

# From the Centers for Disease Control and Prevention

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## Tuberculosis Morbidity—United States, 1997

MMWR. 1998;47:253-257

2 tables, 1 figure omitted

During 1997, a total of 19,855 cases of tuberculosis (TB) (7.4 cases per 100,000 population) were reported to CDC from the 50 states and the District of Columbia, representing a 7% decrease from 1996<sup>1</sup> and a 26% decrease from 1992, when the number of cases peaked during the resurgence of TB in the United States. This report summarizes national TB surveillance data for 1997 and compares it with similar data for previous years. The findings indicate that, although the overall number of TB cases continued to decrease, trends in the number of reported cases and TB case rates differed by geographic area and population characteristics.

In 1997, six states (California, Florida, Illinois, New Jersey, New York, and Texas) reported 57% of all TB cases. Since 1992, the number of cases reported from each of these states decreased substantially. Cases of TB remained concentrated in urban areas: in 1997, 40% of TB cases were reported from 64 major cities. The four largest of these cities (i.e., New York, Los Angeles, Chicago, and Houston) reported an overall decrease in total cases during 1992-1997.

During 1992-1997, the overall decrease in TB cases primarily reflected the substantial decline in cases among U.S.-born persons in all age groups. The number of cases among foreign-born persons increased 6% during this period, reflecting a small increase among adults aged 25-44 years, a larger increase among adults aged  $\geq 45$  years, and a substantial decline among children aged  $< 15$  years.

The proportion of TB cases among foreign-born persons has increased steadily since the mid-1980s and increased markedly since 1992 (from 27% in 1992 to 39% in 1997). The TB case rate for foreign-born persons has remained at least four to five times higher than that for U.S.-born persons.

During 1997, the percentage of TB cases for which drug-susceptibility results for initial *Mycobacterium tuberculosis* isolates were reported was 84% (13,386 of 15,986 culture-positive cases). Of the 42 states that reported drug-susceptibility results for at least 75% of culture-positive cases, 963 (7.6%) isolates

were resistant to at least isoniazid, and 171 (1.3%) were resistant to at least isoniazid and rifampin (i.e., multidrug-resistant TB [MDR-TB]). Of these 42 states, 27 reported at least one MDR-TB case; however, 47% of all MDR-TB cases were reported from New York (n = 47) and California (n = 34).

Information about the human immunodeficiency virus (HIV) status of persons with TB reported to the national surveillance system is limited. In 1997, only 3485 (50%) of 6915 TB case reports for persons aged 25-44 years included information about HIV status, and only 15 states reported HIV test results for at least 75% of cases in persons in this age group. Of these 15 states, the percentage of TB cases in persons aged 25-44 years who were coinfecting with HIV ranged from zero (North Dakota and South Dakota) to 48% (Florida). Reporting of HIV status has improved slowly since 1993, the year such information was first included on TB case reports submitted to CDC. In 1993, information about HIV status was reported for 33% of TB cases in persons aged 25-44 years, and six states reported this information for at least 75% of cases among persons in this age group.<sup>2</sup>

Reported by: Div of Tuberculosis Elimination, National Center for HIV, STD, and TB Prevention, CDC.

**CDC Editorial Note:** The findings in this report highlight several important trends in reported cases of TB in the United States. First, for the fifth consecutive year, the total number of reported cases decreased. Second, declines during 1992-1997 were sustained in states reporting the largest number of TB cases, particularly within major urban communities. Third, the overall decline in reported TB cases reflected a substantial decrease in cases among U.S.-born persons and a small increase in the number of cases among foreign-born persons.

The decline in the overall number of reported TB cases has been attributed to stronger TB-control programs that emphasize promptly identifying persons with TB, initiating appropriate therapy, and ensuring completion of therapy.<sup>3</sup> The resulting decline in cases among U.S.-born persons probably reflected reduced community transmission of *M. tuberculosis*, particularly in areas with a high inci-

dence of acquired immunodeficiency syndrome (AIDS). In comparison, the relatively stable number of cases among foreign-born persons indicated that most cases of active TB disease among foreign-born persons residing in the United States result from infection with *M. tuberculosis* in the person's country of birth.<sup>4</sup>

To reduce active TB disease among foreign-born persons residing in the United States, CDC, in collaboration with state and local health departments, is developing a comprehensive plan that will include strategies to improve case finding and prevention activities. However, not all foreign-born persons have the same risk for active TB disease. For example, persons from countries with established market economies and most former socialist countries of Europe are at low risk for active TB disease and may benefit least from screening.<sup>4</sup>

Two important factors in the resurgence of TB in the United States during the late 1980s were the HIV/AIDS epidemic and the emergence of MDR-TB. Because incomplete reporting has limited analysis of national TB surveillance data by HIV status, state health departments have compared TB and AIDS registries to help estimate the proportion of reported TB cases with HIV coinfection. In the most recent registry comparison conducted by the 50 states and Puerto Rico, 14% of all TB cases (27% of cases in persons aged 25-44 years) reported during 1993-1994 had a match in the AIDS registry.<sup>5</sup> Both this study and recent TB surveillance data indicate that the impact of the HIV/AIDS epidemic also differs by geographic location.<sup>5,6</sup>

HIV-infected persons are at high risk for active TB disease after infection with *M. tuberculosis*. Thus, reducing community transmission of *M. tuberculosis* by promptly identifying and treating persons who have infectious TB is an important first step in preventing further TB disease among HIV-infected persons. The next steps include promptly identifying HIV-infected contacts of persons with infectious TB and ensuring that contacts who may be infected with *M. tuberculosis* complete appropriate preventive therapy. Other important strategies include screening for *M. tuberculosis* infection among persons with

recently identified HIV infection, ensuring completion of preventive therapy among those with *M. tuberculosis* infection, and periodic monitoring and education of those who are not infected with *M. tuberculosis*.<sup>7,8</sup>

Outbreaks of MDR-TB, particularly among HIV-infected persons, contributed to the resurgence of TB in the late 1980s and early 1990s. Since CDC began monitoring anti-TB drug resistance through the national TB surveillance system in 1993, levels of isoniazid resistance have been relatively stable, and the number and proportion of MDR-TB cases has decreased.<sup>9</sup> Nevertheless, 43 states and the District of Columbia reported at

least one MDR-TB case during 1993-1997. All health departments should be prepared to promptly identify persons who have active TB disease, to ensure that standards of care are met with respect to diagnosis and treatment (including prompt initiation and completion of therapy), and to identify and appropriately treat those who may have been infected through close contact with persons who have infectious TB.

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## Update: Influenza Activity—United States and Worldwide, 1997-98 Season, and Composition of the 1998-99 Influenza Vaccine

*MMWR*. 1998;47:280-284  
3 figures omitted

In COLLABORATION with the World Health Organization (WHO), the WHO international network of collaborating laboratories, and state and local health departments, CDC conducts surveillance to monitor influenza activity and to detect antigenic changes in the circulating strains of influenza viruses. This report summarizes surveillance for influenza in the United States and worldwide during the 1997-98 influenza season and describes the composition of the 1998-99 influenza vaccine.

### United States

Influenza activity began to increase in early December 1997 and peaked during late January through early February 1998. The predominant virus was influenza A(H3N2); few influenza type B and influenza A(H1N1) isolates were reported. Each week during the weeks ending January 24 through February 21, 1998, >40 state and territorial epidemiologists reported widespread or regional activity\* with peak activity occurring during the week ending February 7.

From September 28, 1997, through March 28, 1998, WHO collaborating laboratories in the United States tested 73,940 specimens for respiratory viruses, and 11,439 (15.5%) were positive for influenza. Of these, 11,407 (99.7%) were influenza type A, and 32 (0.3%) were type B. Among 2799 subtyped influenza type A isolates, 2793 (99.8%) were type A(H3N2), and six (0.2%) were type A(H1N1).

Beginning the week ending January 3, the proportion of deaths attributed to pneumonia and influenza (P&I) reported by 122 U.S. cities exceeded the epidemic threshold† for 10 consecutive weeks. During the week ending March 21, the proportion of deaths attributed to P&I decreased below the threshold, but increased slightly above the threshold for the week ending March 28.

Two related groups of influenza A(H3N2) viruses circulated in the United States this influenza season: A/Wuhan/359/95-like viruses, similar to the strain included in the 1997-98 influenza vaccine, and A/Sydney/5/97-like viruses, a drifted variant of A/Wuhan/359/95. Results from laboratory-confirmed influenza A outbreaks associated with A/Sydney/5/97-like viruses suggest that vaccine containing A/Wuhan/359/95-like virus provided only limited protection.<sup>1</sup> Of the 272 influenza A(H3N2) isolates antigenically characterized by CDC, 52 (19%) were similar to A/Wuhan/359/95, and 220 (81%) were similar to A/Sydney/5/97. Among influenza A(H3N2) viruses, the proportion that were A/Sydney/5/97-like increased from 20% (three of 15) in October, to 46% (11 of 24) in November, to 86% (97 of 113) in December, and to 91% (101 of 111) in January. Of the nine characterized influenza A(H3N2) viruses collected in February, eight (78%) were A/Sydney/5/97-like.

Eight influenza type B isolates characterized by CDC were similar to the vaccine strain B/Harbin/7/94 and B/Beijing/184/93, and six of seven influenza A(H1N1) isolates were similar to the

vaccine strain A/Johannesburg/82/96 and A/Bayern/7/96. One A(H1N1) isolate was characterized as A/Beijing/262/95-like, which is antigenically different from the vaccine strain.

### Worldwide

In the northern hemisphere, during October 1997-March 1998, influenza A(H3N2) predominated in Austria, Canada, Croatia, Denmark, Finland, France, Germany, Greece, Iran, Israel, Italy, Japan, Morocco, Russian Federation, Spain, Sweden, Switzerland, United Kingdom, and the Federal Republic of Yugoslavia. Influenza A(H3N2) also was isolated in Czech Republic, Egypt, Hong Kong, Iceland, Korea, Netherlands, Norway, Poland, Portugal, Romania, Saudi Arabia, and Taiwan. Influenza A(H3N2) activity increased in Iran, Israel, and Japan in early January and in Canada and Europe from late January through February. In the southern hemisphere, during October-December, influenza A(H3N2) viruses were isolated from outbreaks in Argentina, Chile, and Fiji and from sporadic cases in Australia, French Polynesia, and South Africa.<sup>2-4</sup>

Influenza A(H1N1) isolates were reported less often than influenza A(H3N2) isolates. Outbreaks of influenza A(H1N1) were reported from Belarus, Russian Federation, and United Kingdom. Sporadic cases of influenza A(H1N1) were reported in Argentina, Canada, Croatia, Czech Republic, Denmark, Egypt, France, Germany, Hong Kong, Israel, Italy, Japan, Netherlands, Norway, People's Republic of China, Poland,

Portugal, Saudi Arabia, South Africa, Sweden, Switzerland, and Taiwan. Russian Federation and United Kingdom reported increases in influenza A(H1N1) isolates in February, and Germany and Italy reported increases in March.<sup>2-4</sup>

Outbreaks of influenza B were reported in Japan and People's Republic of China; sporadic cases were reported in Algeria, Argentina, Austria, Belarus, Belgium, Brazil, Canada, Finland, France, Germany, Greece, Hong Kong, Italy, Netherlands, Norway, Portugal, Russian Federation, Senegal, Slovakia, South Africa, Spain, Sweden, Switzerland, United Kingdom, the Federal Republic of Yugoslavia, and Zambia.

In May 1997, the first case of influenza A(H5N1) in a human occurred in Hong Kong.<sup>5</sup> Seventeen additional cases occurred in Hong Kong in November and December. Despite enhanced surveillance, no new cases have been detected since the end of December.

### Composition of the 1998-99 Vaccine

The Food and Drug Administration's Vaccines and Related Biologic Products Advisory Committee (VRBPAC) recommended that the 1998-99 trivalent vaccine for the United States contain A/Sydney/5/97-like(H3N2), A/Beijing/262/95-like(H1N1), and B/Beijing/184/93-like viruses. This recommendation was based on antigenic analyses of recently isolated influenza viruses.

Influenza A(H3N2) isolates were either A/Wuhan/359/95-like or A/Sydney/5/97-like viruses. The proportion of influenza A(H3N2) viruses that were A/Sydney/5/97-like increased from October through March and became predominant in many countries. Vaccine containing an A/Wuhan/359/95-like virus induced a lower antibody response against A/Sydney/5/97 than against A/Wuhan/359/95. Therefore, VRBPAC recommended including A/Sydney/5/97 in the 1998-99 vaccine.

A/Bayern/7/95-like viruses, similar to the 1997-98 influenza A(H1N1) vaccine strain, have been the predominant influenza A(H1N1) viruses isolated during the previous year. However, A/Beijing/262/95-like viruses, which have been detected in Asia during the previous 3 years, were

identified recently in France, Senegal, South Africa, and the United States. Persons who were vaccinated in an experimental vaccine trial with A/Beijing/262/95 developed equivalent antibody levels against A/Bayern/7/95 and A/Beijing/262/95. However, persons vaccinated with A/Bayern/7/95 had lower antibody levels against A/Beijing/262/95 than A/Bayern/7/95. Because A/Beijing/262/95-like viruses were detected on four continents and because the antibody response to this antigen was more heterogeneous than to A/Bayern/7/95, VRBPAC recommended including A/Beijing/262/95 in the 1998-99 vaccine.

Influenza type B isolates from all continents (except Asia) were similar to B/Beijing/184/93 and the 1997-98 vaccine strain B/Harbin/7/94. Viruses antigenically related to the B/Victoria/2/87 reference strain were isolated in Japan and People's Republic of China. Since vaccine containing the B/Harbin/7/94 strain induced antibody to recently isolated B/Beijing/184/93-like strains, VRBPAC recommended retaining B/Harbin/7/94 in the 1998-99 vaccine.

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**CDC Editorial Note:** During the 1997-98 influenza season, influenza A(H3N2) viruses predominated worldwide. This is the second consecutive year in which influenza A(H3N2) viruses have predominated in the United States and the third consecutive year in which the proportion of deaths caused by P&I reported by 122 U.S. cities was elevated for several consecutive weeks. Influenza A(H1N1) and influenza B were isolated only sporadically during the 1997-98 influenza season in most countries, including the United

States. However, outbreaks of influenza B were reported in Japan and People's Republic of China. Identification of the A/Sydney/5/97-like (H3N2) and A/Beijing/262/95-like (H1N1) strains and, in Hong Kong, identification of the 18 cases of influenza A(H5N1) illustrate the need for continued international virologic surveillance for influenza and the timely subtyping of influenza A isolates.

The production of a vaccine against influenza A(H5N1) for general use was not recommended. However, efforts continue at several laboratories worldwide to develop a vaccine candidate should the need arise, and plans are being developed to test an experimental influenza A(H5N1) vaccine for safety and immunogenicity.

Strains to be included in the influenza vaccine usually are selected during the preceding January through February because of scheduling requirements for production, quality control, packaging, distribution, and vaccine administration before onset of the next influenza season. Recommendations of the Advisory Committee on Immunization Practices for the use of vaccine and antiviral agents for prevention and control of influenza will be published in an *MMWR Recommendations and Reports* on May 1, 1998.<sup>6</sup>

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\*Levels of activity are (1) *no activity*; (2) *sporadic*—sporadically occurring influenza-like illness (ILI) or culture-confirmed influenza, with no outbreaks detected; (3) *regional*—outbreaks of ILI or culture-confirmed influenza in counties with a combined population of <50% of the state's total population; and (4) *widespread*—outbreaks of ILI or culture-confirmed influenza in counties with a combined population of ≥50% of the state's total population.

†The epidemic threshold is 1.645 standard deviations above the seasonal baseline. The expected seasonal baseline is projected using a robust regression procedure in which a periodic regression model is applied to observed percentages of deaths from P&I since 1983.

## Erratum: Vol. 47, No. 1 (JAMA. 1998;279:495-496)

*MMWR*. 1998;47:220

In THE article, "Recommended Childhood Immunization Schedule—United States, 1998," on page 11 the asterisk (\*) and dagger (†) footnotes of the table (in the original *MMWR*) were incorrect.

The third sentence of the asterisk footnote (footnote 1 in *JAMA*) should read "Combination vaccines may be used whenever any components of the combination are indicated and its other components are not contraindicated." The

sixth sentence of the dagger footnote (footnote 2 in *JAMA*) should read "The second dose of vaccine is recommended at age 1-2 months and the third dose at age 6 months."