



Yakima Health District BULLETIN

Volume 7, Issue 5

October, 2008

TUBERCULOSIS SURVEILLANCE 2001-2007

Tuberculosis (TB) case detection, treatment, surveillance and control comprise an operational and fiscal duty assigned to county government by Washington State law (RCW 70.28, WAC 246-170). The Yakima Health District executes this duty on behalf of Yakima County, which is the sole source of funding for this vital disease control activity. Health care providers and laboratories are required to notify YHD of suspected cases of tuberculosis (WAC 246-101) and to establish care plans in conjunction with YHD that meet minimum standards for care and disease control (WAC 246-170). This report provides a summary of recent TB surveillance data as feedback to health care providers, policy makers, and the community with respect to the status of TB in Yakima County.

Demographic and Epidemiologic Information

During 2001-2007, health care providers and laboratories reported 83 confirmed cases of active TB to YHD (Figure 1). The annual incidence of TB in Yakima County, about 5-6 cases per 100,000 population, is slightly higher than that for both Washington State and the United States (both ~4-5/100,000). The majority of cases occurred among individuals ≥ 45 years of age (Figure 2). The relatively high rate of active TB among children primarily reflects transmission to close contacts of recent active cases who have had delayed diagnoses. Sixty-four (77%) of reported cases were among males, again above the state average of 60%.

In contrast to the rest of Washington State, where TB morbidity is largely driven by reactivation of disease among foreign-born individuals from Asia and eastern Africa, foreign birth plays less of a dominant role in the epidemiology of TB in Yakima County. As both Table 1 and 2 demonstrate, however, birth in Mexico remains a prominent marker for risk of TB in Yakima County. US-born Latinos in Yakima County experience TB rates on the same order of magnitude as Caucasians. Native Americans continue to experience tuberculosis at rates about 5-10 times higher than other US-born groups. Case counts and local population figures for Asians, Blacks, and Pacific Islanders are too low to contribute meaningfully to the epidemiologic profile of TB in Yakima County.

Twenty (24%) of the 83 TB cases were homeless at the time of diagnosis or during the 12 months prior to diagnosis. Given the estimate that about 1,000 homeless

individuals live in Yakima County, this corresponds to an annual rate of 286 cases per 100,000—50 times the county-wide rate. The dynamic nature of homelessness suggests that this calculation based on static population figures probably overestimates the true incidence among current and recently homeless persons. Nevertheless, it points out the immense risk of TB associated with homelessness (especially among men). Twelve (60%) of the twenty homeless cases' *M. tuberculosis* isolates had identical DNA-fingerprints (WA 007), indicating transmission of a single strain. Most of the WA 007-strain transmission among the homeless is believed to have occurred in late 2002 and early 2003 when six active cases were detected. Occasional subsequent reactivations have occurred among identified contacts who failed to complete treatment for latent TB when outbreak control measures were instituted in 2004. This same strain also caused disease in eight epidemiologically linked members of the Yakama Nation during 2005-2006 and in six other Yakima County residents with no known epidemiologic links to the outbreak or the Yakama Nation. In total, this strain accounts for 26 (31%) of the TB cases in Yakima County during 2001-2007.

Other notable characteristics among reported TB cases have included unemployment (67%), alcoholism (28%), other injection and non-injection drug use (12%), and residence in long term care facilities (10%). Only one case was incarcerated at the time of diagnosis, as measured by the surveillance system. However, this method of measurement provides a gross underestimate of the degree to which individuals at risk for TB come in contact with correctional facilities in Yakima County. YHD TB Control's informal assessment is that about 10-20% of active cases passed through the detention or correctional system during the two years prior to diagnosis.

Clinical Features

Sixty-five (78%) of 83 TB cases were exclusively pulmonary, 12 (14%) had only extrapulmonary (EP) involvement, and 6 (7%) had both pulmonary and EP TB. Sites of involvement for the 18 EP cases were: pleura (5), lymphatics (4), disseminated/miliary (3), meningial (3), bone/joint (2),

Inside this issue:

CDC Updates
Hepatitis B
Screening
Recommendations 3

DOH Ceases
Invasive MRSA
Isolate
Reporting by
Laboratories 3

Flu and RSV
Season is Here 3

and genitourinary (1). These proportions are representative of the distribution of sites of disease reported statewide and nationally.

Fifty (70%) of the 65 pulmonary cases were confirmed by culture. This falls short of the national objective of 85%. When children (for whom yield of culture is very low) are excluded from the calculation, the figure still only reaches 82%. Of the fifty culture-positive pulmonary cases reported, 35 (70%) had a positive sputum AFB smear at the time of diagnosis. This is an indicator of more advanced disease and higher infectiousness; it can also indicate delays in seeking care or in being diagnosed. Statewide in 2005, 85 (58%) of 147 pulmonary cases were sputum smear positive.

Drug resistance was detected in 10 (17%) of 60 unduplicated isolates available for sensitivity testing. Isoniazid resistance was found in nine and multiple drug resistance (MDR--isoniazid plus rifampin) in one. No cases of rifampin monoresistance nor of extensive drug resistance (XDR) were observed.

Standard recommendations for initial four-drug therapy were carried out in 74 (90%) cases. A variety of three-drug regimens were started in five (6%), two-drug regimens in three (4%), and one case died prior to initiating therapy.

Human immunodeficiency virus (HIV) infection was documented in only one case. HIV serology was negative in the other 55 patients tested. HIV testing was not offered in 20 cases, refused in four, and otherwise not documented in three.

Three patients died prior to leaving the hospital. Of the remaining 80 who received outpatient therapy, 70 (88%) were supervised by directly observed therapy either through YHD or the Yakama Nation. Ten more patients died during the course of treatment; all of the surviving 70 completed adequate therapy. No patients were lost to follow-up.

Recent TB-Related Mortality

From March 2005 through August 2008, 11 deaths have occurred among the 48 TB cases reported (23%). This is far in excess of reported mortality among TB cases at the state and national level (5%). A standardized review of the deaths conducted in collaboration with state and federal health officials indicated that, of these 11, eight were either definitely or possibly TB-related. Seven of the eight TB-related deaths were male, one was female. Median age was 54 years (range: 31-90). Four were Native Americans, three were Mexico-born, and one was a formerly homeless Caucasian. The DNA fingerprint of five matched the WA 007 genotype. One case was diagnosed post-mortem and six presented with advanced pulmonary or miliary disease, dying within days-to-weeks of initiating therapy. The eighth TB-related death occurred two months into therapy following a good clinical response; it appears that rifampin-beta-blocker interactions may have contributed to his death. None of the eight were known to be HIV infected.

Most TB-related deaths had substantial delays in seeking health care that contributed one or more months to delays in their diagnosis. At least two cases appeared to have had initial medical consultations that failed to arrive at a suspicion of TB, thereby adding one or more weeks to delays in diagnosis. Most fatal cases had one or more of the following factors that contributed to delays in seeking care or compromised ability to recover: poverty, alcoholism, other chemical dependency, diabetes mellitus, chronic obstructive pulmonary disease, or multiple complex medical problems.

Summary and Recommendations

The epidemiologic profile of TB in Yakima County differs significantly from that in other parts of the state and country, mostly due to Yakima County's lack of sizeable immigrant communities from Asia and eastern Africa.

Homeless individuals, Native Americans, and Mexico-born individuals in Yakima County all have TB rates 1-2 orders of magnitude higher than other groups. At least one of these characteristics was present in 59 (71%) of the 83 cases reported during 2001-2007. Native American and Mexico-born cases presenting with advanced disease, chemical dependency, or multiple comorbidities are at high risk of death, warranting a high suspicion of TB, appropriate specimen collection, prompt initiation of DOT, and close follow-up when such individuals present with compatible clinico-radiographic syndromes (e.g., prolonged cough and upper zone infiltrates). Use of fluoroquinolones as empiric therapy for presumed community acquired pneumonia in the setting of such presentations may delay TB diagnosis by virtue of these agents' anti-mycobacterial activity.

US-born Latinos in Yakima County appear to have a slightly higher TB rate than US-born Caucasians, but the TB rate in this group (~3/100,000 per year) still is not high enough to warrant routine testing for latent TB in the absence of other risk factors (e.g., recent contact, HIV infection, prolonged travel to Mexico, other predisposing medical conditions).

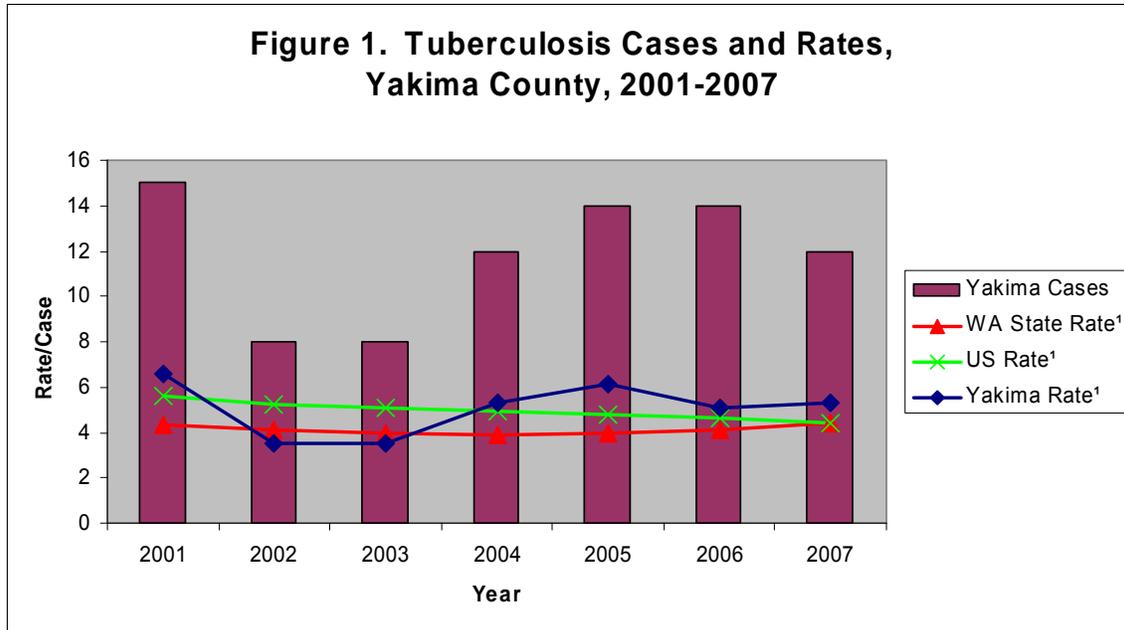
HIV infection is uncommon (~1%) among TB cases in Yakima County, but only about two-thirds of cases had serostatus documented. HIV testing is routinely recommended as part of the initial evaluation for all suspected and confirmed TB cases.

Although multiple-drug resistance is rare (~1%), isoniazid resistance is quite common, occurring in one of every six cases. This supports continuation of the recommendation for four-drug therapy in the initial management of TB cases while cultures and susceptibilities are pending. DOT and public health nurse case management remain the clinical standard of care and YHD's disease control policy for assuring adherence to treatment.

Yakima County falls short of national targets for culture confirmation; diligent efforts should be made to obtain an adequate specimen for AFB culture and susceptibility testing, especially when AFB-smears from sputum are negative.

Finally, these data suggest that targeted testing and treatment for latent TB in Yakima County should focus on individuals with a history of homelessness or incarceration, birth in Mexico or other high-risk countries, and Native American ancestry. Medical conditions for which latent TB testing and treatment are indicated include diabetes mellitus (especially when poorly controlled), HIV-infection, anticipation of tumor necrosis factor-alpha therapy, other immunosuppression, renal failure, and other entities set forth in detail in national guidelines (<http://www.yakimacounty.us/health/documents/bulletin/treatmentLTBI.pdf>.) *QuantiferonTB Gold In-Tube* is considered interchangeable with the tuberculin skin test for diagnosis of latent TB and offers the advantage of higher specificity and equivalent sensitivity in individuals with prior BCG vaccination. For more information, see *Community Based TB Control through Treatment of Latent Infection*, YHD Bulletin, October 2007 <http://www.yakimacounty.us/health/info/publications.htm>.

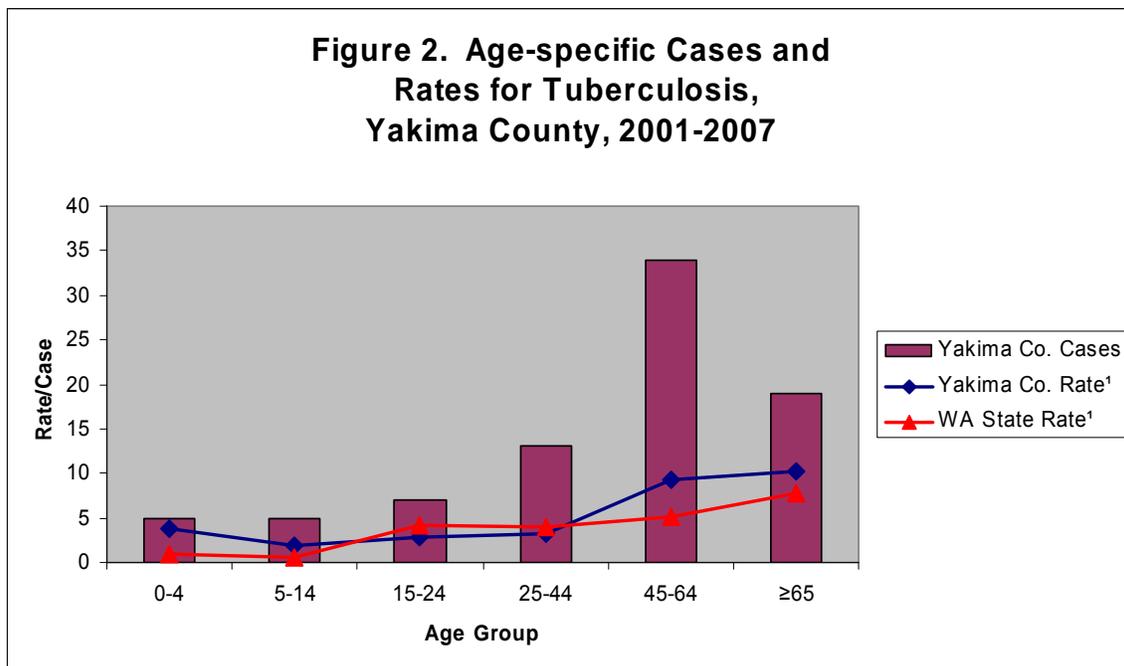
Figure 1. Tuberculosis Cases and Rates, Yakima County, 2001-2007



¹per 100,000/year

Source; Washington State DOH 2008, *Washington State's Tuberculosis Epidemic*.

Figure 2. Age-specific Cases and Rates for Tuberculosis, Yakima County, 2001-2007



¹per 100,000/year

Source; Washington State DOH 2008, *Washington State's Tuberculosis Epidemic*.

Table 1. Nation of Origin among TB Cases, Yakima County, 2001-2007

Nation	Yakima Co. Cases	Yakima Co. % of total	WA State % of total ¹
United States	55	66%	32%
Mexico	26	31%	13%
Other	2	2%	55%
¹ Washington State DOH 2007, <i>Fact Sheet: Foreign Born TB Cases.</i>			

Table 2. Race/Ethnicity-specific TB Cases and Rates, Yakima County, 2001-2007

Risk Group	Yakima Cases	Yakima Rate ¹	WA Rate ²
Native American	18	24.2	6.3
Latino total	41	6.7	10.0
• <i>US-born</i>	15	2.9	--
• <i>FB</i> ³	26	24.9	--
Caucasian	19	1.3	1.0
Other ⁴	<5	--	25-60
¹ based on population figures obtained from the Washington State Office of Financial Management ² Washington State DOH 2008, <i>Washington State's Tuberculosis Epidemic.</i> ³ FB= foreign-born ⁴ Includes Black, Asian, Pacific Islander, and all others			

In order to maximize the effectiveness of available resources, YHD's clinical services for TB are limited to suspected and confirmed active cases, recent close contacts to active TB, and children (<18 years) lacking a medical home. To obtain technical consultation for targeted testing and treatment of latent TB or to report a suspected or confirmed case of active TB, please call (509) 249-6532.

Acknowledgements: Thomas Weiser, MD, Northwest Portland Area Indian Health Board, for his investigation of Yakama Nation TB deaths; Washington State Department of Health TB Program, California Department of Public Health TB Control Branch, and CDC Division of TB Elimination, for their support and technical consultation in our investigation of TB deaths, maintenance of the tuberculosis surveillance database, and DNA fingerprinting of TB isolates.

CDC Updates Hepatitis B Screening Recommendations

In a recent release of updated recommendations, the Centers for Disease Control and Prevention (CDC) added the following to its list of indications for hepatitis B screening: men who have sex with men, injection drug users, individuals from nations with HBsAg seroprevalence $\geq 2\%$ (most of Asia and Africa, Brazil, Peru, Ecuador, Venezuela—but not Mexico, and circumpolar indigenous groups). The report provides an excellent overview of HBV epidemiology, clinical presentation, serology, public health management, and principles of treatment. Continuing medical education credits are available. For more information visit <http://www.cdc.gov/mmwr/PDF/rr/rr5708.pdf>

DOH Ceases Invasive MRSA Isolate Reporting by Laboratories

In response to a 2007 request from Governor Gregoire, the Washington State Department of Health (DOH) initiated a provisional, laboratory-based reporting system for invasive methicillin-resistant *Staphylococcus aureus* (MRSA). DOH also convened a scientific panel to provide recommendations on the best means for controlling the spread of MRSA and other drug-resistant organisms.

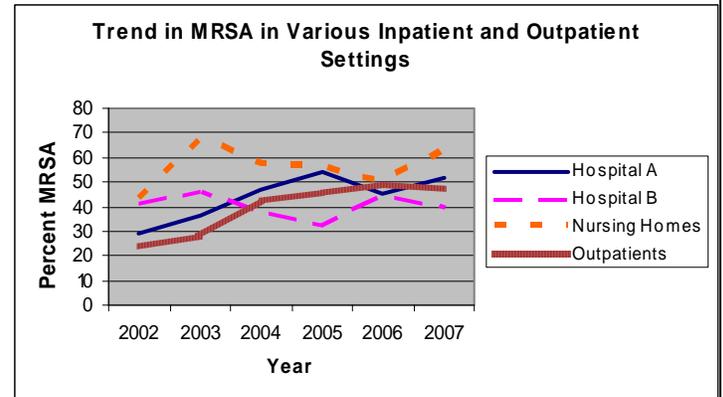
DOH found that the surveillance system confirmed findings from other settings indicating that the proportion of *S. aureus* isolates which are resistant to oxacillin/methicillin has increased. Furthermore, it found that most of the cases were reported among middle-aged and elderly patients. Limitations discovered through the pilot surveillance project were that (1) DOH had no mechanism to assess the sensitivity of the surveillance system, (2) patient information was incomplete, (3) determination of invasive-versus-non-invasive sites was not reliable, and (4) hospital-versus-community-acquisition was not discernable. In sum, DOH found that in order for MRSA surveillance to provide meaningful information, it must be supplemented by additional measures beyond laboratory-based reporting. It terminated the provisional laboratory reporting program in September and re-iterated the recommendations of the MRSA Scientific Panel:

- Conduct standardized hospital-based monitoring to evaluate disease risks in a hospital so that transmission of multi-drug resistant organisms among high risk patients can be prevented in that hospital.
- Conduct voluntary sentinel (or selective) monitoring to

include community-associated MRSA and reporting of results through local or state public health agencies.

- Monitor trends in antibiotic resistance patterns of infections using summary antibiotic resistance data from clinical laboratories.

DOH's full report on the matter can be viewed at http://www.yakimacounty.us/health/documents/bulletin/MRSA_Final_Report.pdf. YHD appreciates the collaboration from local hospitals and laboratories in DOH's pilot surveillance project and in their ongoing voluntary participation in local MRSA surveillance. The following figure reflects one labora-



tory's ongoing contribution toward this end.

As the figure shows, MRSA appears to account for about 50-60% of *S. aureus* isolates from a variety of patient care settings. For more background on the epidemiology and clinical management of MRSA infections, visit the following:

- YHD. *More on MRSA*. YHD Bulletin, January 2007: http://www.yakimacounty.us/health/documents/bulletin/bulletin6_1.pdf
- YHD. *New Statewide Laboratory Surveillance System for MRSA*. YHD Bulletin, December 2007: http://www.yakimacounty.us/health/documents/bulletin/bulletin6_6.pdf
- CDC on Community-Acquired MRSA: http://www.cdc.gov/ncidod/dhqp/ar_mrsa_ca_clinicians.html
- CDC on Healthcare-associated MRSA http://www.cdc.gov/ncidod/dhqp/ar_MRSA.html

Resources for Patients:

- YHD Website has resources for the community regarding MRSA infection at: http://www.yakimacounty.us/health/commhealth/cd_diseaseinnews.htm

Flu and RSV Season is Here

The Yakima Health District has begun collecting RSV/Influenza statistics from local laboratories to determine the extent of respiratory viral activity in Yakima County. This surveillance activity is conducted from October through May each year and the data is posted on our website: <http://www.yakimacounty.us/health/commhealth/immproviders.htm>.

Also available on our website is a list of all Influenza vaccine providers in Yakima County. If you or a patient is looking for an Influenza vaccine provider please go to: <http://www.yakimacounty.us/health/commhealth/flushots.htm>.

YAKIMA HEALTH DISTRICT

**1210 Ahtanum Ridge Drive
Union Gap, WA 98903**



Reporting Line: (509) 249-6541
After hours Emergency: (509) 575-4040 #1
Toll Free: (800) 535-5016 x 541



Confidential Fax: (509) 249-6628



<http://www.yakimapublichealth.org>

Dennis Klukan, MSEPH, Administrator
Christopher Spitters, MD, MPH, Health Officer
Marianne Patnode, RN, Communicable Disease Services Program Coordinator
Gordon Kelly, Environmental Health Director
Wendy Doescher, Region 2 AIDSNET Coordinator
Denny Flodin-Hursh, RN, Public Health Nurse
Perla Benitez, RN, Public Health Nurse
Lela Hansen, RN, Tuberculosis Consultant
Jessica Brown, BS, CHES, Assessment Specialist
Laura Kramer, BS, Environmental Health Specialist
Tess White, RN, Immunization Consultant



Condition (includes confirmed and probable cases)	Cases			Total Cases by Year	
	Jan-Sept	Jan-Sept	Jan-Sept	Total Cases by Year	Total Cases by Year
	2008	2007	2006	2007	2006
Campylobacteriosis	90	96	159	124	202
Cryptosporidiosis	4	13	5	19	7
Enterohemorrhagic E. coli	10	5	4	7	5
Giardiasis	13	39	22	48	31
Salmonellosis	36	23	25	34	34
Shigellosis	4	14	22	26	32
Hepatitis A acute	1	0	1	0	1
Hepatitis B acute	0	1	5	1	5
Hepatitis B chronic	7	7	9	12	12
Hepatitis C acute	0	1	1	1	1
Hepatitis C chronic	120	169	150	228	176
Meningococcal	1	2	1	2	1
Pertussis	17	25	18	37	21
Tuberculosis	10	11	10	11	16
HIV New	8	10	10	10	10
HIV Deaths	3	1	2	1	2
HIV Cumulative Living	161	152	142	152	142
Chlamydia	876	909	824	1168	1120
Genital Herpes—Initial	57	35	53	46	70
Gonorrhea	71	87	123	119	166
Primary and Secondary Syphilis	1	0	3	0	3

**Notifiable
Conditions
Summary
Jan– Sept,
2008**