



# *Yakima Health District*

## **BULLETIN**

Volume 13, Issue 1

February, 2014

## **Tuberculosis in Yakima County**

### **Summary**

- The rate of active tuberculosis (TB) in Yakima County has declined by about two-thirds over the past 20 years, mirroring trends seen statewide and nationwide.
- Targeted testing and treatment for latent TB in primary care settings has probably contributed significantly to this decline.
- Clusters of TB cases among high-risk groups facing complex socioeconomic challenges continue to occur, including one such scenario currently ongoing in the lower Yakima Valley.
- Delayed diagnosis of TB due to a multitude of causes continues to be manifest--albeit crudely--by sputum smear-positivity (48%), cavitation on plain chest radiography (23%), and high TB-related mortality among cases (11%). The diagnosis of TB was missed at the first clinical evaluation in three of the five recent epidemiologically linked lower Yakima Valley cases.
- The most commonly elucidated risk factors among active TB cases in Yakima County include being identified as a recent contact to a known case of active TB, birth in countries with higher rates of TB (e.g., Mexico), being Native American, having been homeless, and engaging in heavy alcohol use.
- Among residents lacking these risk factors, including US-born Latinos, active TB rates are low.

### **Recommendations & Resources**

- Consider the diagnosis of active TB in patients with cough, sputum, fever, and/or weight loss of a subacute or chronic nature. Conduct chest or other radiography targeted to the site of disease and, if appropriate, collect respiratory or extrapulmonary specimens for AFB smear-and-culture and nucleic acid amplification testing.
- Report suspected cases of active TB to YHD TB Control at (509) 249-6541.
- Conduct testing for latent TB among groups at high risk for being infected and progressing to active TB. See epidemiologic factors listed above and resources listed below.
- Use interferon gamma release assays (e.g., Quantiferon TB Gold In-Tube [QFT]) as the preferred latent TB testing modality among patients with a history of birth in countries using BCG immunization. A tuberculin skin test (TST) is preferred for testing in children <5 years of age. QFT-or-TST can be used in all other groups.
- For more information on diagnosis and treatment of latent TB, visit <http://www.cdc.gov/tb/publications/LTBI/default.htm> or download the latent TB app for health care providers at <http://www.cdc.gov/tb/publications/MobileLTBIApp/default.html>
- For assistance in medical decision-making regarding treatment of latent TB in specific patients, visit [www.tstin3d.com](http://www.tstin3d.com).

### **Introduction**

Tuberculosis (TB) rates in the United States and Washington State have steadily declined over the past two decades, and Yakima County has roughly paralleled that decline (Figure 1; page 4). During an average year, the number of active cases reported is only about one-third what it was twenty years ago. Reasons for the decline may include heightened attention given to TB, strengthening of local treatment supervision programs, improved laboratory services, more thorough contact investigations with higher treatment completion rates, changes in migration patterns, and treatment for human immunodeficiency virus (HIV) infection. In Yakima County, a large contribution also comes from the targeted testing and treatment of latent TB in primary care settings.

Despite these positive trends, TB remains a threat on several fronts. First, clusters of cases can emerge among families or social networks when infectious cases persist in the environment undiagnosed for weeks-to-months at a time. As circles of transmission spread beyond households under such circumstances, the efficacy and efficiency of public health contact investigations decline. This leads to an increase in the pool of untreated latent infections from which future active TB cases can arise. Delays in diagnosis also can result in patients initiating treatment too late (or not at all) and succumbing to TB. A recent cluster of cases in the lower Yakima Valley had all of these characteristics: two patients with delayed diagnosis and extensive, communicable TB (one fatal); two children and one adult from a heavily exposed household with secondary cases of active TB; and two dozen latent TB infections detected. In this scenario, patient factors were primary contributors to the delayed diagnoses among contagious cases (e.g., homelessness, chemical dependency, failure to access available health care). However, at least three of the five total active TB cases in this cluster did have pre-diagnosis health care encounters that failed to result in suspicion for TB. Such delays have not been unique to this cluster.

Second, drug resistance presents both a personal health problem for the patient whose TB is thereby more difficult to treat and a public health problem when such strains are transmitted in the community. Finally, complacency about TB being in decline can lead to failure to test and treat for latent TB in appropriately targeted individuals and groups. Conversely, poorly targeted or overzealous testing and treatment can lead to false positive test results, unnecessary exposure to adverse effects of therapy, increased health care costs, and patient inconvenience.

The following summary of active TB cases reported among Yakima County residents during 2004-2013 characterizes the epidemiology, spectrum of clinical features, and treatment outcomes in order to inform our efforts in controlling TB.

### Epidemiology of TB in Yakima County

During 2004-2013, 98 cases of confirmed TB were reported in Yakima County residents. Sixty-three (64%) were male. The majority of cases occurred among adults ages 25-64 years; however, all age groups were affected, including 14 children (Figure 2; page 4). Nation-of-birth was the United States for 57 (58%). Among 41 foreign-born cases, 37 were from Mexico, two from Vietnam, and one each from Puerto Rico and Peru. Duration of residence in the United States was  $\geq 20$  years for over one-half of these (Figure 3; page 4). In addition to foreign-birth, a hierarchical review of recorded risk factors revealed the following: recent contact to a known case (10), HIV infection (2), homelessness (15), heavy alcohol use (19), methamphetamine-or-injection drug use (3), incarceration (1), and long-term care residence (3). Estimated rates by racial/ethnic group (Table 1) suggest a substantially higher risk for active TB among Native Americans and to a lesser degree among Latinos. When cases with risk factors set forth above were subtracted out, elevated risk was still found for Native Americans but not for Latinos.

**Table 1. Estimated TB Rates<sup>1</sup> by Race/Ethnicity, Yakima County, 2004-2013**

Group	Cases	Rate	Relative Risk	P-value
White, non-Hispanic	17	1.5	1.0	Referent
Hispanic	55	5.0	3.4	<0.0001
Native American	24	22.7 <sup>2</sup>	15.6	<0.0001
Other	2	2.8	1.9	0.38 (NS <sup>3</sup> )
<b>No-Risk Factors<sup>4</sup></b>				
Group	Cases	Rate	Relative Risk	P-value
White, non-Hispanic	7	0.6	1.0	Referent
Hispanic	6	0.9	1.5	0.46 (NS)
Native American	8	7.6	12.6	<0.0001

<sup>1</sup>Cases per 100,000 per year

<sup>2</sup>National incidence rate for Native Americans in 2012: 6.3

<sup>3</sup>Not statistically significant

<sup>4</sup>Cases with any of the following risk factors were excluded: foreign birth, recent contact to a known case, homelessness, heavy alcohol use, long-term care residence, methamphetamine-or-injection drug use, and incarceration.

### Clinical Characteristics of Active TB Cases

Sites of involvement were as follows: pulmonary only, 71 (76%) of the 93 cases for whom data was available; extrapulmonary only, 18 (19%); both pulmonary and extrapulmonary, 4 (4%). See tables 2 and 3 for additional details. Laboratory confirmation with culture or nucleic acid amplification was obtained for 81 (83%); radiographic and clinical improvement on therapy, 10 (10%), and other clinician judgment, 7 (7%).

**Table 2. Clinical Features of Pulmonary TB Cases, Yakima County 2004-2013**

Characteristic	Number	Percent (n=75)
Culture confirmed	69	92
Sputum AFB smear-positive	36	48
Cavitation on plain chest radiograph	17	23

**Table 3. Extrapulmonary Sites of TB, Yakima County, 2004-2013**

Site	Number
Pleura	5
Lymphatic-Cervical	4
Lymphatic-Intrathoracic & Other	3
Meninges & Brain	5
Bone & Joint	2
Genitourinary	2
Adrenal	1
<b>Total</b>	<b>22</b>
<b>Culture confirmed</b>	<b>15 (68%)</b>

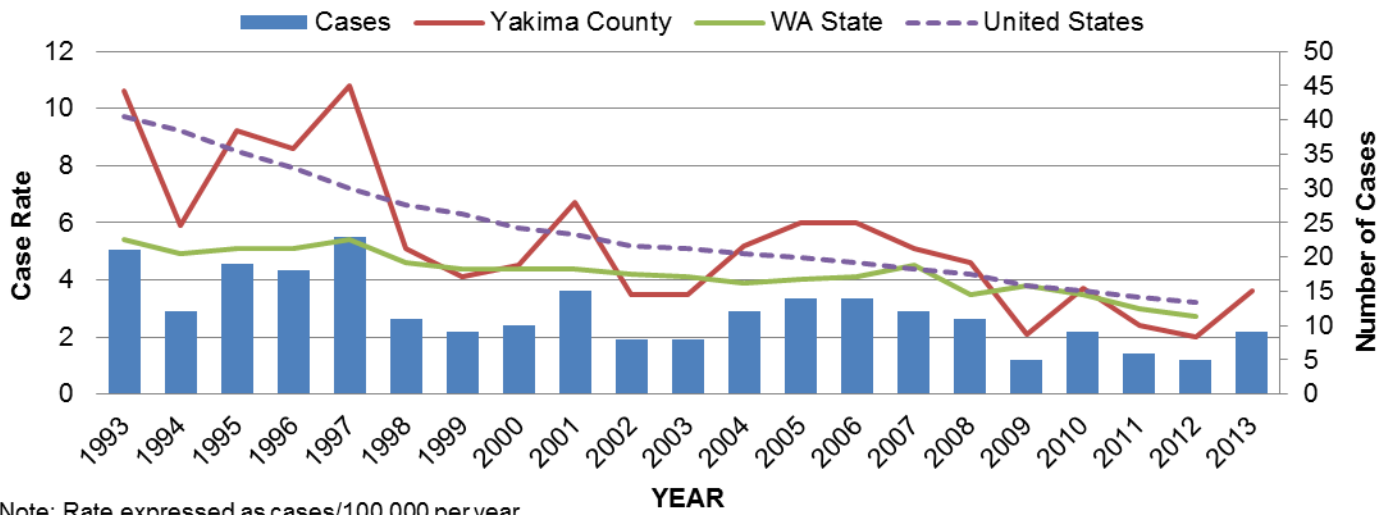
Of 74 cases for whom drug susceptibility testing results were available, 63 (85%) were sensitive to all five first-line anti-TB drugs (isoniazid, rifampin, pyrazinamide, ethambutol, and streptomycin). Isoniazid mono-resistance was present in 7 (10%), pyrazinamide monoresistance in 2 (3%), and isoniazid-plus-rifampin resistance (multiple drug resistance) in 2 (3%). No cases of extensively drug resistant (XDR) TB occurred.

### Vital Status and Treatment Outcomes

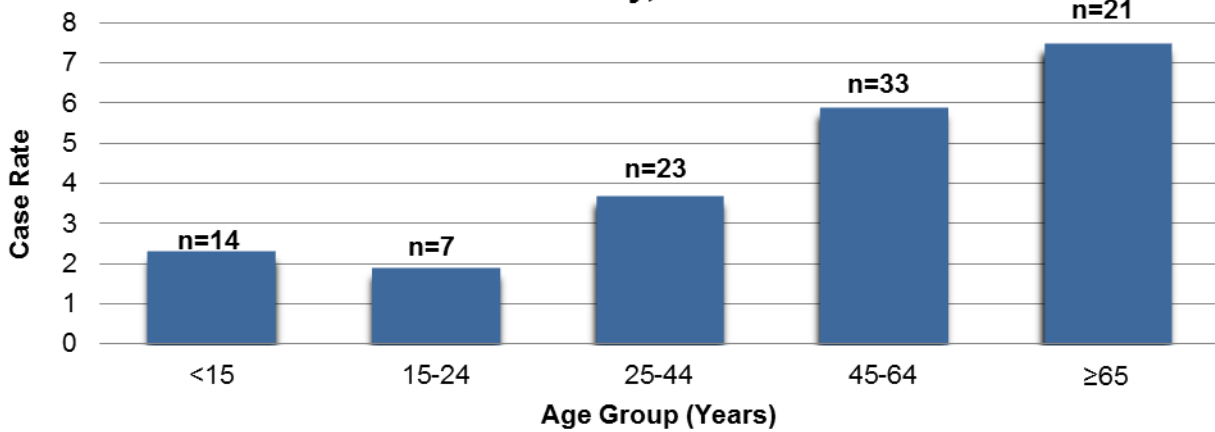
Of the 98 total TB cases during this period, 2 died prior to initiating therapy and 17 died prior to completing therapy for a total mortality of 19%. Nationwide in 2012, 569 (6%) of 9,945 total TB cases died. In Yakima County during 2004-2013, decedents ranged in age from 27 to 90 years (median 60 years). Four cases (22%) were over 80 years of age at the time of death. Death was attributable to TB disease in 11 (50%) and to TB treatment in 1 (6%). The other seven deaths were attributed to causes unrelated to TB.

Among the 79 surviving TB cases, 69 (87%) completed therapy, 7 (9%) are still on treatment, and 4 (5%) moved to other jurisdictions prior to completing therapy. During 2004-2013, all TB cases' treatment was supervised by directly observed therapy (DOT), whereby a Health District clinician or outreach worker assesses the patient's clinical status and observes each ingested dose.

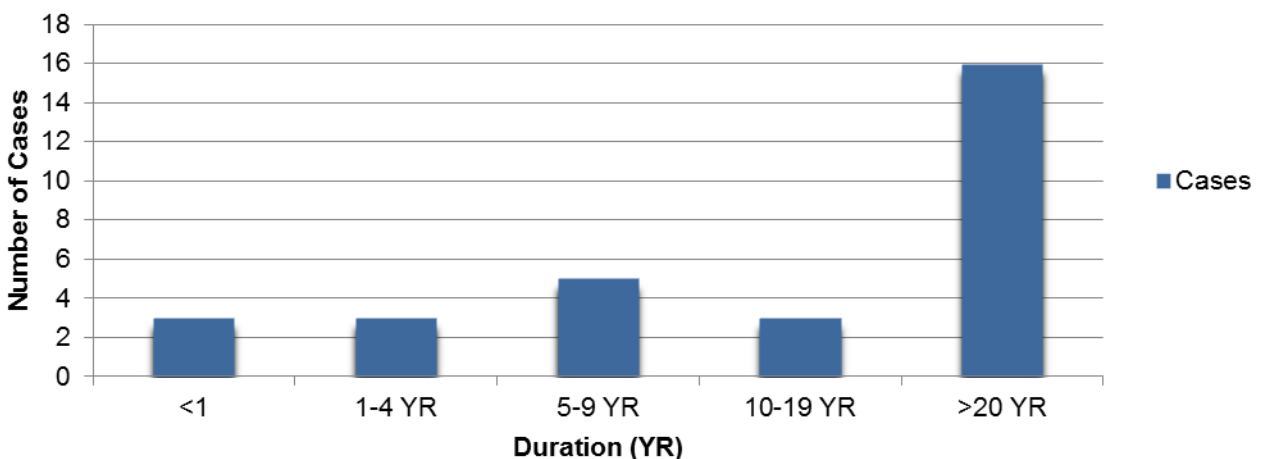
**Figure 1. Tuberculosis Incidence, Yakima County, 2004-2013**



**Figure 2. Age-Specific TB Rates, Yakima County, 2004-2013**



**Figure 3. Duration in US Among Foreign-Born TB Cases, Yakima County, 2004-2013**



# 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>

**André Fresco, MPA, Administrator**  
**Christopher Spitters, MD, MPH, Health Officer**  
**Sheryl Di Pietro, Director of Community Health**  
**Gordon Kelly, Director of Environmental Health**  
**Diane Bock, Community Health Supervisor**



Notifiable Condition <i>(includes confirmed and probable cases)</i>	Total Cases by Year		
	Total Cases by Year	Total Cases by Year	Total Cases by Year
	2013	2012	2011
Campylobacteriosis	154	108	122
Chlamydia	1,380	1,303	1,224
Cryptosporidiosis	3	5	1
Genital Herpes - Initial	56	61	74
Giardiasis	11	15	16
Gonorrhea	181	81	99
Hepatitis A acute	4	2	0
Hepatitis B acute	0	0	0
Hepatitis B chronic	*NA	7	8
Hepatitis C acute	0	2	0
Hepatitis C chronic	*NA	176	196
HIV/AIDS Cumulative Living	192	185	182
HIV/AIDS Deaths	4	6	4
HIV/AIDS New	8	9	12
Meningococcal Disease	0	2	0
Pertussis	101	493	10
Salmonellosis	31	26	18
Shigellosis	6	1	11
STEC (enterohemorrhagic E. coli)	21	7	10
Syphilis - Primary and Secondary	14	6	9
Tuberculosis	9	5	6
*NA=Not Available			

**Notifiable  
Conditions  
Year End  
Summary  
2013**