

World TB Day — March 24, 2016

World TB Day is recognized each year on March 24, which commemorates the date in 1882 when Dr. Robert Koch announced his discovery of *Mycobacterium tuberculosis*, the bacillus that causes tuberculosis (TB). World TB Day is an opportunity to raise awareness about TB and support worldwide TB prevention and control efforts. The U.S. theme for World TB Day, “Unite to End TB,” highlights how much more needs to be done to eliminate TB in the United States.

After 2 decades of annual declines, TB incidence in the United States has leveled at approximately 3.0 new cases per 100,000 persons. (1,2). The determinants of this leveling in TB incidence are not yet clear; further evaluation of available data is required to understand the causes of this trend.

CDC is committed to eliminating TB in the United States. Staying on the path toward TB elimination will require more intensive efforts, both in the United States and globally. These efforts will not only focus on strengthening existing systems for interrupting TB transmission, but also on increasing testing and treatment of persons with latent TB infection. Additional information about World TB Day and CDC’s TB elimination activities is available on CDC’s website (<http://www.cdc.gov/tb/worldtbd>).

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Leveling of Tuberculosis Incidence — United States, 2013–2015

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After 2 decades of progress toward tuberculosis (TB) elimination with annual decreases of ≥ 0.2 cases per 100,000 persons (1), TB incidence in the United States remained approximately 3.0 cases per 100,000 persons during 2013–2015. Preliminary data reported to the National Tuberculosis Surveillance System indicate that TB incidence among foreign-born persons in the United States (15.1 cases per 100,000) has remained approximately 13 times the incidence among U.S.-born persons (1.2 cases per 100,000). Resuming progress toward TB elimination in the United States will require intensification of efforts both in the United States and globally, including increasing U.S. efforts to detect and treat latent TB infection,

INSIDE

- 279 Tuberculosis Among Temporary Visa Holders Working in the Tourism Industry — United States, 2012–2014
- 282 Photokeratitis Linked to Metal Halide Bulbs in Two Gymnasiums — Philadelphia, Pennsylvania, 2011 and 2013
- 286 Travel-Associated Zika Virus Disease Cases Among U.S. Residents — United States, January 2015–February 2016
- 290 Preventing Transmission of Zika Virus in Labor and Delivery Settings Through Implementation of Standard Precautions — United States, 2016
- 293 Notes from the Field: Injuries Associated with Bison Encounters — Yellowstone National Park, 2015
- 296 QuickStats

Continuing Education examination available at http://www.cdc.gov/mmwr/cme/conted_info.html#weekly.



strengthening systems to interrupt TB transmission in the United States and globally, accelerating reductions in TB globally, particularly in the countries of origin for most U.S. cases.

Health departments in the 50 states and District of Columbia (DC) electronically report verified TB cases that meet the CDC and Council of State and Territorial Epidemiologists case definition to the National Tuberculosis Surveillance System (2). Reports include the patient's demographic information, medical and social risk factors for TB, and clinical information about the TB case. U.S.-born persons are defined as persons born in the United States, American Samoa, the Federated States of Micronesia, Guam, the Republic of the Marshall Islands, the Commonwealth of the Northern Mariana Islands, Puerto Rico, the Republic of Palau, the U.S. Virgin Islands, and U.S. minor outlying islands, or persons born elsewhere to a U.S. citizen (3). Race/ethnicity is self-identified. Persons of Hispanic ethnicity might be of any race or multiple races; non-Hispanic persons are categorized by race. CDC calculates state and overall national TB incidence by using July 1 midyear population estimates from the U.S. Census Bureau (3). The Current Population Survey provides the population denominators for incidence according to national origin and race/ethnicity (4). TB case counts and incidence per 100,000 population during 2015 and percent change from 2014 were calculated for the 50 states and DC and for each census division.

As they did during the previous 7 years, four states (California, Florida, New York, and Texas) reported >500 cases each in 2015 (Table 1). Together, these four states accounted

for 4,839 TB cases, or approximately half (50.6%) of all reported cases. State-specific incidence ranged from 0.5 cases per 100,000 persons (West Virginia) to 9.1 TB cases per 100,000 persons (Alaska) (median state incidence = 2.0). By census division, the highest TB incidence was reported in the Middle Atlantic, West South Central, and Pacific divisions. The largest increases in TB incidence from 2014 to 2015 occurred in the East North Central, New England, Mountain, and West South Central divisions.

Among the 9,563 TB cases reported during 2015, 3,201 (33.5%) occurred among U.S.-born persons, corresponding to an annual TB incidence of 1.2 per 100,000 persons. The 6,335 TB cases among foreign-born persons in the United States (66.2% of the total U.S. cases) corresponded to an annual TB incidence of 15.1 per 100,000 persons (Table 2). Overall national TB incidence remained approximately 3.0 cases per 100,000 persons during 2013–2015 (Figure).

In 2015, most U.S.-born persons reported with TB were either non-Hispanic blacks (1,144 cases) or non-Hispanic whites (991 cases) (Table 2). Among U.S.-born non-Hispanic blacks, TB incidence was at an all-time low (3.3 cases per 100,000 persons). Incidence among U.S.-born non-Hispanic whites remained the lowest (0.5 cases per 100,000). Although U.S.-born Hispanics had the third highest case count (661 cases), they had the second lowest incidence (1.8 cases per 100,000). U.S.-born Native Hawaiians/other Pacific Islanders had the highest incidence (12.7 cases per 100,000), followed by U.S.-born American Indians/Alaska

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TABLE 1. Tuberculosis (TB) case counts and incidence, by U.S. Census division and state — United States, 2014 and 2015*

Census division/ state	No. reported TB cases			TB incidence per 100,000 persons [†]		
	2014	2015*	% change	2014	2015*	% change [§]
Division 1: New England						
Connecticut	60	70	16.7	1.7	1.9	16.8
Maine	14	18	28.6	1.1	1.4	28.7
Massachusetts	199	192	-3.5	2.9	2.8	-4.1
New Hampshire	11	13	18.2	0.8	1.0	17.9
Rhode Island	21	30	42.9	2.0	2.8	42.7
Vermont	2	7	250.0	0.3	1.1	250.4
Total	307	330	7.5	2.1	2.2	7.2
Division 2: Middle Atlantic						
New Jersey	307	326	6.2	3.4	3.6	6.0
New York	784	766	-2.3	4.0	3.9	-2.5
Pennsylvania	208	200	-3.8	1.6	1.6	-3.9
Total	1,299	1,292	-0.5	3.1	3.1	-0.7
Division 3: East North Central						
Illinois	320	344	7.5	2.5	2.7	7.7
Indiana	108	116	7.4	1.6	1.8	7.1
Michigan	105	130	23.8	1.1	1.3	23.7
Ohio	156	143	-8.3	1.3	1.2	-8.5
Wisconsin	48	69	43.8	0.8	1.2	43.5
Total	737	802	8.8	1.6	1.7	8.7
Division 4: West North Central						
Iowa	54	38	-29.6	1.7	1.2	-30.0
Kansas	40	36	-10.0	1.4	1.2	-10.3
Minnesota	147	150	2.0	2.7	2.7	1.4
Missouri	80	93	16.3	1.3	1.5	15.9
Nebraska	38	33	-13.2	2.0	1.7	-13.8
North Dakota	15	9	-40.0	2.0	1.2	-41.3
South Dakota	8	17	112.5	0.9	2.0	111.2
Total	382	376	-1.6	1.8	1.8	-2.1
Division 5: South Atlantic						
Delaware	22	23	4.5	2.4	2.4	3.4
District of Columbia	32	33	3.1	4.8	4.9	1.2
Florida	595	602	1.2	3.0	3.0	-0.6
Georgia	335	322	-3.9	3.3	3.2	-5.0
Maryland	198	176	-11.1	3.3	2.9	-11.6
North Carolina	195	201	3.1	2.0	2.0	2.0
South Carolina	79	104	31.6	1.6	2.1	29.8
Virginia	198	213	7.6	2.4	2.5	6.9
West Virginia	13	10	-23.1	0.7	0.5	-22.9
Total	1,667	1,684	1.0	2.7	2.7	-0.2

Natives (6.8 cases per 100,000). A total of 344 TB cases occurred among U.S.-born persons aged <15 years (0.6 cases per 100,000), representing 10.7% of all U.S.-born persons reported as having incident TB in 2015.

In 2015, among foreign-born persons with reported TB in the United States, Asians had both the highest case count (3,007 cases) and highest incidence (28.2 cases per 100,000 persons). The top five countries of origin for foreign-born persons with TB were Mexico (n = 1,250; 19.7%), the Philippines (n = 819; 12.9%), India (n = 578; 9.1%), Vietnam (n = 513; 8.1%), and China (n = 424; 6.7%). Together, these countries represent 45.2% of the foreign-born population in the United States (4), but accounted for 56.6% (3,584 cases) of all TB

TABLE 1. (Continued) Tuberculosis (TB) case counts and incidence, by U.S. Census division and state — United States, 2014 and 2015*

Census division/ state	No. reported TB cases			TB incidence per 100,000 persons [†]		
	2014	2015*	% change	2014	2015*	% change [§]
Division 6: East South Central						
Alabama	133	119	-10.5	2.7	2.4	-10.8
Kentucky	80	67	-16.3	1.8	1.5	-16.5
Mississippi	74	74	0.0	2.5	2.5	0.0
Tennessee	151	131	-13.2	2.3	2.0	-13.9
Total	438	391	-10.7	2.3	2.1	-11.1
Division 7: West South Central						
Arkansas	93	90	-3.2	3.1	3.0	-3.6
Louisiana	121	119	-1.7	2.6	2.5	-2.1
Oklahoma	59	67	13.6	1.5	1.7	12.6
Texas	1,269	1,334	5.1	4.7	4.9	3.2
Total	1,542	1,610	4.4	4.0	4.1	2.9
Division 8: Mountain						
Arizona	193	198	2.6	2.9	2.9	1.1
Colorado	64	73	14.1	1.2	1.3	12.0
Idaho	11	11	0.0	0.7	0.7	-1.2
Montana	6	9	50.0	0.6	0.9	48.6
Nevada	74	85	14.9	2.6	2.9	12.8
New Mexico	50	46	-8.0	2.4	2.2	-8.0
Utah	31	37	19.4	1.1	1.2	17.3
Wyoming	2	4	100.0	0.3	0.7	99.4
Total	431	463	7.4	1.9	2.0	5.9
Division 9: Pacific						
Alaska	62	67	8.1	8.4	9.1	7.9
California	2,134	2,137	0.1	5.5	5.5	-0.8
Hawaii	136	127	-6.6	9.6	8.9	-7.4
Oregon	77	76	-1.3	1.9	1.9	-2.7
Washington	194	208	7.2	2.7	2.9	5.6
Total	2,603	2,615	0.5	5.0	5.0	-0.6
Total U.S. Population	9,406	9,563	1.7	2.9	3.0	0.9

* TB case counts are based on provisional National Tuberculosis Surveillance System data as of March 4, 2016. Updated data will be available in CDC's annual TB surveillance report later this year (<http://www.cdc.gov/tb/statistics/>).

† CDC calculates state and national TB incidence by using the U.S. Census Bureau's July 1 midyear population estimates (<http://www.census.gov/popest/data/national/totals/2015/index.html>).

§ Percentage change in incidence is calculated on the basis of unrounded incidence for 2014 and 2015.

cases among foreign-born persons. Although Mexico-born persons accounted for the largest proportion of foreign-born persons reported with TB, their TB incidence in the United States (10.4 cases per 100,000) was lower than that among persons born in China (24.9 cases per 100,000), India (23.9 cases per 100,000), the Philippines (46.9 cases per 100,000), and Vietnam (47.8 cases per 100,000). From 2014 to 2015, the number of TB cases among Philippines-born persons grew from 755 to 819 (8.5% increase), and the number of TB cases among India-born persons grew from 479 to 578 (20.7% increase). The Philippines-born population in the United States grew from 1,639,286 to 1,747,287 (population growth of 6.6%), and the India-born population grew from 2,166,930 to 2,421,795 (population growth of 11.8%) (4).

TABLE 2. Tuberculosis (TB) case counts and incidence, by national origin and race/ethnicity — United States, 2012–2015*

U.S. population group [†]	2012		2013		2014		2015*	
	No. cases	Incidence per 100,000 persons [§]	No. cases	Incidence per 100,000 persons [§]	No. cases	Incidence per 100,000 persons [§]	No. cases	Incidence per 100,000 persons [§]
U.S.-born								
Hispanic	692	2.0	655	1.9	652	1.8	661	1.8
White, non-Hispanic	1,272	0.7	1,100	0.6	967	0.5	991	0.5
Black, non-Hispanic	1,345	4.0	1,250	3.6	1,183	3.4	1,144	3.3
Asian	120	2.0	151	2.4	137	2.1	141	2.1
American Indian/Alaska Native	145	6.8	125	5.7	117	5.2	141	6.8
Native Hawaiian/other Pacific Islander	51	8.4	44	6.1	83	12.4	88	12.7
Multiple or unknown race/ethnicity	33		37		38		35	
Total U.S.-born[¶]	3,658	1.4	3,362	1.2	3,177	1.2	3,201	1.2
Foreign-born								
Hispanic	2,096	11.5	2,039	11.2	2,093	11.2	2,024	10.3
White, non-Hispanic	297	3.7	322	4.2	279	3.6	258	3.4
Black, non-Hispanic	898	27.7	836	24.5	828	23.6	845	22.8
Asian	2,845	29.9	2,848	29.0	2,852	28.7	3,007	28.2
Multiple, other,** or unknown race/ethnicity	142	—	146	—	171	—	201	—
Total foreign-born[¶]	6,278	15.9	6,191	15.6	6,223	15.4	6,335	15.1
Unknown national origin	4	—	9	—	6	—	27	—
Total United States[¶]	9,940	3.2	9,562	3.0	9,406^{††}	2.9^{††}	9,563*	3.0

* Provisional National Tuberculosis Surveillance System data as of March 4, 2016. Updated data will be available in CDC's annual TB surveillance report later this year (<http://www.cdc.gov/tb/statistics/>).

[†] Persons of Hispanic ethnicity might be of any race or multiple races; non-Hispanic persons are categorized by race.

[§] Overall national TB incidence calculated by using July 1 midyear population estimates from the U.S. Census Bureau (<http://www.census.gov/popest/data/national/totals/2015/index.html>). The Current Population Survey (<http://dataferrett.census.gov>) provided the population denominators for incidence according to national origin and race/ethnicity.

[¶] Incidence provided in the text and this table is rounded. Year-to-year TB incidence per 100,000 U.S.-born population declined 7.0% from 2011 to 2012 (from 1.46 to 1.36 cases), declined 8.8% in 2013 (to 1.24 cases), declined 6.0% in 2014 (to 1.16 cases), and increased 0.3% in 2015 (to 1.17 cases). TB incidence per 100,000 foreign-born population declined 5.9% from 2011 to 2012 (from 16.91 to 15.90), declined 1.8% in 2013 (to 15.61 cases), declined 1.1% in 2014 (to 15.43 cases), and declined 2.3% in 2015 (to 15.08 cases).

** Other includes a total of four persons reported as American Indians/Alaska Natives (one in 2012, two in 2013, zero in 2014, one in 2015) and a total of 51 as Native Hawaiians/other Pacific Islanders (12 in 2012, 17 in 2013, eight in 2014, 14 in 2015).

^{††} The provisional number of TB cases for 2014 was 9,412, which corresponded to an incidence of 2.951 per 100,000 persons (i.e., rounded up to 3.0); the updated number of TB cases for 2014 is 9,406, which corresponds to an incidence of 2.949 cases per 100,000 persons (i.e., rounds down to 2.9).

Ninety-six TB cases occurred among foreign-born persons aged <15 years (6.0 cases per 100,000), representing 1.5% of all foreign-born persons reported as having incident TB in the United States in 2015.

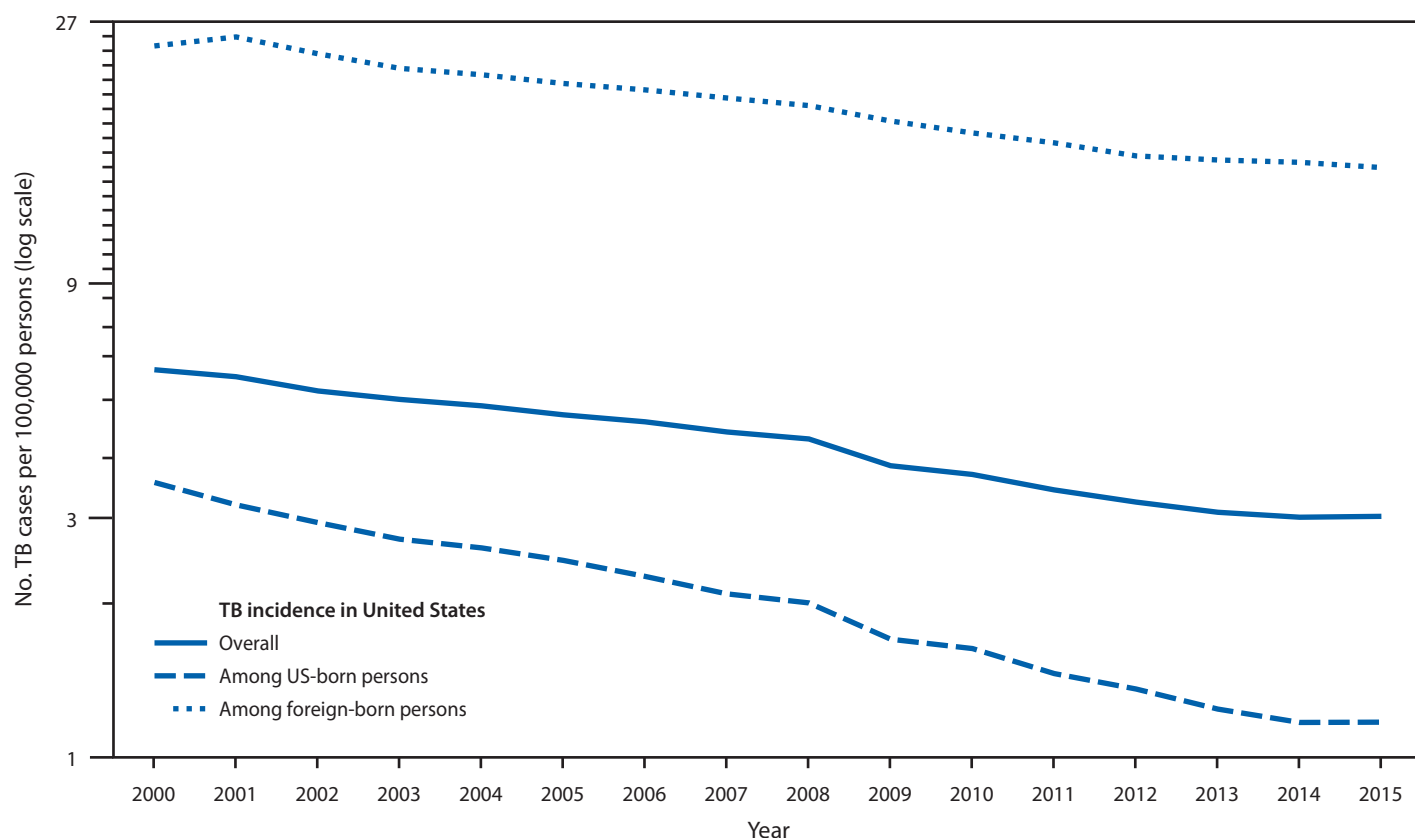
Discussion

After 2 decades of annual declines (1), TB incidence in the United States has leveled at approximately 3.0 new cases per 100,000 persons. Epidemiologic modeling suggests that even if the previously observed annual declines in the United States had been sustained, TB elimination, defined as <1 TB case per one million persons annually (5), would not occur by the end of this century (6). The determinants of this leveling in TB incidence are not yet clear; further evaluation of available data is required to understand the causes of this trend.

The 1985–1992 TB resurgence was attributed to the human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome epidemic, immigration from countries with higher

TB incidence, and increased TB transmission within the United States (7). However, the proportion of TB patients coinfecting with HIV has declined substantially in the United States (5.6% of TB patients in 2015 with known HIV status were coinfecting, including 7.8% of the U.S.-born), and TB incidence among U.S. foreign-born persons has continued to decline (1). In contrast, the stabilization of TB incidence among U.S.-born persons (Table 2), together with evidence provided by molecular genotyping of TB cases (1,8), demonstrates that TB transmission within the United States continues to occur. The continued occurrence of TB cases among U.S.-born children is further corroboration, because TB disease in a young child is a sentinel event representing recent infection (5,7). Substance abuse, incarceration, and homelessness associated with TB outbreaks highlight some of the complicated case management work required on the health department frontlines of TB control (9).

FIGURE. Tuberculosis (TB) incidence overall and among U.S.- and foreign-born persons, by year — United States, 2000–2015



* Provisional National Tuberculosis Surveillance System data as of March 4, 2016. Updated data will be available in CDC's annual TB surveillance report later this year (<http://www.cdc.gov/tb/statistics/>).

Effective TB control requires diagnosing cases as early as possible during the illness, thus allowing earlier airborne precautions and curative treatment to interrupt transmission (5,9). An early diagnosis for a patient with infectious TB also permits a timely contact investigation, which is essential to detect and prevent additional TB cases. Recently infected contacts, particularly children, benefit greatly from treatment to avert progression to active TB disease (5,7). TB prevention, timely diagnosis, and treatment completion are necessary for all groups, but especially for groups disproportionately affected by TB. Since 2003, TB incidence among Native Hawaiians/other Pacific Islanders and American Indians/Alaska Natives has remained high despite declining incidence among Hispanics and non-Hispanic Asians, whites, and blacks (1).

Two thirds of all U.S. TB cases occur among foreign-born persons, often years after arrival (10), which is consistent with disease progression following years of untreated latent TB infection. Epidemiologic modeling indicates that eliminating the threat of TB in the United States will require additional strategies to reduce TB in the countries of origin and expand treatment of latent TB infection among the foreign-born persons (6). Despite recent declines in TB incidence among

foreign-born persons, these persons continue to have a higher risk for TB, reflecting the importance of further intensifying the global battle against TB and underscoring the importance of interventions to screen and treat U.S.-bound permanent immigrants and refugees for TB disease. TB elimination will require both global interventions and a substantial improvement in larger scale identification and treatment of latent TB infection among foreign-born persons living in the United States (6), consistent with CDC's strategic plan for the national elimination of TB (<http://www.cdc.gov/tb/about/strategicplan.htm>).

TB is preventable and curable, and its elimination would have widespread health, economic, and social benefits. Resuming declines in TB incidence will require more comprehensive public health approaches, both globally and domestically. These include increasing case detection and cure rates globally, reducing TB transmission in institutional settings such as health care settings and correctional facilities, and increasing detection and treatment of preexisting latent TB infection among the U.S. populations most affected by TB. Finally, more emphasis should be placed on interrupting the relatively limited, but persistent, ongoing TB transmission (e.g., among persons experiencing homelessness) in the United States, as well

Summary**What is already known about this topic?**

Uniform national reporting of tuberculosis (TB) cases in the United States began in 1953. During 1993–2012, the annual incidence of reported TB cases has always been ≥ 0.2 cases per 100,000 persons lower than the previous year.

What is added by this report?

Preliminary data for 2015 indicate an incidence of 3.0 cases per 100,000 persons, approximately the same incidence as during 2013 and 2014. After 2 decades of declining incidence, progress toward TB elimination in the United States appears to have stalled.

What are the implications for public health practice?

Resuming declines in TB incidence in the United States will require intensification of efforts both domestically and globally. More emphasis should be placed on strengthening U.S. systems for detecting and treating latent TB infection and interrupting TB transmission, as well as accelerating reductions in TB globally.

as continuing research on better means to diagnose, treat, and prevent TB infection and disease.

This report is limited to provisional National Tuberculosis Surveillance System data as of March 4, 2016. Updated data will be available in CDC's annual TB surveillance report (*I*) later this year (<http://www.cdc.gov/tb/statistics/>), although the final TB case count is not expected to change substantially.

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