Influenza Activity—United States, 2000-01 Season

MMWR. 2001;50:207-209

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THIS REPORT SUMMARIZES INFLUENZA ACTIVITY in the United States during October 1, 2000–March 10, 2001.1,2 Influenza activity increased in December and January and peaked at the end of January. The most frequently isolated viruses were influenza A (H1N1); however, influenza B viruses have been co-circulating and appear to be increasing.

During October 1, 2000–March 10, 2001, the World Health Organization (WHO) collaborating laboratories and National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories tested 64,840 specimens for influenza, and 8386 (13%) were positive. Of these, 4885 (58%) were influenza type A and 3501 (42%) were influenza type B. Of the 4885 influenza A viruses identified, 1826 (37%) were subtype: 1746 (96%) were A (H1N1) and 80 (4%) were A (H3N2). The percentage of specimens positive for influenza infections, an indicator of influenza activity, peaked at 24% during the week ending January 27, 2001. For the week ending March 10, 6% of tested specimens were positive for influenza.

CDC antigenically characterized 436 influenza viruses received from U.S. laboratories since October 1. Of the 259 influenza A (H1N1) isolates characterized, 246 (95%) were similar to A/New Caledonia/20/99, the H1N1 component of the 2000-01 influenza vaccine, and 13 (5%) were similar to A/Bayern/07/99. Although A/Bayern-like viruses are antigenically distinct from A/New Caledonia-like viruses, the A/New Caledonia/20/99 vaccine strain produces high titers of antibody that cross-react with A/Bayern/07/95-like viruses.3 Of the 16 influenza A (H3N2) characterized viruses, all were antigenically similar to the vaccine strain A/Panama/2007/99. Of the 161 influenza B viruses characterized, 29 (18%) were similar to the vaccine strain B/Beijing/184/93, and 132 (82%) were more closely related antigenically to the B/Sichuan/379/99 reference strain than to the current vaccine strain. The B/Sichuan virus exhibited cross-reactivity with the vaccine strain.

During October 1–March 10, the percentage of patient visits to U.S. sentinel physicians for influenza-like illness (ILI)† peaked at 4.1% during the week ending January 27. During that week, the percentage of patient visits for ILI was elevated above baseline levels (0-3%) in six of nine surveillance regions. For the week ending March 10, 1.6% of patient visits to U.S. sentinel physicians were the result of ILI.

As reported by state and territorial epidemiologists, influenza activity‡ peaked during the weeks ending February 3 and 10, 2001, when 38 states reported regional or widespread influenza activity. For the week ending March 10, one state reported widespread activity. 12 states reported regional activity, 35 states reported sporadic activity, one state reported no activity, and one state did not report.

For the week ending March 10, the 122 Cities Mortality Reporting System attributed 8.0% of recorded deaths to pneumonia and influenza (P&I). This percentage was below the epidemic threshold of 8.7% for this week. The percentage of P&I deaths remained below the epidemic threshold each week since October 1.

Reported by: Participating state and territorial epidemiologists and state public health laboratory directors, WHO collaborating laboratories, National Respiratory and Enteric Virus Surveillance System laboratories, Sentinel Physicians Influenza Surveillance System, Surveillance Systems Br, Div of Public Health Surveillance and Informatics, Epidemiology Program Office; WHO Collaborating Center for Reference and Research on Influenza, Influenza Br and Respiratory and Enteric Virus Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases, CDC.

CDC Editorial Note: Influenza activity during the 2000-01 season was moderate and lower than the previous three seasons. Three surveillance system components (i.e., WHO/NREVSS laboratories, U.S. sentinel physicians, and state and territorial epidemiologists’ reports) indicated that activity peaked during late January and early February. The predominant influenza strain circulating this season has been influenza A (H1N1); however, the proportion of influenza B virus isolates has been increasing. During the weeks ending February 24, March 3, and 10, 70% of isolates nationwide were influenza B, and during those weeks influenza B viruses predominated (range: 61%-93%) in eight of nine surveillance regions.

Influenza activity as reported by WHO/NREVSS laboratories and U.S. sentinel physicians peaked during the week ending January 27, when 24% of specimens tested were positive for influenza and 4.1% of visits to U.S. sentinel physicians were the result of ILI. During the previous three seasons, the peak percentage of specimens testing positive for influenza ranged from 28% to 32% and the timing of the peak varied from as early as mid-to-late December during the 1999-2000 season to as late as the middle of February during the 1998-99 season. The peak percentage of patient visits to sentinel physicians for ILI ranged from 4.9% in late December of the 1997-98 season to 5.6% during early February of the 1999-2000 season.

As reported by state and territorial epidemiologists, influenza activity peaked during the weeks ending February 3 and 10, when 38 states reported regional or widespread influenza activity. This peak was lower than those reported during the 1997-98, 1998-99, and 1999-2000 seasons, when 46, 43, and 44 states reported regional or widespread influenza activity, respectively. Similar to the laboratory and sentinel physician data, the peak number of states reporting...
Influenza B Virus Outbreak on a Cruise Ship—Northern Europe, 2000

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DURING JUNE 23–JULY 5, 2000, AN OUTBREAK OF RESPIRATORY ILLNESSES OCCURRED ON THE MS Rotterdam (Holland America Line & Windstar Cruises) during a 12-day Baltic cruise from the United Kingdom to Germany via Russia. The ship carried 1311 passengers, primarily from the United States, and 506 crew members from many countries. Although results of rapid viral testing for influenza A and B viruses were negative, immunofluorescence staining and viral culture results implicated influenza B virus infection as the cause of the outbreak. This report summarizes the findings of the outbreak investigation conducted by the ship’s medical department and describes the measures taken to control the outbreak. Travelers at high risk for complications of influenza who were not vaccinated with influenza vaccine during the preceding fall or winter should consider receiving influenza vaccine before travel with large tourist groups at any time of year or to certain regions of the world.

By June 29, 38 crew members and 26 passengers had been seen in the infirmary for ARI; of these, 32 (84%) crew members and 11 (42%) passengers had IILI. Eight crew members were tested by rapid influenza diagnostic testing; all had negative results. Because the etiology of crew respiratory illnesses remained uncertain, four symptomatic crew members disembarked in Stockholm, Sweden, for medical evaluation that included testing of nasopharyngeal specimens by immunofluorescence staining and viral culture. Two of four nasopharyngeal specimens tested positive for influenza B virus by immunofluorescence staining; one of the two specimens also was positive by culture. Neither of the three crew members with high fevers were started on rimantadine therapy for clinically suspected influenza A infection.

To characterize and control the suspected outbreak among crew members, ship’s medical staff implemented a respiratory illness protocol that included surveillance for cases of respiratory illness. A case of acute respiratory illness (ARI) was defined as cough or sore throat. Influenza-like illness (ILI), a subset of ARI cases, was defined as ARI with fever \( \geq 100.0^\circ\text{F} (\geq 37.8^\circ\text{C}) \) or self-reported feverishness. Active surveillance was initiated among crew members. Supervisors on each work shift observed and asked crew members about symptoms of influenza and required any crew member with symptoms to report to the ship’s infirmary for evaluation.

Crew members with confirmed IILI were relieved of duty and placed in cabin isolation either alone or with other ill crew members. Passive surveillance was initiated among passengers and identified any passenger who presented to the ship’s infirmary with respiratory illness. A commercial rapid influenza diagnostic test, designed to detect both influenza A and B viruses but not to distinguish between them, was used selectively to assist in diagnosis. Medical and demographic information, including country of residence, cabin number, and crew duties (if applicable), was collected from ill patients.

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The four components of the influenza surveillance system have been described. Data reported as of March 15, 2001.

Temperature of \( > 100.0^\circ\text{F} (\geq 37.8^\circ\text{C}) \) and either cough or sore throat in the absence of a known cause.

Levels of influenza activity are (1) no activity; (2) sporadic—sporadically occurring IILI or culture-confirmed influenza with no outbreaks detected; (3) regional—outbreaks of IILI or culture-confirmed influenza in counties with a combined population of \(< 50\%\) of the state’s population; and (4) widespread—outbreaks of IILI or culture-confirmed influenza in counties with a combined population of \( \geq 50\%\) of the state’s population.

The epidemic threshold is 1.654 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.

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two crew members diagnosed with influenza B virus infection had been tested using the rapid influenza diagnostic test. On the basis of immunofluorescence results, crew members on rimantadine therapy, which is effective only against influenza A infection, were advised to discontinue their medication. Oseltamivir, an antiviral agent that is effective against both influenza A and B infection, was sent to the ship for treatment of all ill crew members and passengers.

A total of 64 (13%) crew members and 54 (4%) passengers were identified with ARI during the cruise. Of 63 crew members and 54 passengers with ARI for whom clinical information was known, 45 (71%) and 25 (46%), respectively, also had ILI. The median age of ill crew members was 32 years (range: 21-56 years) and of passengers, 68 years (range: 7-85 years). By cross-referencing crew duties, cabin locations of ill crew members and passengers, and dates of illness, medical staff identified the potential index case-patient as a 78-year-old U.S. passenger who boarded the ship ill with unconfirmed ILI after visiting London. She remained in her cabin except for occasional meals and did not seek medical attention until the fifth day of the cruise (June 28). Two of the 13 crew members with ILI, who were seen in the infirmary on June 25 and 26, were her cabin and dining room stewards. Both had worked, socialized, or shared cabins with other crew members who became ill. Surveillance among passengers and crew members was continued during the subsequent cruise and showed a decrease in the number of ARI and ILI cases.

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CDC Editorial Note: The findings of this investigation implicated influenza B virus as the cause of a respiratory illness outbreak onboard a cruise ship. Although the results of rapid viral testing for influenza A and B viruses were negative, influenza B infection was confirmed by viral culture and immunofluorescence antibody testing in two crew members. Although these tests were not performed on passengers, epidemiologic evidence suggested that respiratory illness cases among crew members and passengers were related and that an ill passenger might have transmitted infection to crew members.

Rapid viral diagnostic testing for influenza can be useful for patient management and influenza outbreak control. However, these tests are not as accurate in detecting influenza infection as viral culture. If an influenza outbreak is suspected, nasopharyngeal specimens should be collected simultaneously for rapid viral tests and viral isolation. Viral isolation is essential for identifying new or unusual strains of influenza and for selecting influenza vaccine strains.

Influenza A outbreaks have been reported on cruise ships sailing in the Northern Hemisphere during the summer, but influenza B outbreaks have not been documented. Early suspicion of a potential influenza outbreak among crew members and rapid implementation of a respiratory illness control protocol probably limited the size of the outbreak. Key elements of the protocol included (1) implementation of active and passive surveillance using standard case definitions; (2) use of targeted rapid influenza diagnostic testing and viral cultures to confirm cases of influenza virus infection; (3) isolation of all crew members meeting the ILI case definition or those with confirmed influenza; (4) use of antiviral agents for treatment and, if indicated, for prophylaxis; and (5) monitoring of intervention results.

Because influenza viruses usually are spread by droplets and aerosols produced by an infected person who is coughing or sneezing, isolation can limit the spread of infection in semienclosed environments such as cruise ships. Although the number of days crew members with ILI were isolated from noninfected crew members and passengers was not reported, isolation measures ide-
Physical Activity Trends—United States, 1990-1998

Physical activity is associated with numerous health benefits, and increased participation in various types of leisure-time physical activity had been encouraged during the 1990s. To determine national estimates of leisure-time physical activity during 1990-1998, data were obtained from the Behavioral Risk Factor Surveillance System (BRFSS). This report summarizes the results of that analysis, which indicate that leisure-time physical activity trends have remained unchanged.

BRFSS is a population-based, random-digit-dialed telephone survey of the civilian, noninstitutionalized U.S. population aged ≥18 years. Forty-three states and the District of Columbia collected data about physical activity for 1990, 1991, 1992, 1994, 1996, and 1998. Data were not collected by all states during 1991, 1992, 1994, 1996, and 1998. Respondents were asked about the two physical activities or exercises they engage in most often and about the frequency, duration, and distance (if applicable) of each activity. Responses were then classified as one of 56 selected activities. Moderate activity was defined as any of the 56 selected activities, and vigorous activity was defined as aerobic physical activity classified as vigorous-intensity based on estimated metabolic expenditure (MET). To classify an activity as vigorous, it must be aerobic with an assigned MET value that is at least 60% of a person’s maximal cardiorespiratory capacity (MCC). MET values are determined using two regression equations for MCC: one for men (METsMCC = [0.6 × (60−0.55 × age)]/3.5) and one for women (METsWCC = [0.6 × (48−0.37 × age)]/3.5).

To have achieved recommended levels of physical activity, a person must have reported engaging in moderate-intensity physical activity ≥5 times per week for ≥30 minutes each time, vigorous-intensity physical activity ≥3 times per week for ≥20 minutes each time, or both during the preceding month. Persons reporting some activity during the preceding month but not enough to be classified as moderate or vigorous were classified as insufficient. Persons classified as inactive reported no physical activity outside of their occupation during the preceding month. Data were analyzed using SUDAAN to obtain prevalence estimates for recommended levels of physical activity. All data were age adjusted to the 2000 standard population.

The prevalence of those who engaged in recommended levels of activity increased slightly from 24.3% in 1990 to 25.4% in 1998, and the prevalence of those reporting insufficient activity increased from 45.0% in 1990 to 45.9% in 1998. Those reporting no physical activity decreased from 30.7% in 1990 to 28.7% in 1998. The components of recommended activity remained relatively stable.

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CDC Editorial Note: The findings in this report indicate that trends in physical activity remained stable during 1990-1998. Classifying persons according to their main pair of nonoccupational activities during the preceding month suggests that only approximately one fourth of U.S. adults meet recommended levels of physical activity.

During 1990-1998, the BRFSS formula for calculating vigorous intensity changed. In 1992, vigorous intensity was calculated as 50% of MCC; before 1992, it was calculated as 60% of MCC, the generally accepted threshold for vigorous activity. The data reported here vary from previous reports because all years of data were calculated using the same formula for vigorous intensity (60% MCC). Therefore, the slight increase in vigorous physical activity that might have appeared after 1992 in previous reports was attributed to differences in calculating vigorous physical activity rather than an actual increase among the population.

The findings in this report are subject to at least four limitations. First, these data are self-reported and are subject to recall bias. Second, because these data do not include information on nonleisure-time physical activities, total activity may be underestimated. Third, only the two most common activities the respondents engaged in during the preceding month are reported. Finally, these data are limited by coverage- and nonresponse-related errors.

Moderate-intensity physical activity has substantial health benefits. Moderate-intensity activities include housework, childcare activities, occupational activity, or walking for transportation, which may be more prevalent among women and certain subgroups of the population. However, surveillance systems that primarily are based on sports-related vigorous activities may miss a substantial portion of this type of activity. Also, systems based on only two reported activities may miss less intense or moderate-intensity activities. Public health programs usually encourage participation in moderate-intensity rather than vigorous-intensity activities for sedentary persons. Surveillance systems should be updated so that a broader range of physical activities can be measured. A more extensive measurement system would enable determination of whether the trends in this report are an accurate reflection of physical activity trends in the United States.

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Sudden Death in a Traveler Following Halofantrine Administration—Togo, 2000

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On July 17, 2000, a previously healthy 22-year-old U.S. student collapsed and died suddenly while leading a teenage exchange group in West Africa. This report summarizes the results of the investigations of this incident, which implicate use of halofantrine for treatment of malaria as the cause of death. Travelers should be warned that halofantrine treatment may be dangerous in persons with cardiac abnormalities or in those taking mefloquine for malaria prophylaxis.

The student began taking mefloquine for malaria prophylaxis approximately 1 week before departure on July 5. On July 12, he developed fever of 102°F (39°C), chills, headache, and cough, and was seen at a clinic in Togo 2 days later. He was diagnosed with malaria and bronchopneumonia and treated orally with halofantrine, dirithromycin, and acetylcysteine. The patient defervesced over the following 24 hours and resumed normal activities on July 13.

On July 14, following a 2-hour car ride, he stepped from the car, complained of a "head rush," and collapsed. Cardiopulmonary resuscitation was unsuccessful, and he was later pronounced dead at a local medical center. On July 24, an autopsy was performed at Yale–New Haven Medical Center, which revealed a previously undiagnosed atypical asymmetric hypertrophic cardiomyopathy.

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CDC Editorial Note: This report underscores precautions about halofantrine use for treating malaria, especially among travelers who are taking mefloquine prophylaxis. In the case of this traveler, who had been taking mefloquine for prophylaxis and had been in a malarious area for only 1 week, the diagnosis of malaria probably was erroneous. The patient in this report also received dirithromycin, a macrolide antibiotic that may have exacerbated the cardiac effects of mefloquine and halofantrine.

Halofantrine is a synthetic phenanthrene-methanol antimalarial and is chemically related to quinine and mefloquine. The drug has been approved for use in the United States and is marketed internationally but not in the United States. Although halofantrine is an efficacious treatment for Plasmodium falciparum malaria, the drug can cause rare but serious cardiac complications. The drug has been associated with lengthening of the QT interval in patients without known cardiac abnormalities and with fatal or near-fatal arrhythmias in some persons. Although this patient had no family history of heart disease, hypertrophic cardiomyopathy, which has been associated with QT prolongation and an increased risk for sudden cardiac death, was discovered at autopsy.

QT prolongation may occur more frequently when halofantrine is administered following mefloquine, and prescribing information for halofantrine warns against its use in those taking mefloquine. The manufacturer and others also recommend that halofantrine be used for treatment only in persons who have a normal electrocardiogram, which makes its use in many less-developed settings impractical.

Travelers to remote areas should consider carrying antimalarials for presumptive self-treatment should they become ill with symptoms of malaria and are unable to obtain prompt medical care. Both sulfadoxine-pyrimethamine (Fansidar, RocheLaboratories, Nutley, New Jersey), and atovaquone-proguanil (Malarone, Glaxo Wellcome, Research Triangle Park, North Carolina) are acceptable options for presumptive self-treatment, depending on local drug resistance patterns. However, all travelers should be cautioned that presumptive self-treatment for malaria is not a substitute for a prompt medical evaluation.

Halofantrine treatment may be dangerous in those with cardiac abnormalities or in those taking mefloquine for malaria prophylaxis. However, because P. falciparum malaria is a potentially life-threatening illness, the benefit of halofantrine treatment may outweigh the risks in the case of laboratory-confirmed P. falciparum infection if no other effective therapies are available. Additional information about malaria prophylaxis and treatment is available from CDC by telephone, (888) 232-3228, fax, (888) 232-3299, or on the World Wide Web, http://www.cdc.gov/travel.

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