocompromising medical conditions are at increased risk for developing active TB.

Correction

The web site for Oregon's Campaign for Judicious Use of Antibiotics was misspelled. It is www.healthoregon.org/antibiotics/home.htm (not *antibiotics*, much to the disappointment of our formicidaen friends).