Shortage of Tetanus and Diphtheria Toxoids

A temporary shortage of adult tetanus and diphtheria toxoids (Td) in the United States has resulted from two coincident situations: (1) a decrease in the number of lots released by Wyeth Lederle (Pearl River, New York), and (2) a temporary decrease in inventory of vaccine following routine maintenance activities at the production facilities by Aventis Pasteur (Swiftware, Pennsylvania) that lasted longer than anticipated. Approximately one half of the usual number of Td doses has been distributed this year. Although there have been no decreases in production of tetanus toxoid (TT), availability is low because of increased use during the Td shortage. On the basis of information provided by Aventis Pasteur, the Public Health Service expects vaccine supplies to be restored early in 2001. Until then, Aventis Pasteur will be limiting distribution of available doses.

The shortage will only impact persons aged ≥7 years who (1) require tetanus prophylaxis in wound management, (2) have not completed a primary series (three doses) of vaccine containing Td, or (3) have not been vaccinated during the preceding 10 years with Td. Arthus-type reactions may occur among persons who receive multiple doses of TT, especially within short intervals (<10 years). However, if vaccination with Td is delayed for >10 years following their last Td administration, persons may be protected inadequately against diphtheria.

Clinics experiencing shortages of Td may need to prioritize their use of available supplies. If administration of Td is delayed, clinics should implement a call-back system when vaccine is available. Recommendations for use (highest to lowest priority) of Td are:

1. Persons traveling to a country where the risk for diphtheria is high.*
2. Persons requiring tetanus vaccination for prophylaxis in wound management.
3. Persons who have received <3 doses of vaccine containing Td.
4. Pregnant women and persons at occupational risk for tetanus-prone injuries who have not been vaccinated with Td within the preceding 10 years.
5. Adolescents who have not been vaccinated with a vaccine containing Td within the preceding 10 years.
6. Adults who have not been vaccinated with Td within the preceding 10 years.

*Travelers to certain countries may be at substantial risk for exposure to toxigenic strains of C. diphtheriae, especially with prolonged travel, extensive contact with children, or exposure to poor hygiene. On the basis of surveillance data and consultation with the World Health Organization, countries with highest risk are in Africa (Algeria, Egypt, and sub-Saharan Africa); the Americas (Brazil, Dominican Republic, Ecuador, and Haiti); Asia/Oceania (Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Iran, Iraq, Laos, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Syria, Thailand, Turkey, Vietnam, and Yemen); and Europe (Albania and all countries of the former Soviet Union).1

Influenza Activity—United States and Worldwide, April-October 2000

During October 1999–May 2000, influenza A(H3N2), A(H1N1), and B viruses were identified in the Northern Hemisphere. Influenza A(H3N2) predominated, but the number of influenza A(H1N1) viruses increased toward the end of the influenza season in the Northern Hemisphere. Since April, influenza A viruses have predominated in the Southern Hemisphere and tropical regions, but influenza B viruses also have been identified. This report summarizes influenza activity in the United States and worldwide from April 2000 through October 2000.

United States

The WHO Collaborating Center for Reference and Research at CDC conducts active national surveillance for influenza from October through May.3 Although formal weekly reporting is discontinued during summer months, WHO collaborating laboratories can report influenza viruses during the summer to CDC and submit these viruses for antigenic characterization. Since March, influenza A(H1N1) viruses have been the most frequently isolated influenza viruses in the United States. Influenza A(H1N1) viruses were identified each
month from April through July and were isolated from an outbreak in July among children and staff at a summer camp in Texas. Influenza A(H1N1) viruses were identified during October in California, Florida, and Texas. Influenza A(H3N2) viruses were isolated from sporadic cases during April, from one immunocompromised patient in June, from one imported case in an immune suppressed person in August in Massachusetts, and from three cases in October (one each in California, Hawaii, and Kentucky). Additional influenza A viruses (unsubtyped) were identified in California and Texas during September and in Utah in October. Influenza B viruses were identified each month through May. During August-October, influenza B viruses were identified in Alaska, California, Nevada, Oklahoma, and Washington.

**Worldwide**

From April through October, influenza A(H1N1), A(H3N2), and B viruses were reported from Asia; influenza A viruses were reported more frequently than influenza B viruses. In Africa, influenza A(H1N1) viruses were reported more frequently than A(H3N2) viruses from April through August, but all subtype influenza A viruses reported during September were A(H3N2). In Canada, both influenza A and B viruses were reported each month from April through July; most of the viruses reported during June-July were influenza type B. During September-October, influenza A and B viruses were reported in Canada, and influenza A viruses were reported from Mexico. Influenza type A and B viruses also were isolated in Europe during September-October. In South America, influenza A(H1N1) viruses predominated, but influenza A(H3N2) and B viruses were isolated. In Oceania, influenza type A viruses were more commonly isolated than influenza type B; both A(H3N2) and A(H1N1) subtypes circulated.

**Characterization of Influenza Virus Isolates**

The WHO Collaborating Center for Reference and Research on Influenza at CDC analyzes isolates received from laboratories worldwide. Of the 205 influenza A(H1N1) isolates that were collected and antigenically characterized during April-October, 173 (84%) were similar to A/New Caledonia/20/99, the H1N1 component of the 2000-01 influenza vaccine, 31 (15%) were similar to A/Bayern/07/95, and one (0.5%) showed reduced titers with A/New Caledonia/20/99 antisera. Although A/Bayern-like viruses are antigenically distinct from the 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. Of the 205 antigenically characterized H1N1 viruses, 136 were from South or Central America, 42 from the United States, 18 from Asia, seven from Australia, New Zealand, and New Caledonia, and two from Africa.

Of the 65 influenza A(H3N2) viruses antigenically characterized, 60 (92%) were well inhibited by antisera to the recommended vaccine strain, A/Moscow/10/99. Thirty-four of the antigenically characterized H3N2 viruses were from South America, 17 from Asia, five from Australia, New Zealand, and New Caledonia, four from the United States, two each from Canada and Africa, and one from Europe.

Of the 53 antigenically characterized influenza B viruses, 52 (98%) were antigenically similar to the recommended vaccine strain, B/Beijing/184/93. Seventeen of the influenza B viruses were from Asia, 15 from the United States, 10 from South America, nine from Australia, New Zealand, and New Caledonia, and one each from Africa and Europe.

**CDC Editorial Note:** Influenza A(H1N1), A(H3N2), and B viruses circulated in the Northern Hemisphere during the winter season. Influenza activity in the Southern Hemisphere was less extensive than the preceding Southern and Northern Hemisphere influenza seasons when a larger proportion of the circulating influenza viruses were A(H3N2) viruses. The identification of sporadic influenza cases and isolated influenza outbreaks during the summer and fall months is not unusual. Recent isolates from the Northern Hemisphere have been predominantly influenza A(H1N1) and influenza B viruses. However, surveillance information is not a reliable predictor of future influenza activity. The type(s)/subtype(s) of influenza virus that will circulate, the timing of onset and peaking, and the severity of the upcoming season in the Northern Hemisphere cannot be predicted. Persons at increased risk for influenza-related complications should receive annual influenza vaccination to reduce their chances for influenza infection and the severity of the illness should they become infected.2-4

In February of each year, the World Health Organization (WHO) recommends influenza virus strains for inclusion in the following season’s Northern Hemisphere influenza vaccine. The regulatory authorities in each country then determine the actual viruses to be used for vaccine production. Frequently, the regulatory authorities in a country will substitute an antigenically equivalent virus for one or more of the WHO recommended viruses because of better growth or processing properties. In the United States, the Food and Drug Administration’s Vaccines and Related Biological Products Advisory Committee is responsible for the selection of vaccine strains to be used by U.S. vaccine manufacturers.

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the 2000-01 influenza season, WHO has recommended A/New Caledonia/20/99-like (H1N1), A/Moscow/10/99-like (H3N2), and B/Beijing/184/93-like viruses for inclusion in the Northern Hemisphere influenza vaccine. U.S. vaccine manufacturers used the antigenically equivalent stains A/Panama/2007/99 (H3N2) for the A/Moscow/10/99-like strain and B/Yamanashi/166/98 for the B/Beijing/184/93-like strain. Most viruses isolated since April, both in the United States and worldwide, are well matched to the current vaccine strains.

CDC collects and reports U.S. influenza surveillance data during October-May. This information is updated weekly and is available through the CDC voice information system, telephone (888) 232-3228, or the fax information system, telephone (888) 232-3299, by requesting document number 361100, or the CDC voice information system, telephone (888) 232-3228, or the fax information system, telephone (888) 232-3299, by requesting document number 361100, or on the Influenza Branch World-Wide Web site at http://www.cdc.gov/ncidod/diseases/flu/weekly.htm.

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Incidence of Pap Test Abnormalities Within 3 Years of a Normal Pap Test—United States, 1991-1998

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1 table omitted

Declines in cervical cancer incidence and mortality reported in the United States since the 1950s have been attributed to early detection and treatment of precancerous and cancerous lesions through the use of the Papanicolaou (Pap) test. More than 50 million Pap tests are performed each year; however, guidelines about the frequency of testing in women with a history of normal test results are inconsistent. To determine the incidence of cervical cytologic abnormalities following a normal Pap test, 1991-1998 data from the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) were analyzed for this report. The findings indicated that within 3 years of a normal Pap test result, severe cytologic abnormalities were uncommon, and incidence rates were similar among women screened 1, 2, and 3 years following a normal Pap test.

For each woman, CDC received a report that included demographic characteristics, Pap test results, diagnostic procedures, and histopathologic results. To be eligible for the analysis, women were required to have had a first NBCCEDP Pap test reported as normal during 1991-1998, and at least one subsequent Pap test performed within the following 9-36 months. Of 620,063 women tested during 1991-1998, 128,805 (20.8%) met the criteria for eligibility. Results of Pap tests were reported using Bethesda System categories: normal; infection, inflammation, or reactive changes; atypical squamous cells of undetermined significance (ASCUS); low-grade squamous intraepithelial lesion (LSIL); high-grade squamous intraepithelial lesion (HSIL); “suggestive of squamous cell carcinoma”; and “other” (e.g., glandular atypia and atypical endocervical glands).

Incidence rates of Pap test interpretations were calculated by dividing the number of women with each test result by the number of women retested within each age group (<30, 30-49, 50-64, and ≥65 years) and time interval (9-12, 13-24, and 25-36 months). Incidence rates were age-adjusted using the age distribution of the 1996 NBCCEDP population. Ordinary least-squared regression was used to evaluate the trend of increasing time between the first Pap test on the age-adjusted incidence of ASCUS, LSIL, HSIL, and suggestive of squamous cell carcinoma.

The average age of women included in the analysis was 48.9 years (range: 12-96 years); 73,631 (57.0%) were non-Hispanic whites, 22,672 (17.6%) were Hispanics, 17,314 (13.4%) were non-Hispanic blacks, 10,983 (8.5%) were American Indians/Alaska natives, 3070 (2.4%) were Asians/Pacific Islanders, and 1135 (0.9%) were categorized as “other” or “unknown.” The mean time between the first and second test was 15.7 months. Approximately 121,576 (94.4%) of the 128,805 second test results were interpreted as normal or infection, inflammation, or reactive changes. The incidence rate of the second test results interpreted as HSIL and suggestive of squamous cell carcinomas was 66 per 10,000 women aged <30 years, 22 per 10,000 women aged 30-49 years, 15 per 10,000 women aged 50-64, and 10 per 10,000 women aged ≥65 years (trend test, p<0.001). Overall, as age increased, the incidence of ASCUS and LSIL also decreased (trend test, p<0.001, each category).

The age-adjusted incidence of results interpreted as LSIL increased over time (trend test, p=0.01). The incidence of ASCUS, the most common cytologic abnormality, did not change significantly over time (p=0.36). The differences in the age-adjusted incidence of HSIL and suggestive of squamous cell carcinoma for the time intervals also were not significant (p=0.42).

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CDC Editorial Note: The U.S. Preventive Services Task Force recommends Pap test screening at least every 3 years until age 65 years. The American Cancer Society guidelines suggest that screening less frequent than annually may be adequate for Pap testing in women with a history of 3 negative annual Pap tests, and the American College of Obstetricians and Gynecologists recommends annual Pap tests for most women.

The difference in screening annually, biennially, or triennially is substantial in the number of tests performed and in the public health implications. In this analysis, women screened 1, 2, and 3 years after a nor-
unnecessary patient morbidity and importance lead to further testing and grade results of undetermined clinical significance of these abnormalities is unclear. Women who were screened annually rather than less frequently might have worse health outcomes if low-grade results of undetermined clinical importance lead to further testing and unnecessary patient morbidity and anxiety.9,10

The findings in this report are subject to at least four limitations. First, the database used was intended for descriptive statistics and not for hypothesis testing; data were limited to a few variables. Second, NBCCEDP serves low-income and uninsured women; results may not be generalizable to other groups. However, low-income and uninsured women usually are at greater risk for developing cervical neoplasia than women with higher incomes; therefore, higher-income women should be less likely to exhibit higher rates during the 3-year interval examined in this study. Third, women may have received Pap testing outside the program during the time between the first and subsequent Pap tests; however, this probably occurred in only a few women. Finally, women who frequently get screened, specifically within 1 year after Pap test, might be low-risk women concerned about their health or high-risk women with histories of abnormal Pap tests who have been told to get annual tests. Other risks for cervical cancer in these women and whether these risks affected the findings in this study are unknown. NBCCEDP receives data from many cytopathology laboratories and clinical settings. The findings in this study may better represent actual clinical settings than the findings in a controlled trial.

CDC is working with state health departments to use this information as a basis for cost-effective strategies to reach women who have not received screening services for cervical disease. CDC will assist NBCCEDP in assessing program-provider practices, modifying patient recall systems, and developing professional and public education strategies to improve patient-provider decision making. Further research is needed to clarify the benefit and harm related to frequency of subsequent Pap testing in women with normal results.

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Public Health Consequences Among First Responders to Emergency Events Associated With Illicit Methamphetamine Laboratories—Selected States, 1996-1999

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Methamphetamine, a central nervous system stimulant, is manufactured in illicit laboratories using over-the-counter ingredients.1 Many of these ingredients are hazardous substances that when released from active or abandoned methamphetamine laboratories can place first responders† at risk for serious injuries and death. In 16 states,‡ the Agency for Toxic Substances and Disease Registry maintains the Hazardous Substances Emergency Events Surveillance (HSEES) system to collect and analyze data about the morbidity and mortality associated with hazardous substance-release events.§ Based on events reported to HSEES during 1996-1999, this report describes examples of events associated with illicit methamphetamine laboratories that resulted in injuries to first responders in three states, summarizes methamphetamine-laboratory events involving injured first responders, and suggests injury prevention methods to protect first responders.

Washington
In April 1996, an oven exploded as two persons were using acetone, hydrochloric acid, and sodium hydroxide to manufacture methamphetamine in an illicit apartment laboratory; one person sustained chemical burns and was taken to a hospital emergency department. The source of the burns was not revealed and, as a result, three hospital employees had nausea and vomited while treating the person. Three emergency medical technicians (EMTs) and two police officers exposed to emissions from the fire had eye and respiratory irritation. None of the injured first responders was wearing personal protective equipment (PPE) at the time of injury.

Oregon
In February 1999, a firefighter sustained chemical burns after exposure to hydrochloric acid and ephedrine during a fire at an illicit methamphetamine laboratory in a house in a residential neighborhood. Chemicals and other drug-manufacturing paraphernalia used to make methamphetamine were found after the fire was extinguished. The firefighter, who had worn turnout gear¶ as PPE at the time of injury, was decontaminated at the site, treated at a local hospital, and released.

Iowa
In March 1999, three police officers had respiratory irritation after exposure to anhydrous ammonia and ether emissions during a raid of an illicit residential methamphetamine laboratory. The officers were decontaminated at the site, treated at a local hospital, and released. They had not worn PPE at the time of injury.
Summary

Of the 23,327 events reported to the HSEES system during 1996-1999, 1673 (7.2%) resulted in injuries: 112 (0.5%) events were associated with methamphetamine; 59 (52.7%) methamphetamine-associated events resulted in injuries. Methamphetamine-associated events were reported by five state health departments (Iowa, Minnesota, Missouri, Oregon, and Washington) participating in the HSEES system. Of the 112 events, 155 persons were injured; 79 (51.0%) injured persons were first responders: 55 (69.6%) police officers, nine (11.4%) EMTs, eight (10.1%) firefighters, and seven (8.9%) hospital employees. The 79 injured first responders had 111 injuries; 60 (51.4%) were respiratory irritation (e.g., cough, difficulty breathing, and throat irritation), and 12 (10.8%) were eye irritation; 61 (77.2%) injured first responders were treated at a hospital and did not require admission.

PPE status at the time of injury was known for 67 (84.8%) of the 79 injured first responders; 57 (85.1%) had not worn PPE at the time of injury (45 [78.9%] were police officers). Of the 36 events causing injuries to first responders, 12 (33.3%) involved anhydrous ammonia and 11 (30.6%) involved hydrochloric acid. In 33 (91.7%) of the 36 events for which the type of release was known, 19 (57.6%) involved air emissions, 10 (30.3%) involved fires, and seven (21.2%) involved explosions.


CDC Editorial Note: This report illustrates how first responders were at risk for injuries during emergency events associated with illicit methamphetamine laboratories. Of all HSEES events, methamphetamine-associated events accounted for a small number; however, they were more likely to result in injuries. Substances used in methamphetamine laboratories often are corrosive, explosive, flammable, and toxic and can cause fires, explosions, and other uncontrolled reactions. These laboratories may be found in various environments, including motel rooms, private residences, campgrounds, and motor vehicles; an estimated 20%-30% of known methamphetamine laboratories were discovered because of fires and explosions.

Hazardous substances released during and after an event usually enter the body by inhalation and skin absorption; acute exposures may result in cough, headache, chest pain, burns, pulmonary edema, respiratory failure, coma, and death. Of the types of responders usually on site first, police officers had the greatest number of injuries because they were present during and immediately after a release. EMTs sustained most injuries through on-site exposure or direct contact with the clothing or skin of contaminated persons. Firefighters, the least often injured on-site first responders, were likely to be wearing PPE during events. Hospital personnel injuries may have been caused by injured persons not being decontaminated before being brought to the hospital. Standard uniforms worn by police officers, EMTs, and hospital personnel provided little or no chemical/respiratory protection. During some events, turn-out gear worn by firefighters offered only limited protection.

The findings in this report are subject to at least two limitations. Reporting of any event to HSEES is not mandatory; therefore, participating state health departments may not be informed about every event. Because methamphetamine laboratories are illicit, sources (primarily law enforcement officials) might hesitate to report events that may jeopardize investigations. Second, HSEES is not conducted in all states, and HSEES data may not represent populations in other areas.

Interventions that can reduce risk for injuries among first responders to methamphetamine-laboratory events include (1) increasing awareness of the risks associated with illicit drug laboratories, (2) encouraging training in situations involving hazardous material, (3) identifying the nature of the event before entering the contaminated area, (4) wearing appropriate PPE, and (5) following a proper decontamination process after exposure to hazardous substances. Information about the hazards likely to be encountered and protective measures that can be taken by first responders at methamphetamine-associated events can be found at http://www.cdc.gov/niosh/pgdstart.html and http://hazmat.dot.gov/egr2000/psnsort.htm.

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