

Executive Commentary

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Highlights of 2010 Report

Since 1953, in cooperation with state and local health departments, the Centers for Disease Control and Prevention (CDC), Division of Tuberculosis Elimination (DTBE) has collected information on each newly reported case of tuberculosis (TB) disease in the United States. Currently, each individual TB case report (Report of Verified Case of Tuberculosis or RVCT) is submitted electronically. The following are the highlights of the 2010 report:

1. Updated case counts for each year from 1993 through 2009.
2. Case counts: 11,182 TB cases were reported to CDC from the 50 states and the District of Columbia (DC) for 2010, representing a 3.1% decrease from 2009 (Table 1).
 - Nineteen states reported increased case counts from 2009 (Table 28).
 - California, Texas, New York, and Florida accounted for greater than 50% of the national case total (Table 28).
 - For the seventh consecutive year, Hispanics (29%) exceeded all other racial or ethnic groups with the largest percentage of total cases (Table 2).
 - Asians (28%) have surpassed non-Hispanic blacks or African-Americans¹ (24%) as the second largest racial or ethnic group since 2008.
 - Blacks or African-Americans born in the United States represented 40% of TB cases in U.S.-born persons and accounted for approximately 16% of the national case total (Table 17).
 - Asians born outside the United States represented 44% of TB cases in foreign-born persons and accounted for approximately 27% of the national case total (Table 18).
3. Case rates: In 2010, the TB case rate declined from 3.8 to 3.6 per 100,000 persons, representing a 3.8% decrease from 2009.
 - Thirteen states and DC reported rates above the national average (Table 20).
 - Thirty-seven states met the definition for low incidence, or ≤ 3.5 cases per 100,000 persons, an increase of three states from 2009 (Table 20).
 - The TB case rate was 1.6 per 100,000 for U.S.-born persons and 18.1 for foreign-born persons (Table 5).
 - Asians continued to have the highest case rate (22.4 per 100,000 persons) among all racial or ethnic groups (Table 2) though the case rate in Native Hawaiian or Other Pacific Islanders increased (20.8 per 100,000 persons).
4. Burden among the foreign-born: In 2010 the percentage of cases occurring in foreign-born persons was 60% of the national case total.
 - Foreign-born Hispanics and Asians together represented 80% of TB cases in foreign-born persons, and accounted for 48% of the national case total (Table 18).
 - In 32 states, $\geq 50\%$ of TB cases occurred among foreign-born persons (Table 23).
 - In 14 states, $\geq 70\%$ of TB cases occurred among foreign-born persons (Table 23).
 - In 9 states, $\geq 75\%$ of TB cases occurred among foreign-born persons (Table 23).
 - The top five countries of origin of foreign-born persons with TB were Mexico, Philippines, India, Vietnam and China (Table 6).
5. Drug resistance: 1.2% of reported cases, compared to 1.1% in 2009, had primary multidrug resis-

¹Hispanic and non-Hispanic are ethnicities. All races are non-Hispanic. The category “non-Hispanic blacks or African-Americans” includes U.S. - born and foreign-born persons unless otherwise specified.

tance, which is defined as no previous history of TB disease and resistance to at least isoniazid and rifampin (Table 10).

Tuberculosis in the United States

In 2010, the number of TB cases reported (11,182) and case rate (3.6 cases per 100,000) both decreased; this represented declines of 3.1% and 3.8%, respectively, compared to 2009. Since the 1992 TB resurgence peak in the United States, the number of TB cases reported annually has decreased by 58% (Table 1).

TB case rates vary by well-known factors such as age, race and ethnicity, and country of origin. The proportion of total cases occurring in foreign-born persons has been increasing since 1993. In 2010, 60% of TB cases occurred in foreign-born persons. Foreign-born persons have accounted for the majority of TB cases in the United States every year since 2001. Moreover, the case rate among foreign-born persons in 2010 was approximately 11 times higher than among U.S.-born persons (Table 5).

Tuberculosis deaths decreased by 7%, from 590 deaths in 2008 to 547 deaths in 2009 after a small increase from 554 deaths in 2007 (Table 1).

Age

Since 1993, TB case rates have declined nearly annually for all age groups. In 2010, TB case rates declined for those aged 15–24 years of age; 25–44; and those greater than or equal to 65 years while case rates remained similar for children 0–14 years of age and those 45–64 years. The highest burden of disease continues to be among older adults. In 2010, adults aged 65 years and older had a case rate of 5.5 cases per 100,000, while children aged < 14 years had the lowest rate at 1.0 case per 100,000 (Table 4).

Race and Ethnicity

In 2003, the race and ethnicity category, “non-Hispanic, Asian or Pacific Islander,” was split into “non-Hispanic Asian” and “non-Hispanic Native Hawaiian or Other Pacific Islander.” In 2010, Asians had the highest TB case rate at 22.4 cases per 100,000, which was a slight decrease from 23.3 in 2009. Native Hawaiians or Other Pacific Island-

ers had the second-highest TB case rate at 20.8 cases per 100,000, which is an increase compared to 16.7 cases per 100,000 reported in 2009. Due to low case numbers among Native Hawaiians or other Pacific Islanders, case rates fluctuate and must be interpreted with caution (Table 2).

Since 1993, TB case rates have declined between 54% and 76% in the following racial and ethnic groups: among Hispanic or Latinos from 19.9 to 6.5 cases per 100,000; among non-Hispanic blacks or African-Americans from 28.5 to 7.0 cases per 100,000; among American Indian or Alaska Natives from 14.0 to 6.4 cases per 100,000; and among non-Hispanic whites from 3.6 to 0.9 cases per 100,000. In 2010, the TB case rate for Asians remained approximately three times higher than that for Hispanics or blacks or African-Americans (Table 2).

Origin of Birth

Since 1993, the TB case rate among U.S.-born persons has declined annually. In 2010, the TB case rate for U.S.-born persons was 1.6 cases per 100,000 representing a 78% decrease from 7.4 cases per 100,000 in 1993. The TB case rate among foreign-born persons also declined during the same interval though the decline was less substantial. In 2010, the TB case rate among foreign-born persons was 18.1 cases per 100,000 representing a 47% decrease from 34.0 cases per 100,000 in 1993 (Table 5).

The proportion of TB cases among persons born in the United States has also declined annually since 1993. In 2010, 39% of TB cases were among U.S.-born persons compared to 69% in 1993 (Table 5). In 32 states, $\geq 50\%$ of TB cases occurred among foreign-born persons. In 14 states (California, Colorado, Connecticut, Delaware, Iowa, Maine, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Rhode Island, and Utah), $\geq 70\%$ of TB cases occurred among foreign-born persons (Table 23).

Country of Origin and World Region

From 2005 through 2009, the top five countries of origin of foreign-born persons with TB were Mexico, Philippines, India, Vietnam and China (Table 6). The distribution of TB cases by world region of origin reflects immigration patterns

among persons settling in the United States². Of the 6,720 TB cases reported among foreign-born persons in 2010, 40% occurred among persons born in the Americas region, and 29% occurred among persons born in the Western Pacific region (Table 19). From 1993 to 2010, the proportion of cases increased among persons born in the Eastern Mediterranean region (3% in 1993 to 4.4% in 2010), the Southeast Asia region (6% in 1993 to 15% in 2010), and the African region (2% in 1993 and 8% in 2010) (Table 19).

Multidrug-Resistant Tuberculosis

From 1993, when the RVCT was expanded to include drug-susceptibility results, the proportion of patients with primary multidrug-resistant TB (MDR TB), which is defined as no previous history of TB disease and resistance to at least isoniazid and rifampin, decreased from 2.5% to 1.0% by 1998. However, there has been a slight increase in the percentage of MDR TB cases from 1.0% percent of the total number of reported TB cases in 2008, (89 absolute cases), to 1.1% of the total number of reported TB cases in 2009 (94 cases), to 1.2% in 2010 (88 cases). Since 1997, the percentage of U.S.-born patients with MDR TB has remained $\leq 1.0\%$. However, of the total number of reported primary MDR TB cases, the proportion occurring in foreign-born persons increased from 25.3% (103 of 407) in 1993 to 82% (72 of 88) in 2010 (Table 10).

Extensively Drug-Resistant Tuberculosis

CDC has included an updated case count of extensively drug-resistant TB (XDR TB) cases from 1993 to 2010 in the slide set that accompanies this report. XDR TB is defined as resistance to isoniazid and rifampin plus resistance to any fluoroquinolone and at least one of three injectable second-line anti-TB drugs (i.e., amikacin, kanamycin, or capreomycin)^{3,4}. One person was reported to have

²United States Department of Homeland Security. 2010 Yearbook of Immigration Statistics. In: U.S. Department of Homeland Security, Office of Immigration Statistics; 2011.

³Centers for Disease Control and Prevention. Revised Definition of Extensively Drug-Resistant Tuberculosis. *MMWR Morb Mortal Wkly Rep* 2006;55:1176.

⁴Extensively drug-resistant tuberculosis (XDR-TB): recommendations for prevention and control. *Wkly Epidemiol Rec* 2006;81:430-2.

XDR TB during 2010, compared to no cases in 2009 and five cases in 2008.

Tuberculosis Therapy

The proportion of TB patients prescribed an initial treatment regimen including at least isoniazid, rifampin and pyrazinamide increased from 72% in 1993 to 87% in 2010, though this is slightly below the 89% observed in 2003. The proportion of patients who completed therapy within 1 year increased from 64% in 1993 to 85% in 2008 (the latest year for which complete outcome data are available). The proportion of persons receiving directly observed therapy at least for a portion of the treatment duration also increased from 36% in 1993 to 90% in 2008, the latest year for which complete outcome data are available (Table 12).

Summary

Both the absolute number of TB cases and the TB case rates in the United States continued to decrease in 2010. With 11,182 total cases representing a case rate of 3.6 cases per 100,000 persons, 2010 had the lowest number of reported TB cases since reporting began in 1953. After the unprecedented 11.4% decrease in reported tuberculosis cases in 2009⁵, the rate of decline returned to the average observed from 2003 - 2008 with a 3.1% decrease in the number of reported cases and a 3.8% decrease in the TB case rate in 2010. Though the reasons for the unprecedented decline have not been completely elucidated, it does not appear that the 2009 decline was due to underreporting.

In response to the Institute of Medicine report *Ending Neglect: The Elimination of Tuberculosis in the United States* outlining recommendations for achieving domestic TB elimination, CDC has committed to: maintaining control of TB while adapting to a declining incidence of disease and changing systems of health care financing and management; accelerating the decline of TB through targeted testing and treatment of persons with latent TB infection; developing new tools for the diagnosis, treatment, and prevention of TB; reducing the global burden of TB by increasing the United States involvement in global TB control

⁵Centers for Disease Control and Prevention. Decrease in reported tuberculosis cases - United States, 2009. *MMWR Morb Mortal Wkly Rep* 2010;59:289-94.

activities; mobilizing and sustaining support for TB elimination by engaging policy and opinion leaders, healthcare providers, affected communities, and the public; and tracking progress toward the goal of TB elimination^{6,7,8}.

Because of continuing disparities between TB rates in U.S.-born whites compared with racial and ethnic minorities and persons born outside the United States, efforts should continue to focus on 1) awareness of TB in high-risk populations (persons of Hispanic ethnicity, Asian or African-American race; persons with human immunodeficiency virus; persons who are incarcerated; persons who experience homelessness; persons living in long-term care facilities, persons without stable employment; and persons with drug use or excess alcohol use), 2) education and TB awareness amidst declining TB incidence⁹; 3) diagnosis and treatment of TB and latent infection in foreign-born persons; and 4) sustained funding for TB control. Continued support for CDC's current TB elimination priorities⁷ should increase progress towards the elimination goal of one TB case per 1,000,000 persons.

⁶Ending Neglect: The Elimination of Tuberculosis in the United States. Washington, DC: National Academy Press; 2000.

⁷Centers for Disease Control and Prevention. CDC's Response to Ending Neglect: The Elimination of Tuberculosis in the United States. Atlanta; 2002.

⁸CDC --- TB Strategic Planning. Centers for Disease Control and Prevention. (Accessed August 31, 2011, at <http://www.cdc.gov/tb/about/strategicplan.htm>.)

⁹Jereb JA. Progressing toward tuberculosis elimination in low-incidence areas of the United States. Recommendations of the Advisory Council for the Elimination of Tuberculosis. MMWR Recomm Rep 2002;51:1-14.