Chapter 7:
Tuberculosis in West Virginia

West Virginia Matching of Tuberculosis and AIDS Cases 1984-2000

Matching of Tuberculosis and AIDS Cases West Virginia, 1984 - 2000			
Year of Report	**# of TB Cases**	**# of AIDS Cases**	**# of TB Cases With AIDS**
1984	133	6	0
1985	108	7	0
1986	124	10	0
1987	99	25	1
1988	68	20	0
1989	77	55	0
1990	87	54	0
1991	64	71	1
1992	92	45	2
1993	75	100	2
1994	80	94	0
1995	71	129	1
1996	57	121	1
1997	54	119	2
1998	42	94	0
1999	41	63	0
2000	33	56	0
TOTAL	**1,305**	**1,069**	**10**

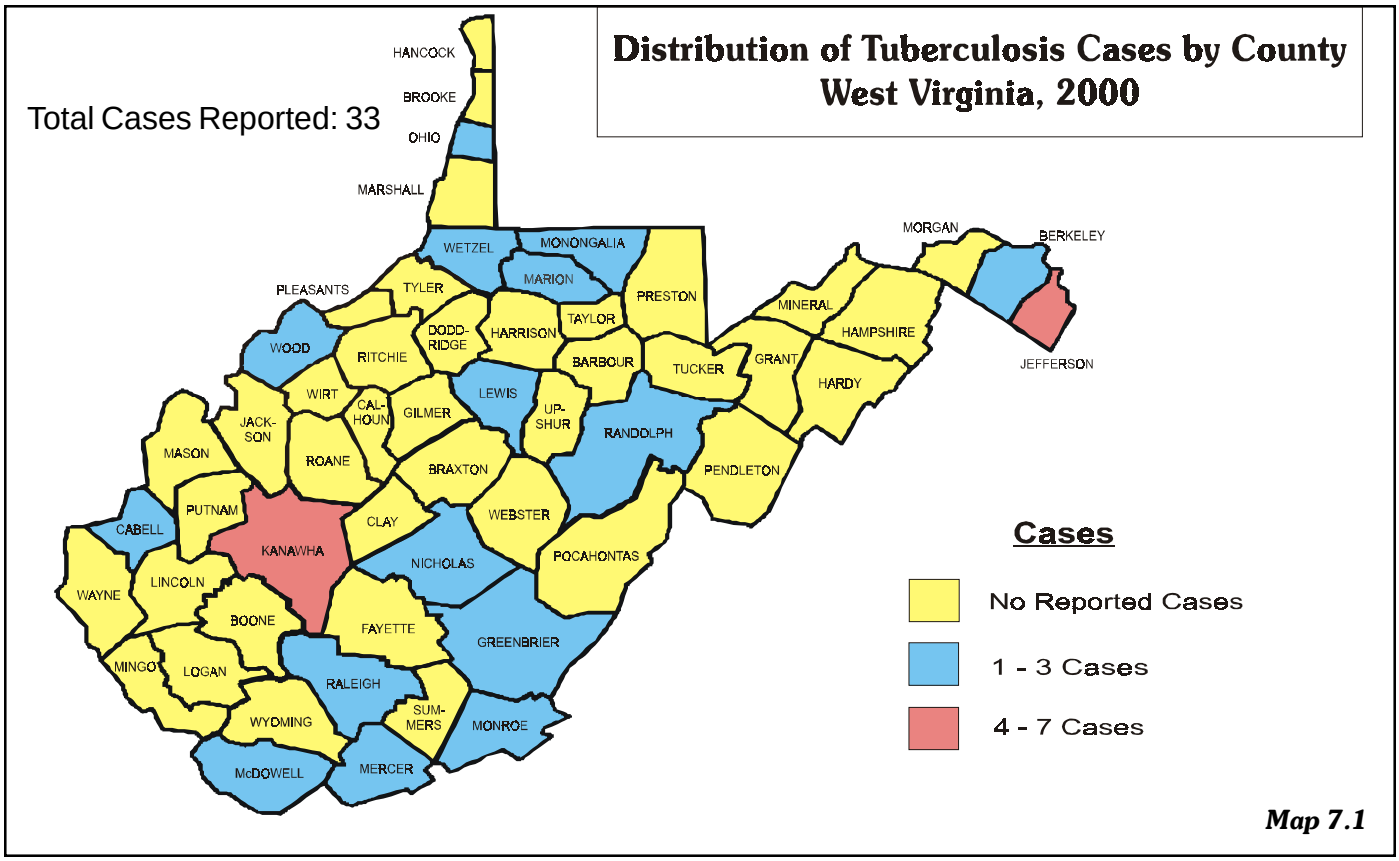
Table 7.1

Tuberculosis, is a disease caused by a bacteria called Mycobacterium tuberculosis. The bacteria can attack any part of the body, but they usually attack the lungs. TB disease was once the leading cause of death in the United States.

In the 1940s, scientists discovered the first of several drugs now used to treat TB. As a result, TB slowly began to disappear in the United States. But TB has come back. After 1984, the number of TB cases reported in the United States began to increase. In 1999, 17,531 of TB cases were reported, but declined to 16,377 cases in 2000.

TB is an airborne disease caused by the bacteria Mycobacterium tuberculosis. It is spread through tiny airborne droplets expelled by an infectious person. Transmission may occur when an uninfected person breathes in these droplets. Whether infection occurs depends upon the the environment where exposure occurred, infectiousness of the person with TB, and the duration of exposure. The closer contact to a person with active TB leads to a greater risk of infection.

TB bacteria become active if the immune system can't stop them from growing. The active bacteria begin to multiply in the body and cause TB disease. Many people who have TB infection never develop TB disease. In these group of people, the TB bacteria remain inactive for a lifetime without causing disease. But other people, especially people who have weak immune systems, the bacteria become active and cause TB disease.



Map 7.1

People infected with HIV virus, the virus that causes AIDS, and peaple living with AIDS have very weak immune systems, therefore very likely to be infected if exposed.

The Tuberculosis Program provides medication and educational services to prevent and control infection and disease caused by Mycobacterium tuberculosis. The West Virginia Tuberculosis Program

under the Division of Surveillance and Disease Control is responsible for disease surveillance, monitoring of statistical trends, and individual case management consultation to county health departments and other health care providers throughout the state.

The West Virginia AIDS and Tuberculosis registries are matched semi-annually to determine if there have been any individuals reported with both diseases. Since the inception of West Virginia's AIDS registry on April 1, 1984, there have been a total of 10 co-infected AIDS/TB cases reported in the state (Table 7.1).

It should be a high priority that HIV positive individuals be screened for TB infection and become candidates for TB preventive therapy. Likewise, persons found to be infected with TB should be counseled about risk behaviors of HIV and offered HIV testing. A concerted effort should be made to screen for HIV or TB following the diagnosis of either disease.

Individuals who are positive for HIV are at special risk of acquiring TB infection. Studies have shown that HIV-positive individuals, when exposed to a person with TB disease and is minimally infectious, or exposed for short periods of time, have developed TB infection and/or disease at much higher rates than typically seen among persons who have healthy immune systems.

Eight three percent (83%) of TB cases occur in the lung. Persons who are HIV-positive are more likely to have TB outside the lung. Normal chest x-rays may result even when the sputum cultures grew TB. Also, when someone is immunosuppressed, which may be caused by disease or immunosuppressive drugs, they may not have the ability to mount an immune response to skin test antigens and therefore the tuberculin skin test may give a false-negative response even though they may have latent TB infection or active TB disease. This is more common as CD4 counts decline, particularly below 400/mm. Standard treatment regimens have proven to be effective for persons who are immunosuppressed. Multi-drug resistant TB (MDR-TB) is a potential problem, though resistance has not occurred in the AIDS population in West Virginia. The rate of drug interaction is relatively high among HIV co-infected TB patients and therefore should be monitored closely. TB-HIV is preventable, and INH is effective for latent TB infection (LTBI). Other treatment regimens have been proven to be effective and are explained in detail in the Morbidity and Mortality Weekly Report (MMWR) prepared by the Centers for Disease Control and Prevention (CDC), June 9, 2000/ Vol. 49/ No. RR-6. Electronic copy is available from CDC's World Wide Web server at ***http://www.cdc.gov.***

Map 7.1 shows that the number of reported cases of active TB disease was higher in the southwestern counties. On average, the central, northern, and eastern counties in West Virginia reported no more than one or two cases of TB.

West Virginia Tuberculosis Mortality 1984 - 2000

West Virginia Tuberculosis Mortality 1984 - 2000			
Year of Report	**# of TB Cases**	**# of TB Deaths**	**State Rates***
1984	133	12	**6.8**
1985	108	19	**5.6**
1986	124	19	**6.5**
1987	99	16	**5.2**
1988	68	8	**3.6**
1989	77	5	**4.1**
1990	87	6	**4.9**
1991	64	6	**3.6**
1992	92	<5	**5.1**
1993	75	6	**4.1**
1994	80	<5	**4.4**
1995	71	5	**3.9**
1996	57	<5	**3.1**
1997	54	10	**3.0**
1998	42	<5	**2.3**
1999	41	5	**2.3**
2000	33	7	**1.8**

Table 7.2

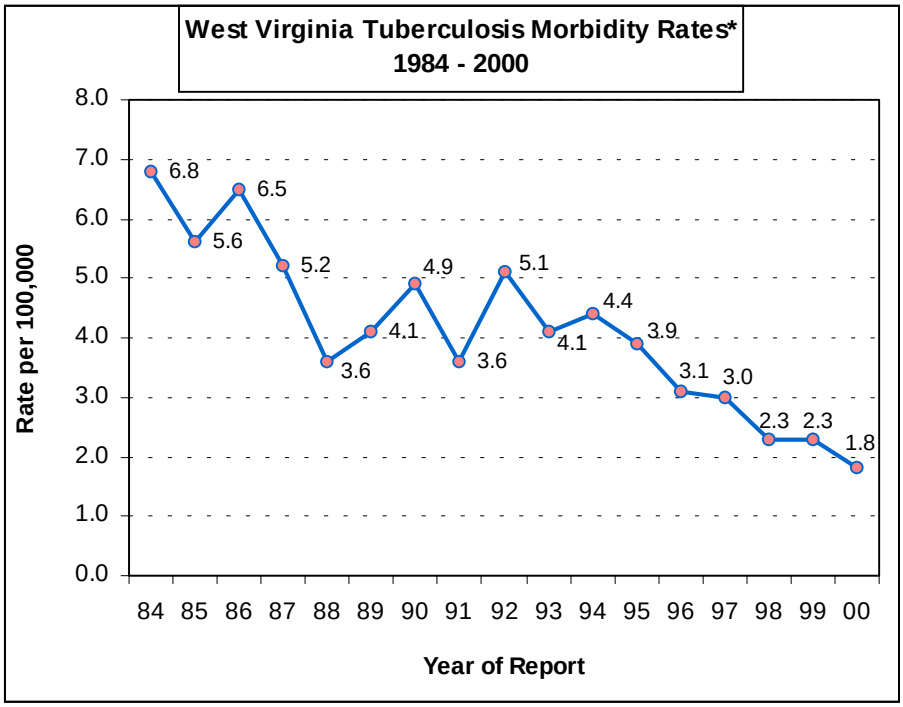


Figure 7.1

*Rates are per 100,000 residents and are based on the 1990 population.

The number of annual tuberculosis deaths in West Virginia has been below 10 since 1988, with the exception of 1997 (Table 7.2). In 1997, 10 deaths occurred, which included all patients diagnosed after death and those who died prior to completing treatment for tuberculosis. Tuberculosis may therefore not have been the actual cause of death. Tuberculosis played a leading role in at least two of the deaths in 1998, and at least one in 1999. Tuberculosis mortality rates continue to decline since 1984 to the lowest ever (1.8) in 2000 (Figure 7.1).

West Virginia Tuberculosis Cases by Age Group and Year of Report

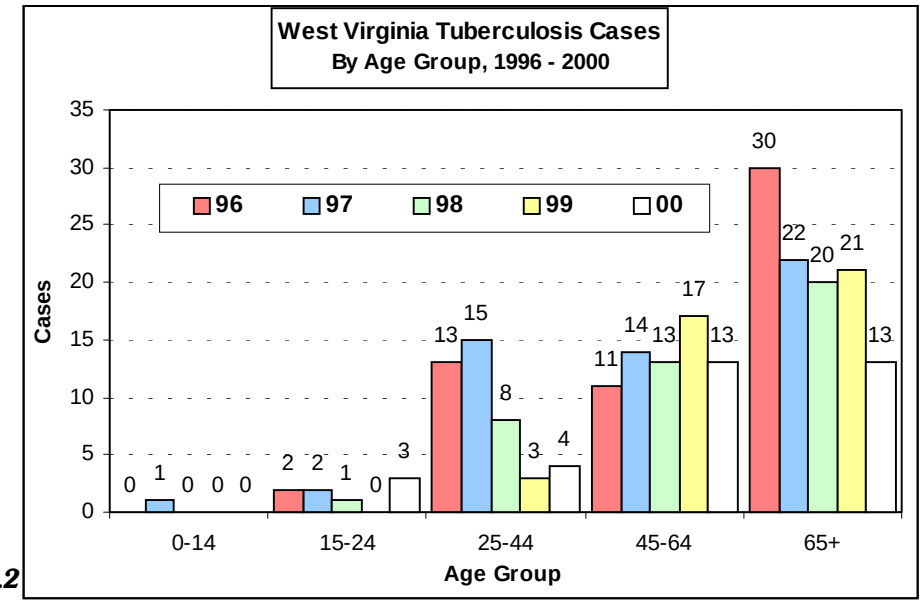


Figure 7.2

Figure 7.2 displays tuberculosis cases from 1996 through 2000 by age group. Cases over the age of 65 had gradually decreased to 48% in 1998, but increased to 51% of annual reported cases in 1999 than had a 48% decline in 2000. Although this age group continues to represent the largest age group of reported cases, none of the cases were nursing home residents. There were no cases of active tuberculosis reported for under the age of 20 in 1998 and none reported under the age of 30 in 1999, while four cases under 30 in 2000.

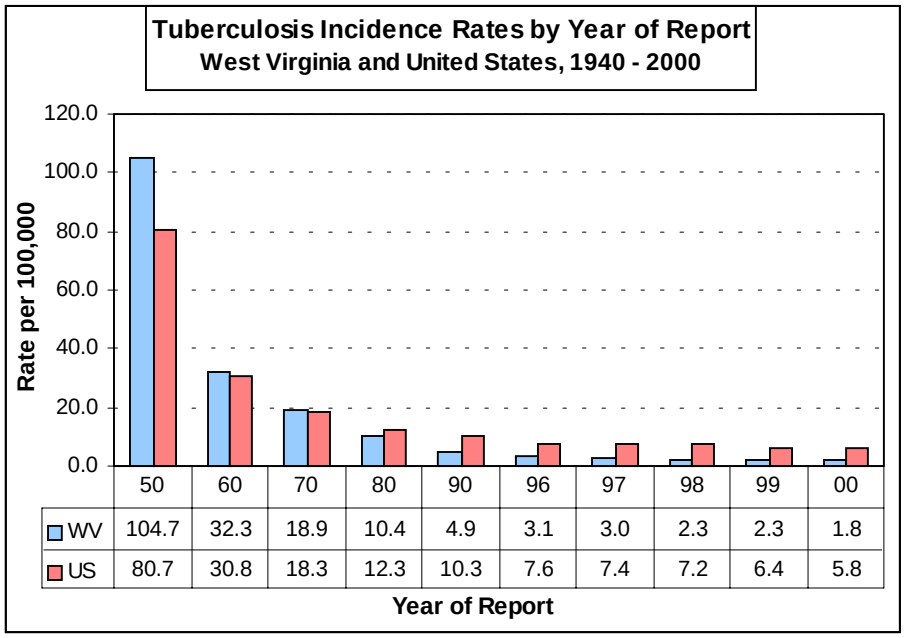


Figure 7.3

Figure 7.3 displays the incidence rate of tuberculosis in West Virginia compared to the United States. In the mid-1900's, West Virginia's case rate of tuberculosis per 100,000 population was greater than the national rate of reported cases. In 1974, West Virginia's rate dropped below the national rate, and the state has maintained a case rate of less than half of the national rate since 1990. In 2000, the same comparison of rates continued, with 1.8 for the West Virginia and 5.8 for the United States.

West Virginia Tuberculosis Cases by Gender, Race, and Year of Report

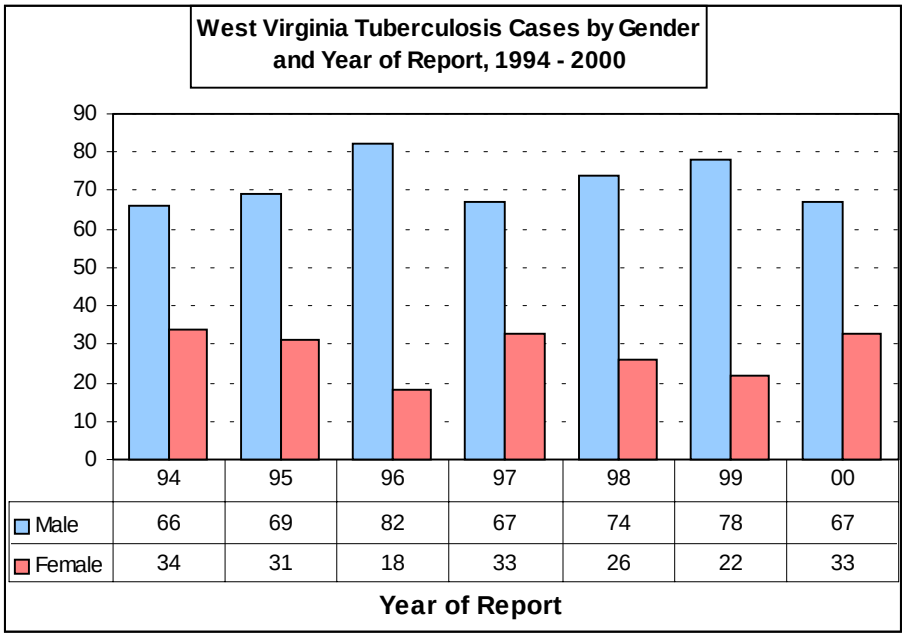


Figure 7.4

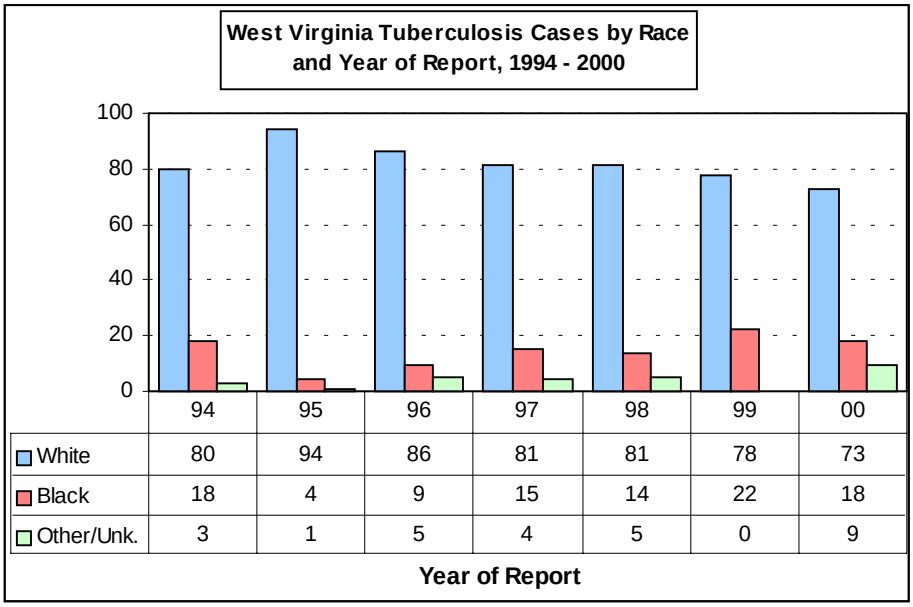


Figure 7.5

TB cases are usually higher among men than among women. From 1994-00, the percentage of TB among the male population continued to increase from 66% in 1994 to 82% in 1996, but declined in 1997 to 67% and increased to 74% in 1998 and continue to increase in 1999 to 78% and declined to 67% in 2000 (Figure 7.4). In 2000, males dominated the cases more than two to one (male 67% to female 33%).

TB cases by race from 1994-00 are displayed in Figure 7.5. West Virginia's population is predominantly white, as are the cases of TB. The percentage of blacks with TB has fluctuated from 18% in 1994 to 4% in 1995, then increased to 9% in 1996, to 15% in 1997, and dropped to 14% in 1998, but increased to 22% in 1999 and declined to 18% in 2000. Blacks accounted for 18% of tuberculosis cases while only 3% of West Virginia's population.

Notes: