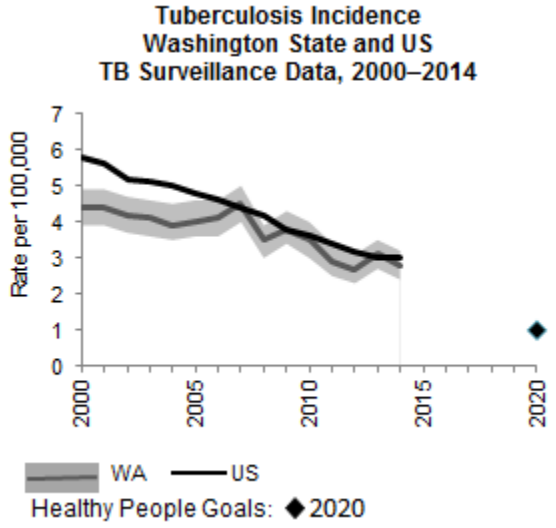
Tuberculosis

Definition: Tuberculosis (TB) is an infectious disease caused by the bacteria *Mycobacterium tuberculosis*. TB disease most commonly attacks the lungs, though it can also occur in other parts of the body. TB takes one of two forms—active TB disease or latent TB infection. People with active TB disease are in advanced stages of infection, most often show specific clinical signs and symptoms, and can transmit TB to others. People with latent TB infection do not show signs or symptoms and cannot transmit TB. Incidence rate estimates for TB disease are reported as the number of new cases per 100,000 population and use the Centers for Disease Control and Prevention case definition.[1]

This is a data update of the *Health of Washington State* chapter on Tuberculosis published in 2012.

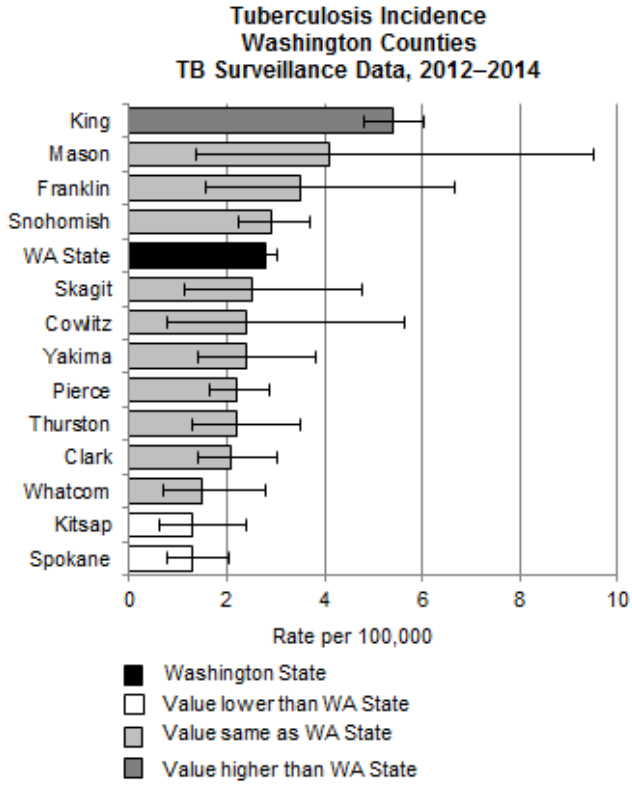
Time Trends

Incidence rates of TB disease in Washington have declined moderately since 2000. Rate differences between Washington and the U.S. have lessened over this period. In 2014, the TB rate in Washington (2.8 cases per 100,000) was similar to the U.S. rate.[2] Washington continues to make progress toward the *Healthy People 2020* goal, although will unlikely meet the goal.



Geographic Variation

From 2012–2014 combined, the TB rate in Washington was 2.8 cases per 100,000. During this period, 13 Washington counties had no TB cases while 13 had fewer than five. Rates are reported here for counties having five or more cases. King County reported 55% of the state's cases, with a rate higher than the state average. A key factor contributing to King County's TB rate is its large number of foreign-born residents. Kitsap and Spokane counties each had a rate below the state average for this period.



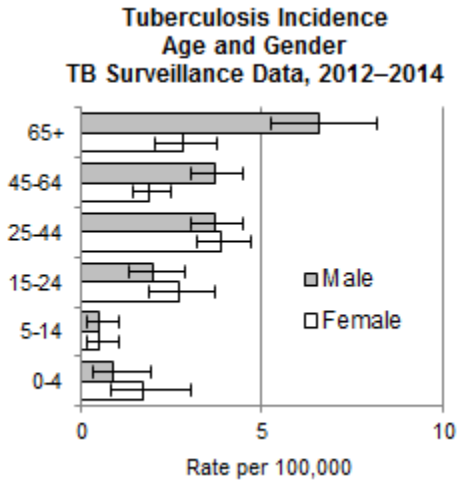
Age and Gender

From 2012–2014 combined, the TB rate among Washington residents ages 65 and older was higher than in most other age groups. Higher risk of TB disease among those 65 and older may be related to an increased risk of past exposure, along with a greater present risk of chronic disease.

Young children are at greater risk of developing disease after exposure. New cases of TB disease among children under five years of age indicate recent TB transmission in a community.[3] In 2012–

2014 combined, there was about one new case of TB per 100,000 children under five in Washington.

For 2012–2014 combined, males accounted for 56% of all TB cases in Washington. Males experienced a higher TB rate (3.2 cases per 100,000) compared to females (2.5 cases per 100,000) during this period. Higher overall incidence of TB among males has also been observed in other countries,[4] and in U.S. urban centers.[5] Higher risk of TB among males has been linked to several factors. One proposed factor is a greater likelihood of being in places or among groups where risk of exposure to TB is higher. Another factor is males more often engaging in health behaviors that increase risk of developing TB disease if infected.[6,7] Such factors may help explain the higher risk of TB among males in Washington. Among all TB cases from 2012–2014, males were more likely than females to have experienced homelessness, and to have abused alcohol, prior to diagnosis.

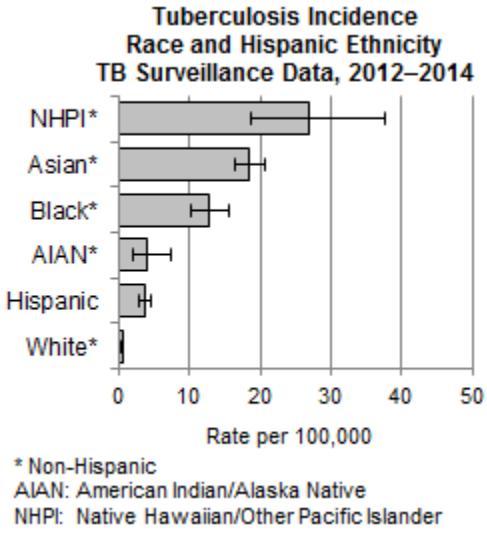


Economic Factors and Education

The Washington State Department of Health has not recently explored the relationship between income and education and the incidence of TB in Washington. Earlier work showed increasing TB rates with increasing proportions of residents living in poverty.[8] Researchers have shown that globally[9] and in the United States,[10] low income and low levels of education are associated with higher rates of TB.

Race, Ethnicity and Origin

For 2012–2014 combined, Washington residents of all other groups experienced a greater risk of TB compared to whites. Asian residents had a TB rate (18.4 cases per 100,000) higher than any of Washington's larger race or ethnic groups during this period. Black residents had the next highest rate (12.8 cases per 100,000). Native Hawaiian and other Pacific Islander residents experienced the greatest TB risk of any group. It is uncertain, however, whether the rate in this relatively small population is truly greater than the rate among Asian residents.



Foreign-born origin is a persistent risk factor for TB in Washington, as it is in the U.S.[11] For 2012–2014 combined, 75% of Washington residents diagnosed with TB were foreign-born. Origins from countries where TB is more common is a key factor driving higher risk among many of Washington's racial and ethnic communities. During this same time period, 94% of TB cases among Asian residents, 83% among black residents and 85% among Hispanic residents were foreign-born.

Data Sources

Tuberculosis surveillance data for years 2000-2014: Washington State Department of Health; Public Health Issues Management System (PHIMS-TB).

National tuberculosis data: U.S. Centers for Disease Control and Prevention; National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention; Division of Tuberculosis Elimination.

Population estimates data for state and county, by sex, age and race-ethnicity: Washington State Office of Financial Management, Forecasting Division.

For More Information

Washington State Department of Health, Tuberculosis Control Program, (360) 236-3443

Technical Notes

Foreign-born: The term foreign-born refers to any person born outside of the United States or its territories (e.g., Puerto Rico) and protectorates (e.g., Guam and American Samoa), regardless of U.S. citizenship status.

Acknowledgments

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Endnotes

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[1] U.S. Centers for Disease Control and Prevention. *Case Definitions for Infectious Conditions Under Public Health Surveillance: Tuberculosis (Mycobacterium tuberculosis), 2009 Case Definition*; http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/tuberculosis_current.htm; Accessed March 20, 2012.

[2] U.S. Centers for Disease Control and Prevention. *Reported Tuberculosis in the United States, 2014.* Atlanta, GA: U.S. Department of Health and Human Services; 2015; http://www.cdc.gov/tb/statistics/reports/2014/pdfs/tb-surveillance-2014-report.pdf. Accessed February 24, 2016.

[3] Friedman LN. *Tuberculosis: Current Concepts and Treatment*. 2nd ed. Boca Raton, FL: CRC Press; 2001.

[4] Borgdorff MW, Nagelkerke NJD, Dye C, Nunn P. Gender and tuberculosis: a comparison of prevalence surveys with notification data to explore sex differences in case detection. *Int J Tuberc Lung Dis*. 2000;4(2):123-132.

[5] Martinez AN, Rhee JT, Small PM, Behr MA. Sex differences in the epidemiology of tuberculosis in San Francisco. *Int J Tuberc Lung Dis*. 2000;4(1):26-31.

[6] Jimenez-Corona ME, Garcia-Garcia L, DeRiemer K, et al. Gender differentials of pulmonary tuberculosis transmission and reactivation in an endemic area. *Thorax* 2006;61:348-353.

[7] Caracta CF. Gender differences in pulmonary disease. *Mt Sinai J Med.* 2003;70:215-224.

[8] Washington State Department of Health. *The Health of Washington State Report, 2004 Supplement: Tuberculosis*; http://www.doh.wa.gov/HWS/ID2004.shtm; Accessed March 20, 2012.

[9] WHO. *Addressing Poverty in TB Control: Options for National TB Control Programmes.* Geneva, Switzerland. World Health Organization; 2005 (WHO/HTM/TB/2005.352).

[10] Barr RG, Diez-Roux AV, Knirsch CA, Pablos-Mendez A. Neighborhood poverty and the resurgence of tuberculosis in New York City, 1984-1992. *Am J Public Health*. 2001;91:1487-1493.

[11] Cain KP, Haley CA, Armstrong LR, et al. Tuberculosis among Foreign-born Persons in the United States: Achieving Tuberculosis Elimination. *Am J Respir Crit Care Med.* 2007; 175:75-79.