

“Choking Game” Awareness and Participation Among 8th Graders — Oregon, 2008

The “choking game” is an activity in which persons strangle themselves to achieve euphoria through brief hypoxia (1). It is differentiated from autoerotic asphyxiation (2,3). The activity can cause long-term disability and death among youths (4). In 2008, CDC reported 82 deaths attributed to the choking game and other strangulation activities during the period 1995–2007; most victims were adolescent males aged 11–16 years (4). To assess the awareness and prevalence of this behavior among 8th graders in Oregon, the Oregon Public Health Division added a question to the 2008 Oregon Healthy Teens survey concerning familiarity with and participation in this activity. This report describes the results of that survey, which indicated that 36.2% of 8th-grade respondents had heard of the choking game, 30.4% had heard of someone participating, and 5.7% had participated themselves. Youths in rural areas were significantly more likely (6.7%) to have participated than youths in urban areas (4.9%). Choking game participation was higher among 8th graders who reported mental health risk factors (4.0%), substance use (7.9%), or both (15.8%), compared with those who reported neither (1.7%). Public health surveillance of these strangulation activities among youths should be expanded to better quantify the risks and understand the motives and circumstances surrounding participation. Parents, educators, counselors, and others who work with youths should be aware of strangulation activities and their serious health effects; they should watch for signs of participation in strangulation activities, especially among youths with suspected substance use or mental health risk factors.

The Oregon Healthy Teens survey, an annual population-based anonymous survey* of 8th and 11th graders† designed to monitor and measure adolescent health and well-being, is

* Available at <http://www.dhs.state.or.us/dhs/ph/chs/youthsurvey>. Beginning in 2009, Oregon Healthy Teens will be a biannual survey conducted in odd years only.

† The Oregon Healthy Teens survey includes students in 8th and 11th grades. However, knowledge of and participation in the choking game were only assessed on the 8th-grade survey. Therefore, all discussion and description of the survey in this report refers to the 8th-grade portion only.

based on the CDC’s Youth Risk Behavior Survey (YRBS) and includes questions on physical and mental health, sexual activity, substance use, physical activity/nutrition, and community characteristics. In 2008, all 647 Oregon public middle and high schools were part of the sampling frame, which was stratified into eight regions. Schools were sampled randomly from within each region, with a total of 114 schools being sampled. The data were weighted to achieve a statewide representative sample. Weighting was based on the probability of school and student selection, and a post-stratification adjustment for county participation. Schools use an active notification/passive consent model with parents, who may decline their child’s participation. In 2008, the survey contained a total of 188 questions, which were designed to be completed in the course of a class period. Overall, 77.0% of sampled schools agreed to administer the survey, and 83.7% of the 8th graders in those schools participated. In 2008, a single question about the choking game was added to the 8th-grade survey. Students were asked whether they had ever heard of the choking game, had heard of some-



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one participating, had helped someone participate, or had ever participated in the choking game themselves.[§]

All analyses were conducted using statistical software to accommodate the survey design and weighting appropriately. The strength of association between variables was analyzed using a chi-square test with Rao-Scott corrections, and all reported p-values are based on corrected Rao-Scott chi-square results.

The 2008 survey included 10,642 respondents. Of these, 7,757 (73%) answered the choking game question. The mean age of respondents to this question was 13.7 years (standard deviation = 0.5). Those who did not answer this question were more likely to be male and nonwhite and more likely to report

higher levels of sexual activity, substance use, and mental health risk factors. Among the respondents, 36.2% had heard of the choking game, and 30.4% had heard of someone participating in it. Additionally, 2.6% had helped someone participate, and 5.7% had ever participated themselves.

A similar percentage of females reported participating compared with males (5.3% versus 6.1%, $p = 0.13$). Hispanic (7.7%) and American Indian/Alaska Native (7.6%) youths had the highest participation rates, followed by white (5.4%), black (4.5%), Native Hawaiian (3.4%), and Asian (2.8%) youths.[¶] Youths living in rural areas had a significantly higher participation rate than those in urban areas (6.7% rural versus 4.9% urban, $p = 0.01$) (Table).

Youths who participated in the choking game were significantly more likely to also report other unhealthy behaviors and mental health risk factors. In

[§] The survey stated, "The next question refers to the 'Choking Game,' also called Knock Out, Space Monkey, Flatlining, or The Fainting Game. This is an activity that some youth participate in to get a high by cutting off blood and oxygen to the brain with a belt, towel, rope, or other item. Which of the following is true for you? (Please mark all that apply.) a. I have never heard of the Choking Game; b. I've heard of someone participating in the Choking Game; c. I have helped someone else participate in the Choking Game; d. I have participated in the Choking Game myself."

[¶] Persons identified as American Indian/Alaska Native, white, black, Native Hawaiian, and Asian are all non-Hispanic. Race/ethnicity categories are mutually exclusive.

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TABLE. Demographic characteristics and risk factors for participation in the “choking game”^{**} among 8th-grade students — Oregon Healthy Teens survey, 2008

Characteristic/Risk factor	No.	(%)	Prevalence of reported participation in choking game (%)	PR [†] (95% CI [‡])	p-value
Sex					
Male	3,642	(47)	6.1	Referent	0.13
Female	4,115	(53)	5.3	0.9 (0.6–1.2)	
Geography					
Urban	3,944	(55)	4.9	Referent	0.01
Rural	3,813	(45)	6.7	1.4 (1.0–1.9)	
Race/Ethnicity[¶]					
White	5,298	(66)	5.4	Referent	0.009
Hispanic	1,184	(16)	7.7	1.4 (1.0–2.0)	
American Indian/Alaska Native	518	(7)	7.6	1.4 (1.0–2.0)	
Black	220	(4)	4.5	0.8 (0.5–1.3)	
Native Hawaiian	144	(2)	3.4	0.6 (0.3–1.5)	
Asian	308	(5)	2.8	0.5 (0.2–1.7)	
Mental health or substance use^{**}					
None	3,525	(45)	1.7	Referent	<0.001
Mental health only	1,878	(25)	4.0	2.3 (1.3–4.1)	
Substance use only	880	(11)	7.9	4.6 (2.7–7.8)	
Substance use and mental health	1,456	(19)	15.8	9.2 (5.8–14.7)	

* Based on response to the following survey item: “The next question refers to the ‘Choking Game,’ also called Knock Out, Space Monkey, Flatlining, or The Fainting Game. This is an activity that some youth participate in to get a high by cutting off blood and oxygen to the brain with a belt, towel, rope, or other item. Which of the following is true for you? (Please mark all that apply.) a. I have never heard of the Choking Game; b. I’ve heard of someone participating in the Choking Game; c. I have helped someone else participate in the Choking Game; d. I have participated in the Choking Game myself.”

[†] Prevalence ratio.

[‡] Confidence interval.

[¶] Persons identified as white, American Indian/Alaska Native, black, Native Hawaiian, and Asian are all non-Hispanic. Race/ethnicity categories are mutually exclusive.

^{**} *Mental health only* included youths who answered “yes” to at least one of four mental health risk questions: 1) contemplated suicide in past 12 months; 2) self-rated mental health status as “fair” or “poor” (versus “excellent,” “very good,” or “good”); 3) had an unmet mental health need in the past 12 months; or 4) gambled for money in the past 12 months. Youths indicating a substance use risk were excluded. *Substance use only* included youths who indicated using at least one of four substances in the past 30 days: 1) alcohol, 2) cigarettes, 3) marijuana, or 4) other illegal drugs (e.g., stimulants, LSD, ecstasy, cocaine, or heroin). Youths indicating a mental health risk factor were excluded. *Substance use and mental health* included youths indicating a mental health risk factor and substance use.

particular, youths who had used substances^{**} and also reported mental health risk factors^{††} had the highest participation rate (15.8%) and were approximately nine times more likely to participate in the choking game than those without either risk factor. Among those who reported substance use only and no mental health risk factors, the participation rate was 7.9%, and among those reporting mental health risk factors only but no substance use, the participation rate was 4.0%. The participation rates among all these groups were substantially higher than the rate among students who reported neither substance use nor mental health risk factors (1.7%) (Table).

^{**} Included youths who indicated using at least one of four substances (alcohol, cigarettes, marijuana, or other illegal drugs) in the past 30 days.

^{††} Included youths who indicated at least one of four mental health risk factors (suicide contemplation in the past 12 months, self-rated mental health as “fair” or “poor,” unmet mental health need in past 12 months, and ever gambled for money).

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Editorial Note

This study represents the first systematic assessment at the state level for awareness of and participation in strangulation activities among youths. Results from the 2008 Oregon Healthy Teens survey indicated that nearly one third of 8th-grade students were aware of someone who participated in the choking game, and nearly 6% acknowledged trying it. Public health experts stress that this high risk activity is not a game and should not be referred to as such (1).

Before this study, published reports of this activity were anecdotal (2–8) or were based on small surveys, including one survey of 357 youths aged 12–18 years

What is already known on this topic?

During 1995–2007, CDC identified 82 unintentional deaths among children and adolescents related to participation in the “choking game” and other strangulation activities.

What is added by this report?

In 2008, nearly 6% of Oregon 8th graders reported ever having participated in the choking game, with rates highest among those also reporting substance use and mental health risk factors.

What are the implications for public health practice?

Parents and persons who work with youths (e.g., educators, counselors, and health-care providers) should be aware of these activities and their serious health consequences, and they should look for and be able to recognize signs of strangulation activities, especially among youths with reported substance use or mental health risk factors.

in Williams County, Ohio,^{§§} and one nonrandom survey of 2,504 youths aged 9–18 years in Texas and Ontario, Canada (9). Reported lifetime participation in strangulation activities was 11% in the Ohio study and 6.6% in the Texas/Canada study.

The results of the Oregon study suggest that the risk for participation in strangulation activities was higher for youths who had other health risk factors, particularly substance use and certain mental health risk factors. This is the first study to examine these risk associations in a scientific and systematic way. However, previous case studies with very small numbers (three or fewer) presented theories based on their case subjects that are relevant to the results described in this report. Regarding substance use, previous case studies proposed that youths who engage in strangulation activities were not likely to be using drugs or alcohol (2), a suggestion that is contrary to the results described in this report. On the other hand, the link between poorer mental health and strangulation activities has been reflected in some case studies, suggesting that youths experiencing peer rejection or other disruptive factors are more likely to participate in strangulation activities (6,8). Case reports also suggest that participation in strangulation activities might occur alone, which might result in increased risk for fatality or serious injury (2), or in groups gathered to watch others lose consciousness (6).

The association between participation in strangulation activities and other sensation-seeking behaviors or mental health risk factors suggests that effective methods for substance use prevention might serve as

models for effective prevention strategies. Prevention messages for this activity should be tested before being incorporated into general use to minimize unintended consequences, such as increased participation (4). Because of the apparent overlap between youths participating in strangulation activities and mental health and substance use risk factors, effective prevention messages could be incorporated into existing substance use and mental health screening instruments, curricula, or related public health tools.

The previous survey of youths aged 9–18 years conducted in Texas and Ontario, Canada, found that 40% of surveyed youths thought no risk existed for participating in the choking game existed (9). This common misconception highlights the need for basic factual information about the health risks of strangulation activities in prevention messages. The age of the youths should be considered when determining the type of message and the messenger (9).

Parents, educators, counselors, health-care providers, and others who work with youths should become aware of strangulation activities and the signs of participation (e.g., mention of the choking game [or the game by its other names]; bloodshot eyes; marks on the neck; frequent, severe headaches; disorientation after spending time alone; and ropes, scarves, and belts tied to bedroom furniture or doorknobs or found knotted on the floor) (3). Nearly one third of 163 pediatricians and family practitioners recently surveyed were not aware of the choking game or the signs indicating that a patient might be participating in this activity (10). Finally, to identify participating youths, health and mental health practitioners should consider adding a question about strangulation activities to clinical screening tools, especially for youths identified as having substance use or mental health risks.

The findings in this report are subject to at least four limitations. First, because only public school students were surveyed, youths who attended private schools, were homeschooled, were institutionalized, or were not attending school were not represented in the results. Second, the survey did not ask about frequency of participation or time elapsed since most recent participation. Substantial differences might exist among youths who participated regarding frequency or recency. Third, this analysis is based on a prevalence determination from a single question that was not tested for reliability or validity. Finally, a substantial proportion of the 8th graders surveyed

^{§§} Additional information available at <http://www.co.williams.oh.us/family%20first/williams%20final%20report%202-6-07.pdf>.

(23%) did not complete the choking game question. A comparison of responders and nonresponders revealed that nonresponders belong to groups with likely higher rates of participation in the choking game.

To develop effective prevention programs, quantitative and qualitative research is needed to understand why and under what circumstances youths engage in strangulation activities. In the meantime, based on the findings described in this report, the Oregon Public Health Division is developing and evaluating educational materials for educators and clinicians who work in school-based health centers and other primary-care locations.

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Outbreak of Adenovirus 14 Respiratory Illness — Prince of Wales Island, Alaska, 2008

On September 22, 2008, a physician on Prince of Wales Island, Alaska, notified the Alaska Department of Health and Social Services (ADHSS) of an unusually high number of adult patients with recently diagnosed pneumonia ($n = 10$), including three persons who required hospitalization and one who died. ADHSS and CDC conducted an investigation to determine the cause and distribution of the outbreak, identify risk factors for hospitalization, and implement control measures. This report summarizes the results of that investigation, which found that the outbreak was caused by adenovirus 14 (Ad14), an emerging adenovirus serotype in the United States that is associated with a higher rate of severe illness compared with other adenoviruses. Among the 46 cases identified in the outbreak from September 1 through October 27, 2008, the most frequently observed characteristics included the following: male (70%), Alaska Native (61%), underlying pulmonary disease (44%), aged ≥ 65 years (26%), and current smoker (48%). Patients aged ≥ 65 years had a fivefold increased risk for hospitalization. The most commonly reported symptoms were cough (100%), shortness of breath (87%), and fever (74%). Of the 11 hospitalized patients, three required intensive care, and one required mechanical ventilation. One death was reported. Ad14 isolates obtained during the outbreak were identical genetically to those in recent community-acquired outbreaks in the United States which suggests the emergence of a new, and possibly more virulent Ad14 variant. Clinicians should consider Ad14 infection in the differential diagnosis for patients with community-acquired pneumonia, particularly when unexplained clusters of severe respiratory infections are detected.

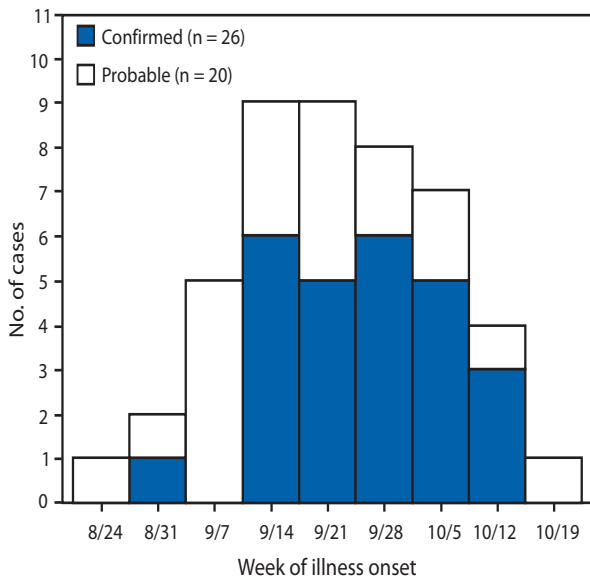
On October 1, 2008, epidemiologists from ADHSS arrived at Prince of Wales Island to identify cases and help collect clinical specimens from patients at clinics A and B. On October 6, CDC confirmed that six of 13 nasopharyngeal samples collected from patients at clinics A and B from September 1 through October 6 tested positive for Ad14 infection. Before the outbreak (October 2005–August 2008), only six sporadic cases of Ad14 infection had been identified by the Alaska State Virology Laboratory.

On October 12, ADHSS and CDC investigators returned to the island to conduct additional investigations. Investigators reviewed hospital and clinic medical records using a CDC data collection form* to ascertain demographic characteristics of patients, symptom information, past medical history, and clinical outcomes. A probable case of Ad14 infection was defined by a clinically diagnosed acute lower respiratory tract infection in a resident of Prince of Wales Island who had been treated at clinic A or B from September 1 through October 27. A confirmed case was defined by laboratory-confirmed Ad14 infection by polymerase chain reaction, viral culture, or serology during the same period. Sera were collected at the time of the clinic or home visit and tested for Ad14-specific neutralizing antibodies using a standardized neutralization assay for Ad14; a titer of $\geq 1:80$ was considered evidence of recent Ad14 infection (1). Paired sera were not collected. Patients who met the probable or confirmed case definitions completed a written questionnaire on risk factors for hospitalization, smoking status, travel history, and social history.

From September 1 through October 27, 46 cases of Ad14 infection (20 probable and 26 confirmed) were identified at clinics A and B; symptom onset ranged from August 29 to October 19 (Figure). Patients ranged in age from 2 to 95 years (median: 47 years); 70% were male, 61% were Alaska Native, and 48% were current smokers. The most common symptoms included cough in 46 patients (100%), shortness of breath in 40 (87%), and self-reported fever in 34 (74%) (Table 1). Chest radiographs were obtained for 39 (85%) patients; 30 (77%) of the radiographs were consistent with acute lower tract respiratory illness, most commonly patchy or interstitial infiltrates. The median duration of illness was 14 days (range: 1–41 days). Most of the 46 patients received one or more of the following treatments: antibiotics (91%), bronchodilators (41%), or corticosteroids (28%) (Table 1); none received antiviral therapy.

*The acute respiratory illness outbreak data collection short form, available at <http://www.bt.cdc.gov/urdo/pdf/shortform.pdf>.

FIGURE. Number of confirmed and probable cases of adenovirus 14 infection* (N = 46), by week of illness onset — Prince of Wales Island, Alaska, 2008



* Confirmed cases were those in which laboratory confirmation of adenovirus 14 infection by polymerase chain reaction, culture, or serology was obtained. Probable cases were those in which a clinical diagnosis was made of acute lower respiratory tract infection.

Among the 11 (24%) patients who were hospitalized, ages ranged from 33–78 years (median age: 68 years); nine patients were medically evacuated off the island. One patient with a history of underlying chronic obstructive pulmonary disease (COPD) requiring supplemental oxygen refused hospitalization and died within 10 days of symptom onset. Postmortem testing for adenovirus was not performed.

Among the 46 cases identified, 28 (61%) also had pulmonary disease (including COPD, asthma, or lung cancer) or another chronic condition (including cardiovascular disease, diabetes, cancer, and liver disease) (Table 2). Patients aged ≥ 65 years had a five-fold increased risk for hospitalization on univariate analysis ($p < 0.01$) (Table 2). In a multivariate logistic regression model that included age, current smoking status, race, underlying pulmonary disease, and comorbid condition, only age ≥ 65 years remained a statistically significant predictor of hospitalization (odds ratio [OR] = 13.7; $p < 0.01$).

Serum and nasal/oral swabs were obtained from September 1 through October 27, and submitted to ASVL and CDC's Gastroenteritis and Respiratory Viruses Laboratory Branch for testing. Respiratory

TABLE 1. Frequency of selected symptoms, signs, treatment, and clinical outcomes among patients with confirmed or probable adenovirus 14 infection* (N = 46) — Prince of Wales Island, Alaska, 2008

Characteristic	No [†]	(%)
Symptoms		
Cough	46	(100)
Shortness of breath	40	(87)
Fever (self-reported)	34	(74)
Productive cough	32	(70)
Headache	26	(56)
Nasal congestion	25	(54)
Sore throat	24	(52)
Vomiting	11	(24)
Signs		
Measured temperature $\geq 100.4^{\circ}\text{F}$ ($\geq 38.0^{\circ}\text{C}$)	18	(39)
Tachypnea [§]	10	(22)
Treatment		
Antibiotics	42	(91)
Antivirals	0	(0)
Bronchodilators	19	(41)
Corticosteroid (oral or inhaled)	13	(28)
Clinical outcome		
Hospitalized	11	(24)
Intensive care	4	(9)
Supplemental oxygen	9	(20)
Mechanical ventilation	1	(2)
Cardiopulmonary resuscitation	1	(2)
Death	1	(2)

* Confirmed cases were those in which laboratory confirmation of adenovirus 14 infection by polymerase chain reaction, culture, or serology was obtained. Probable cases were those in which a clinical diagnosis was made of acute lower respiratory tract infection.

[†] Unknown or not recorded in the medical record: shortness of breath, one; fever (self-reported), one; productive cough, three; headache, four; nasal congestion, three; sore throat, six; vomiting, one; measured temperature, one; tachypnea, five; mechanical ventilation, one.

[§] Respiratory rate: adult, ≥ 25 ; child aged < 5 years, ≥ 40 ; infant, ≥ 50 .

specimens were cultured for respiratory syncytial virus, influenza viruses, parainfluenza viruses, adenoviruses, herpes simplex virus, rhinoviruses, coxsackie viruses, echoviruses, and enteroviruses. Respiratory specimens were also tested for Ad14 DNA using an Ad14-specific real-time polymerase chain reaction assay and viral isolates were sequenced.

Serum and/or nasal/oral swabs were collected from 39 (85%) patients (25 serum samples, 39 nasal/oral swabs). Among the 39 respiratory specimens submitted for testing, 16 (41%) tested positive for Ad14. Among the 25 serum specimens submitted for testing, 12 (48%) had elevated Ad14 neutralizing antibody titers. In total, 26 (67%) of 39 patients tested had laboratory-confirmed Ad14 infection. The genetic sequences of the Ad14 viruses isolated from this

TABLE 2. Risk for hospitalization among patients with confirmed and probable adenovirus 14 infection* (N = 46), by selected patient characteristics† — Prince of Wales Island, Alaska, 2008

Characteristic	Total cases		Hospitalized		RR†	95% CI‡	p-value
	No.	No.	(%)	No.			
Sex							
Male	32	8	(25.0)		1.2	(0.4–3.8)	1.00
Female	14	3	(21.4)		1.0	Referent	
Age (yrs)							
≥65	12	7	(58.3)		5.0	(1.8–14.0)	<0.01
<65	34	4	(11.8)		1.0	Referent	
Race							
Alaska Native	28	8	(28.6)		1.9	(0.4–8.3)	0.40
Not Alaska Native	17	3	(17.6)		1.0	Referent	
Unknown race	1	0	(0.0)				
Laboratory-confirmation status							
Confirmed	26	6	(23.1)		0.9	(0.3–2.6)	1.00
Probable	20	5	(25.0)		1.0	Referent	
Comorbid condition							
Underlying pulmonary disease¶	20	7	(35.0)		2.1	(0.6–6.9)	0.30
Other comorbid condition**	8	1	(12.5)		0.8	(0.1–6.1)	1.00
No comorbid condition	18	3	(16.7)		1.0	Referent	
Smoking status							
Current smoker	22	6	(27.3)		1.3	(0.5–3.7)	0.60
Not a current smoker	20	4	(20.0)		1.0	Referent	
Unknown smoking status	4	1	(25.0)				

* Confirmed cases were those in which laboratory confirmation of adenovirus 14 infection by polymerase chain reaction, culture, or serology was obtained. Probable cases were those in which a clinical diagnosis was made of acute lower respiratory tract infection.

† Risk ratio.

‡ Confidence interval.

¶ Underlying pulmonary disease included any patients with a history of congestive-obstructive pulmonary disease, asthma, or lung cancer. Some patients defined as having underlying pulmonary disease also had other comorbid conditions.

** Other comorbid conditions included cardiovascular disease, diabetes, cancer, and liver disease. Excludes any patients with underlying pulmonary disease.

outbreak were identical with those found in other outbreak strains in the United States (2,3). No other pathogens were identified.

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Editorial Note

This report documents the first recognized community outbreak of Ad14 infection in Alaska. Adenoviruses have been associated with acute respiratory infections, pharyngoconjunctival fever, gastrointestinal illness, and hemorrhagic cystitis (4). Although adenovirus infections are typically mild, some persons, including infants and immunocompromised persons, are at increased risk for severe disease (2). Before 2003, U.S. outbreaks of Ad14 most often occurred among U.S. military recruits, and most cases were mild (3,5).

However, recent U.S. reports of Ad14 outbreaks, including the Alaska outbreak, describe severe and sometimes fatal respiratory illness in persons of all ages (2,3). The genetic sequences of the isolated Ad14 viruses in these recent outbreaks are identical and are distinct from the Ad14 reference strain of 1955, which suggests the emergence of a new and possibly more virulent Ad14 variant (2,3).

During this outbreak, certain groups were more frequently affected, including males, persons aged ≥65 years, and persons with underlying pulmonary disease. In addition, 22 (48%) patients were current smokers. Smoking has not been associated with Ad14 infection previously. As part of a separate investigation of this outbreak, a case-control study was conducted on Prince of Wales Island during September and October 2008. Cases were patients with clinical or radiological evidence of pneumonia in an island resident aged >1 year who sought care from September 1 through October 27, 2008. Age-matched controls were randomly selected from the community. Controls with self-reported signs of

What is already known on this topic?

Before 2003, outbreaks of adenovirus 14 (Ad14) respiratory infections in the United States typically occurred among military recruits; however, increasing numbers of outbreaks of severe and sometimes fatal Ad14 infection in nonmilitary settings have been described recently.

What is added by this report?

This outbreak of community-acquired Ad14 occurred in a remote Alaskan community and Alaska Natives (61%), males (70%), and persons with underlying pulmonary disease (44%) were more frequently affected; persons aged ≥ 65 years were at five times greater risk for hospitalization.

What are the implications for public health practice?

Clinicians should consider Ad14 infection in the differential diagnosis for patients with community-acquired pneumonia, particularly when unexplained clusters of severe respiratory infections are detected.

febrile acute upper respiratory infection or acute lower respiratory tract illness in the 2 weeks preceding onset of symptoms in the case-patient to whom they were matched were excluded. Preliminary results indicate that smoking (OR = 13.0, $p = 0.002$), comorbid condition (OR = 3.5, $p = 0.03$), and contact with an Ad14-infected person (OR = 18.0, $p < 0.001$) to be risk factors for disease (CDC, unpublished data; 2009). Although smoking prevalence for the Prince of Wales Island was unavailable, the 48% rate of smoking among patients in this report was substantially higher than the smoking prevalence in the general Alaska public (22%) and the Alaska Native population (38%).[†] This finding, when combined with the preliminary results of the case-control study, suggests that smoking was associated with Ad14 illness in this outbreak. In addition, 70% of the patients who met the case definition were Alaska Natives, a group that constitutes only 33% of the Prince of Wales Island population. Alaska Natives living in rural Alaska have been shown to be at increased risk for many respiratory infections, likely due to multiple risk factors, including lack of modern sanitation services, crowded housing conditions, and barriers to health care (6).

During this outbreak, 11 of 46 (24%) patients were hospitalized. In the multivariable analysis, the only statistically significant independent risk factor for hospitalization was advanced age (≥ 65 years). In other studies of Ad14, additional risk factors for

hospitalization have included certain underlying medical conditions, such as pulmonary and cardiovascular disease (7). No such associations were found in this investigation, but the ability to assess the individual effect of these risk factors was limited by small sample size.

Among the 46 patients, 42 (91%) were prescribed antibiotics at the time of their clinic visit. Although cidofovir, gancyclovir, and ribavirin might be beneficial (4), no specific antiviral medication is recommended for the treatment of severe adenovirus disease, and none of the patients received antiviral medications. No licensed vaccine for Ad14 currently exists. However, initial studies to assess the safety and immunogenicity of newly manufactured adenovirus 4 (Ad4) and 7 (Ad7) vaccines have shown promise in study populations (8). Ad4 and Ad7 vaccine safety and efficacy trials are in progress, and vaccines for these adenovirus serotypes might offer some cross-immunity to Ad14 (3,9).

Adenovirus infections continue to be identified in communities throughout Alaska; the last reported cases of Ad14 were in August 2009. Health-care providers should consider Ad14 in their differential diagnosis for patients with community-acquired pneumonia, obtain respiratory and serologic specimens for laboratory confirmation, and report suspected Ad14 outbreaks to public health officials. Patients with symptoms of severe viral respiratory infections and those diagnosed with adenovirus infection should be placed in private rooms or share a room with other patients with the same infection to help control the spread of respiratory infections (10). Health-care providers should follow standard contact and droplet precautions when caring for persons hospitalized with an adenoviral infection (10).

Acknowledgments

The findings in this report are based, in part, on contributions by M Fribush, MD, who initially reported this outbreak, and by E Funk, Alaska Section of Epidemiology; T Schmidt, Alaska State Virology Laboratory; C Watson, Alaska Public Health Nursing; L Thomas, health-care providers and staff members of clinics A and B, Prince of Wales Island; L Anderson, G Armstrong, A Curns, D Erdman, G Fischer, X Lu, Div of Viral Diseases; and D Bensyl, B Gunnels, Office of Workforce and Career Development, CDC.

[†] Alaska Department of Health and Social Services. Alaska Behavioral Risk Factor Survey—2007 annual report. August 2008. Available at <http://www.hss.state.ak.us/dph/chronic/hsl/brfss/pubs/brfss07.pdf>.

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Announcements

National Glaucoma Awareness Month — January 2010

January is National Glaucoma Awareness Month. Glaucoma is a group of disorders that damage the optic nerve and lead to vision loss (1). According to the National Eye Institute, glaucoma affects approximately 4 million people in the United States, and nearly half of those with glaucoma are not aware that they have the disease (2).

Persons aged >60 years (especially Mexican Americans) have an increased risk for developing glaucoma, as do African Americans aged >40 years, persons with a family history of glaucoma, and persons with diabetes (2). Glaucoma can be detected with a comprehensive dilated eye examination. Early detection and treatment can prevent or control vision loss (2).

Information on CDC's Vision Health Initiative and strategies for prevention and control of common eye diseases is available at <http://www.cdc.gov/visionhealth>. Additional information about glaucoma is available at <http://www.nei.nih.gov/health/glaucoma>.

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1. The Eye Disease Prevalence Research Group. Prevalence of open-angle glaucoma among adults in the United States. *Arch Ophthalmol* 2004;122:532–8.
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Notices to Readers

New Look for MMWR Weekly Publication

The *MMWR* weekly has a new look starting with this issue, the first issue of Volume 59. The changes are intended to give the weekly and other *MMWR* publications a more modern appearance, make them easier to read, and allow incorporation of new features. Other publications in the *MMWR* series (e.g., *Recommendations and Reports* and *Surveillance Summaries*) will feature the same new look when published in 2010. In conjunction with the new look for the weekly, the *MMWR* website also has been redesigned. The website can be accessed at <http://www.cdc.gov/mmwr>.

Changes to the National Notifiable Infectious Disease List and Data Presentation — January 2010

This issue of *MMWR* incorporates changes to Table I (Provisional cases of infrequently reported notifiable diseases, United States) and Table II (Provisional cases of selected notifiable diseases, United States). This year, the modifications add and remove diseases designated as nationally notifiable by the Council of State and Territorial Epidemiologists (CSTE) in conjunction with CDC (1–5).

Two new diseases have been added to the list of nationally notifiable infectious diseases: viral hemorrhagic fever and dengue fever. Incidence data for viral hemorrhagic fever will appear in Table I, and dengue virus infections will appear in Table II. The surveillance case definitions adopted for these diseases are listed in their respective CSTE position statements (1,2) and are included in the case definitions section of the National Notifiable Diseases Surveillance System (NNDSS) website (3).

Two diseases have been removed from the list of nationally notifiable infectious diseases: invasive group A streptococcal disease and coccidioidomycosis (4,5). Incidence data for these diseases no longer appear in Table II.

Rocky Mountain spotted fever has been renamed spotted fever rickettsiosis (6). Incidence data for spotted fever rickettsiosis continue to appear in Table II.

Streptococcus pneumoniae, invasive disease has replaced two previous nationally notifiable diseases: 1) *Streptococcus pneumoniae*, nondrug resistant invasive

disease in children aged < 5 years and 2) *Streptococcus pneumoniae* drug-resistant invasive disease (7). Incidence data for *Streptococcus pneumoniae*, invasive disease appear in Table II.

Data for hepatitis C viral, acute, and ehrlichiosis/anaplasmosis (including subcategories *Ehrlichia chaffeensis*, *Ehrlichia ewingii*, *Anaplasma phagocytophilum*, and ehrlichiosis/anaplasmosis, undetermined) are now displayed in Table II because case reports exceeded 1,000 during 2009.

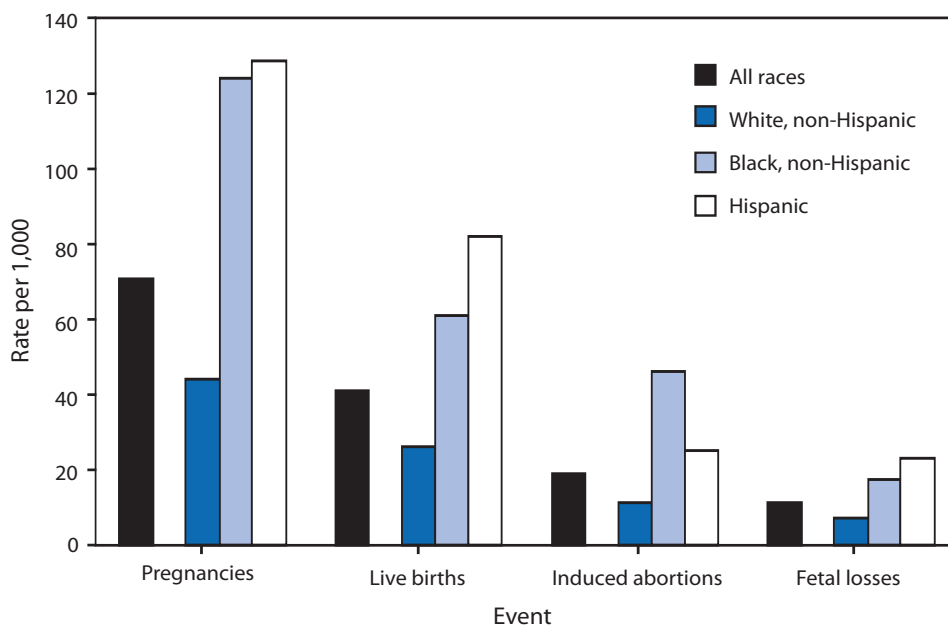
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3. Council of State and Territorial Epidemiologists. Position statement 09-ID-19. Add dengue virus infections to the nationally notifiable conditions list. Available at <http://www.cste.org/ps2009/09-id-19.pdf>. Accessed January 11, 2010.
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QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Pregnancy, Birth, Abortion, and Fetal Loss Rates Per 1,000 Women Aged 15–19 Years, by Race and Hispanic Ethnicity — United States, 2005



Estimated pregnancy, birth, abortion, and fetal loss rates among non-Hispanic white women aged 15–19 years during 2005 were substantially lower than among their non-Hispanic black and Hispanic counterparts. Although overall pregnancy rates for non-Hispanic black and Hispanic women aged 15–19 years are similar, black women in this age group had lower birth rates and higher abortion rates than their Hispanic counterparts.

SOURCES: Ventura SJ, Abma JC, Mosher WD, Henshaw SK. Estimated pregnancy rates for the United States, 1990–2005: an update. *Natl Vital Stat Rep* 2009;58(4). Available at http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_04.pdf.

Ventura SJ, Abma JC, Mosher WD, Henshaw SK. Estimated pregnancy rates by outcome for the United States, 1990–2004. *Natl Vital Stat Rep* 2009;56(15). Available at http://www.cdc.gov/nchs/data/nvsr/nvsr56/nvsr56_15.pdf.

Notifiable Diseases and Mortality Tables

TABLE I. Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending January 9, 2010 (1st week)*

Disease	Current week	Cum 2010	5-year weekly average [†]	Total cases reported for previous years					States reporting cases during current week (No.)
				2009	2008	2007	2006	2005	
Anthrax	—	—	—	—	—	1	1	—	
Botulism, total	—	—	3	93	145	144	165	135	
foodborne	—	—	0	12	17	32	20	19	
infant	—	—	2	58	109	85	97	85	
other (wound and unspecified)	—	—	1	23	19	27	48	31	
Brucellosis	—	—	2	102	80	131	121	120	
Chancroid	1	1	0	24	25	23	33	17	SC (1)
Cholera	—	—	0	10	5	7	9	8	
Cyclosporiasis [§]	—	—	4	125	139	93	137	543	
Diphtheria	—	—	—	—	—	—	—	—	
Domestic arboviral diseases ^{§, ¶} :									
California serogroup virus disease	—	—	—	41	62	55	67	80	
Eastern equine encephalitis virus disease	—	—	—	4	4	4	8	21	
Powassan virus disease	—	—	—	1	2	7	1	1	
St. Louis encephalitis virus disease	—	—	0	10	13	9	10	13	
Western equine encephalitis virus disease	—	—	—	—	—	—	—	—	
<i>Haemophilus influenzae</i> , ^{**} invasive disease (age <5 yrs):									
serotype b	—	—	1	26	30	22	29	9	
nonsertotype b	1	1	5	205	244	199	175	135	CO (1)
unknown serotype	3	3	5	223	163	180	179	217	PA (2), MO (1)
Hansen disease [§]	—	—	2	59	80	101	66	87	
Hantavirus pulmonary syndrome [§]	—	—	0	13	18	32	40	26	
Hemolytic uremic syndrome, postdiarrheal [§]	1	1	5	213	330	292	288	221	MI (1)
HIV infection, pediatric (age <13 yrs) ^{††}	—	—	1	—	—	—	—	380	
Influenza-associated pediatric mortality ^{§, §§}	7	7	1	360	90	77	43	45	NY (2), IL (1), MI (1), TX (2), OR (1)
Listeriosis	2	2	18	765	759	808	884	896	VA (1), TN (1)
Measles ^{¶¶}	—	—	1	61	140	43	55	66	
Meningococcal disease, invasive ^{***} :									
A, C, Y, and W-135	—	—	6	273	330	325	318	297	
serogroup B	—	—	5	146	188	167	193	156	
other serogroup	—	—	1	23	38	35	32	27	
unknown serogroup	8	8	15	464	616	550	651	765	NYC (1), PA (2), OH (1), MI (1), GA (1), FL (2)
Mumps	—	—	17	989	454	800	6,584	314	
Novel influenza A virus infections ^{†††}	—	—	—	43,771	2	4	NN	NN	
Plague	—	—	0	7	3	7	17	8	
Poliomyelitis, paralytic	—	—	—	—	—	—	—	1	
Polio virus Infection, nonparalytic [§]	—	—	—	—	—	—	NN	NN	
Psittacosis [§]	—	—	0	9	8	12	21	16	
Q fever, total ^{§, §§§}	—	—	3	99	120	171	169	136	
acute	—	—	2	84	106	—	—	—	
chronic	—	—	0	15	14	—	—	—	
Rabies, human	—	—	0	4	2	1	3	2	
Rubella ^{¶¶¶}	—	—	0	3	16	12	11	11	
Rubella, congenital syndrome	—	—	—	2	—	—	1	1	
SARS-CoV ^{§, ****}	—	—	—	—	—	—	—	—	
Smallpox [§]	—	—	—	—	—	—	—	—	
Streptococcal toxic-shock syndrome [§]	—	—	4	127	157	132	125	129	
Syphilis, congenital (age <1 yr)	—	—	6	257	431	430	349	329	
Tetanus	—	—	1	14	19	28	41	27	
Toxic-shock syndrome (staphylococcal) [§]	—	—	2	76	71	92	101	90	
Trichinellosis	—	—	0	12	39	5	15	16	
Tularemia	—	—	2	82	123	137	95	154	
Typhoid fever	3	3	9	326	449	434	353	324	VA (2), FL (1)
Vancomycin-intermediate <i>Staphylococcus aureus</i> [§]	—	—	0	70	63	37	6	2	
Vancomycin-resistant <i>Staphylococcus aureus</i> [§]	—	—	0	1	—	2	1	3	
Vibriosis (noncholera <i>Vibrio</i> species infections) [§]	—	—	5	597	588	549	NN	NN	
Viral Hemorrhagic Fever ^{††††}	—	—	—	NN	NN	NN	NN	NN	
Yellow fever	—	—	—	—	—	—	—	—	

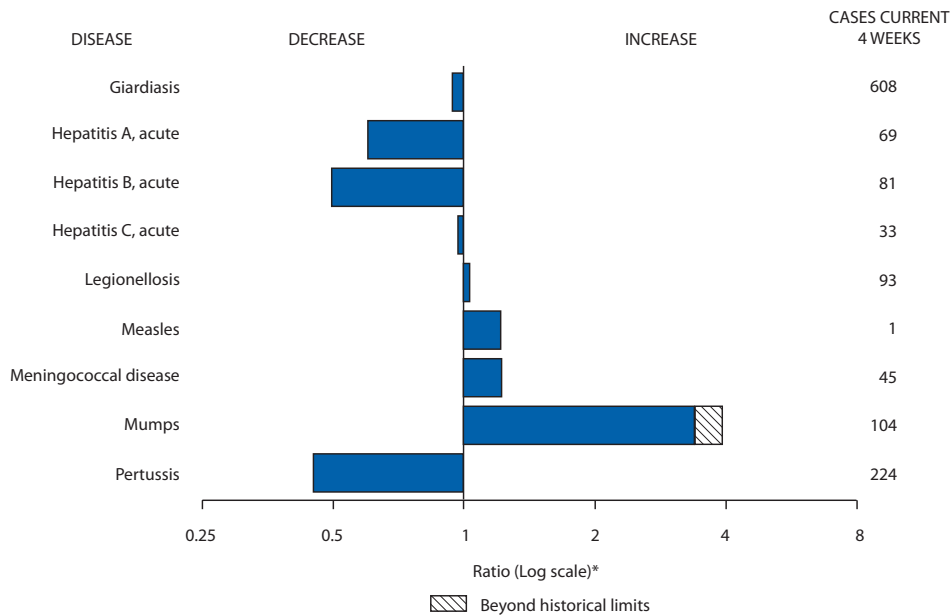
See Table I footnotes on next page.

Notifiable Diseases and Mortality Tables

TABLE I. (Continued) Provisional cases of infrequently reported notifiable diseases (<1,000 cases reported during the preceding year) — United States, week ending January 9, 2010 (1st week)*

- : No reported cases. N: Not reportable. NN: Not Nationally Notifiable Cum: Cumulative year-to-date counts.
 * Incidence data for reporting years 2009 and 2010 are provisional, whereas data for 2005 through 2008 are finalized.
 † Calculated by summing the incidence counts for the current week, the 2 weeks preceding the current week, and the 2 weeks following the current week, for a total of 5 preceding years. Additional information is available at <http://www.cdc.gov/epo/dphsi/phs/files/5yearweeklyaverage.pdf>.
 ‡ Not reportable in all states. Data from states where the condition is not reportable are excluded from this table, except starting in 2007 for the domestic arboviral diseases and influenza-associated pediatric mortality, and in 2003 for SARS-CoV. Reporting exceptions are available at <http://www.cdc.gov/epo/dphsi/phs/infdis.htm>.
 § Includes both neuroinvasive and nonneuroinvasive. Updated weekly from reports to the Division of Vector-Borne Infectious Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases (ArboNET Surveillance). Data for West Nile virus are available in Table II.
 ** Data for *H. influenzae* (all ages, all serotypes) are available in Table II.
 †† Updated monthly from reports to the Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Implementation of HIV reporting influences the number of cases reported. Updates of pediatric HIV data have been temporarily suspended until upgrading of the national HIV/AIDS surveillance data management system is completed. Data for HIV/AIDS, when available, are displayed in Table IV, which appears quarterly.
 ††† Updated weekly from reports to the Influenza Division, National Center for Immunization and Respiratory Diseases. Since April 26, 2009, a total of 255 influenza-associated pediatric deaths associated with 2009 influenza A (H1N1) virus infection have been reported. Since August 30, 2009, a total of 236 influenza-associated pediatric deaths occurring during the 2009–10 influenza season have been reported. A total of 130 influenza-associated pediatric deaths occurring during the 2008–09 influenza season have been reported.
 †††† No measles cases were reported for the current week.
 ††††† Data for meningococcal disease (all serogroups) are available in Table II.
 †††††† CDC discontinued reporting of individual confirmed and probable cases of 2009 pandemic influenza A (H1N1) virus infections on July 24, 2009. CDC will report the total number of 2009 pandemic influenza A (H1N1) hospitalizations and deaths weekly on the CDC H1N1 influenza website (<http://www.cdc.gov/h1n1flu>). In addition, three cases of novel influenza A virus infections, unrelated to the 2009 pandemic influenza A (H1N1) virus, were reported to CDC during 2009.
 †††††† In 2009, Q fever acute and chronic reporting categories were recognized as a result of revisions to the Q fever case definition. Prior to that time, case counts were not differentiated with respect to acute and chronic Q fever cases.
 ††††††† No rubella cases were reported for the current week.
 †††††††† Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Zoonotic, Vector-Borne, and Enteric Diseases.
 ††††††††† There were no cases of Viral Hemorrhagic Fever during week one. See Table II for Dengue Hemorrhagic Fever.

Figure I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals January 9, 2010, with historical data



* Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

Notifiable Disease Data Team and 122 Cities Mortality Data Team

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Notifiable Diseases and Mortality Tables

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending January 9, 2010, and January 10, 2009 (1st week)*

Reporting area	Chlamydia trachomatis infection					Cryptosporidiosis				
	Current week	Previous 52 weeks		Cum 2010	Cum 2009	Current week	Previous 52 weeks		Cum 2010	Cum 2009
		Med	Max				Med	Max		
United States	8,474	22,405	26,592	8,474	20,541	27	113	259	27	99
New England	356	760	1,482	356	394	—	6	45	—	45
Connecticut	2	225	400	2	34	—	0	38	—	38
Maine [†]	—	47	75	—	56	—	0	4	—	1
Massachusetts	340	377	944	340	212	—	2	16	—	5
New Hampshire	1	34	61	1	35	—	1	5	—	1
Rhode Island [†]	—	63	244	—	29	—	0	8	—	—
Vermont [†]	13	22	63	13	28	—	1	9	—	—
Mid. Atlantic	2,262	3,014	4,307	2,262	2,555	4	13	37	4	5
New Jersey	190	429	838	190	426	—	1	5	—	—
New York (Upstate)	187	607	1,193	187	148	1	3	12	1	1
New York City	1,495	1,160	1,956	1,495	1,243	—	1	8	—	1
Pennsylvania	390	826	1,001	390	738	3	8	19	3	3
E.N. Central	805	3,442	4,280	805	4,008	10	25	54	10	17
Illinois	2	1,046	1,427	2	1,427	—	2	8	—	2
Indiana	140	399	695	140	374	—	4	9	—	3
Michigan	543	870	1,332	543	841	1	5	11	1	2
Ohio	55	697	1,044	55	1,022	7	7	16	7	4
Wisconsin	65	375	471	65	344	2	7	24	2	6
W.N. Central	219	1,339	1,697	219	1,148	1	18	61	1	4
Iowa	—	174	256	—	191	—	3	14	—	1
Kansas	6	176	561	6	102	—	2	6	—	—
Minnesota	—	260	338	—	315	—	4	34	—	—
Missouri	171	508	638	171	412	1	3	12	1	2
Nebraska [†]	39	100	236	39	65	—	2	9	—	1
North Dakota	3	32	91	3	8	—	0	5	—	—
South Dakota	—	53	80	—	55	—	1	10	—	—
S. Atlantic	2,305	3,854	5,360	2,305	3,059	5	19	45	5	12
Delaware	65	88	180	65	48	—	0	2	—	—
District of Columbia	—	124	225	—	112	—	0	1	—	—
Florida	557	1,421	1,670	557	1,154	4	8	24	4	7
Georgia	—	681	1,150	—	185	1	5	23	1	5
Maryland [†]	262	425	896	262	275	—	1	5	—	—
North Carolina	—	0	0	—	—	—	0	9	—	—
South Carolina [†]	488	523	1,421	488	807	—	1	7	—	—
Virginia [†]	907	598	926	907	422	—	1	7	—	—
West Virginia	26	69	136	26	56	—	0	2	—	—
E.S. Central	487	1,739	2,217	487	1,941	2	3	10	2	1
Alabama [†]	9	466	629	9	429	—	1	5	—	1
Kentucky	—	249	642	—	373	1	1	4	1	—
Mississippi	—	442	840	—	532	—	0	3	—	—
Tennessee [†]	478	579	809	478	607	1	1	5	1	—
W.S. Central	1,530	2,952	5,806	1,530	2,932	1	8	35	1	—
Arkansas [†]	224	269	417	224	332	—	1	5	—	—
Louisiana	—	525	1,130	—	596	—	0	6	—	—
Oklahoma	1,306	167	2,717	1,306	192	—	2	9	—	—
Texas [†]	—	2,007	2,519	—	1,812	1	4	20	1	—
Mountain	282	1,432	2,089	282	903	2	9	26	2	10
Arizona	174	499	755	174	27	—	1	3	—	2
Colorado	—	299	727	—	509	—	2	10	—	2
Idaho [†]	33	69	184	33	18	1	1	7	1	1
Montana [†]	22	56	86	22	56	1	1	4	1	1
Nevada [†]	4	170	477	4	99	—	0	2	—	—
New Mexico [†]	42	175	344	42	38	—	2	8	—	3
Utah	7	110	160	7	133	—	0	3	—	—
Wyoming [†]	—	36	69	—	23	—	0	2	—	1
Pacific	228	3,483	4,688	228	3,601	2	14	25	2	5
Alaska	—	99	137	—	104	—	0	1	—	—
California	228	2,689	3,591	228	2,870	—	8	20	—	2
Hawaii	—	120	147	—	130	—	0	1	—	—
Oregon	—	200	468	—	65	2	3	9	2	3
Washington	—	388	571	—	432	—	1	8	—	—
American Samoa	—	0	0	—	—	N	0	0	N	N
C.N.M.I.	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	75	135	332	75	53	N	0	0	N	N
U.S. Virgin Islands	—	9	17	—	1	—	0	0	—	—

C.N.M.I.: Commonwealth of Northern Mariana Islands.

U: Unavailable. —: No reported cases. N: Not reportable. NN: Not Nationally Notifiable. Cum: Cumulative year-to-date counts. Med: Median. Max: Maximum.

* Incidence data for reporting years 2009 and 2010 are provisional. Data for HIV/AIDS, AIDS, and TB, when available, are displayed in Table IV, which appears quarterly.

[†] Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

Notifiable Diseases and Mortality Tables

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending January 9, 2010, and January 10, 2009 (1st week)*

Reporting area	Dengue Virus Infection									
	Dengue Fever					Dengue Hemorrhagic Fever†				
	Current week	Previous 52 weeks		Cum 2010	Cum 2009	Current week	Previous 52 weeks		Cum 2010	Cum 2009
	Med	Max				Med	Max			
United States	—	0	0	—	NN	—	0	0	—	NN
New England	—	0	0	—	NN	—	0	0	—	NN
Connecticut	—	0	0	—	NN	—	0	0	—	NN
Maine [§]	—	0	0	—	NN	—	0	0	—	NN
Massachusetts	—	0	0	—	NN	—	0	0	—	NN
New Hampshire	—	0	0	—	NN	—	0	0	—	NN
Rhode Island [§]	—	0	0	—	NN	—	0	0	—	NN
Vermont [§]	—	0	0	—	NN	—	0	0	—	NN
Mid. Atlantic	—	0	0	—	NN	—	0	0	—	NN
New Jersey	—	0	0	—	NN	—	0	0	—	NN
New York (Upstate)	—	0	0	—	NN	—	0	0	—	NN
New York City	—	0	0	—	NN	—	0	0	—	NN
Pennsylvania	—	0	0	—	NN	—	0	0	—	NN
E.N. Central	—	0	0	—	NN	—	0	0	—	NN
Illinois	—	0	0	—	NN	—	0	0	—	NN
Indiana	—	0	0	—	NN	—	0	0	—	NN
Michigan	—	0	0	—	NN	—	0	0	—	NN
Ohio	—	0	0	—	NN	—	0	0	—	NN
Wisconsin	—	0	0	—	NN	—	0	0	—	NN
W.N. Central	—	0	0	—	NN	—	0	0	—	NN
Iowa	—	0	0	—	NN	—	0	0	—	NN
Kansas	—	0	0	—	NN	—	0	0	—	NN
Minnesota	—	0	0	—	NN	—	0	0	—	NN
Missouri	—	0	0	—	NN	—	0	0	—	NN
Nebraska [§]	—	0	0	—	NN	—	0	0	—	NN
North Dakota	—	0	0	—	NN	—	0	0	—	NN
South Dakota	—	0	0	—	NN	—	0	0	—	NN
S. Atlantic	—	0	0	—	NN	—	0	0	—	NN
Delaware	—	0	0	—	NN	—	0	0	—	NN
District of Columbia	—	0	0	—	NN	—	0	0	—	NN
Florida	—	0	0	—	NN	—	0	0	—	NN
Georgia	—	0	0	—	NN	—	0	0	—	NN
Maryland [§]	—	0	0	—	NN	—	0	0	—	NN
North Carolina	—	0	0	—	NN	—	0	0	—	NN
South Carolina [§]	—	0	0	—	NN	—	0	0	—	NN
Virginia [§]	—	0	0	—	NN	—	0	0	—	NN
West Virginia	—	0	0	—	NN	—	0	0	—	NN
E.S. Central	—	0	0	—	NN	—	0	0	—	NN
Alabama [§]	—	0	0	—	NN	—	0	0	—	NN
Kentucky	—	0	0	—	NN	—	0	0	—	NN
Mississippi	—	0	0	—	NN	—	0	0	—	NN
Tennessee [§]	—	0	0	—	NN	—	0	0	—	NN
W.S. Central	—	0	0	—	NN	—	0	0	—	NN
Arkansas [§]	—	0	0	—	NN	—	0	0	—	NN
Louisiana	—	0	0	—	NN	—	0	0	—	NN
Oklahoma	—	0	0	—	NN	—	0	0	—	NN
Texas [§]	—	0	0	—	NN	—	0	0	—	NN
Mountain	—	0	0	—	NN	—	0	0	—	NN
Arizona	—	0	0	—	NN	—	0	0	—	NN
Colorado	—	0	0	—	NN	—	0	0	—	NN
Idaho [§]	—	0	0	—	NN	—	0	0	—	NN
Montana [§]	—	0	0	—	NN	—	0	0	—	NN
Nevada [§]	—	0	0	—	NN	—	0	0	—	NN
New Mexico [§]	—	0	0	—	NN	—	0	0	—	NN
Utah	—	0	0	—	NN	—	0	0	—	NN
Wyoming [§]	—	0	0	—	NN	—	0	0	—	NN
Pacific	—	0	0	—	NN	—	0	0	—	NN
Alaska	—	0	0	—	NN	—	0	0	—	NN
California	—	0	0	—	NN	—	0	0	—	NN
Hawaii	—	0	0	—	NN	—	0	0	—	NN
Oregon	—	0	0	—	NN	—	0	0	—	NN
Washington	—	0	0	—	NN	—	0	0	—	NN
American Samoa	—	0	0	—	NN	—	0	0	—	NN
C.N.M.I.	—	—	—	—	NN	—	—	—	—	NN
Guam	—	0	0	—	NN	—	0	0	—	NN
Puerto Rico	—	0	0	—	NN	—	0	0	—	NN
U.S. Virgin Islands	—	0	0	—	NN	—	0	0	—	NN

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† DHF includes cases that meet criteria for dengue shock syndrome (DSS), a more severe form of DHF.

§ Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

Notifiable Diseases and Mortality Tables

TABLE II. (Continued) Provisional cases of selected notifiable diseases, United States, weeks ending January 9, 2010, and January 10, 2009 (1st week)*

Reporting area	Spotted Fever Rickettsiosis (including RMSF) [†]									
	Confirmed					Probable				
	Current week	Previous 52 weeks		Cum 2010	Cum 2009	Current week	Previous 52 weeks		Cum 2010	Cum 2009
	Med	Max				Med	Max			
United States	—	20	78	—	1	—	20	78	—	7
New England	—	0	2	—	—	—	0	2	—	—
Connecticut	—	0	0	—	—	—	0	0	—	—
Maine [§]	—	0	2	—	—	—	0	2	—	—
Massachusetts	—	0	1	—	—	—	0	1	—	—
New Hampshire	—	0	0	—	—	—	0	0	—	—
Rhode Island [§]	—	0	0	—	—	—	0	0	—	—
Vermont [§]	—	0	1	—	—	—	0	1	—	—
Mid. Atlantic	—	1	6	—	—	—	1	6	—	—
New Jersey	—	0	0	—	—	—	0	0	—	—
New York (Upstate)	—	0	3	—	—	—	0	3	—	—
New York City	—	0	4	—	—	—	0	4	—	—
Pennsylvania	—	0	2	—	—	—	0	2	—	—
E.N. Central	—	1	7	—	1	—	1	7	—	—
Illinois	—	0	6	—	—	—	0	6	—	—
Indiana	—	0	3	—	—	—	0	3	—	—
Michigan	—	0	2	—	1	—	0	2	—	—
Ohio	—	0	4	—	—	—	0	4	—	—
Wisconsin	—	0	1	—	—	—	0	1	—	—
W.N. Central	—	3	27	—	—	—	3	27	—	—
Iowa	—	0	1	—	—	—	0	1	—	—
Kansas	—	0	1	—	—	—	0	1	—	—
Minnesota	—	0	2	—	—	—	0	2	—	—
Missouri	—	3	26	—	—	—	3	26	—	—
Nebraska [§]	—	0	2	—	—	—	0	2	—	—
North Dakota	—	0	0	—	—	—	0	0	—	—
South Dakota	—	0	0	—	—	—	0	0	—	—
S. Atlantic	—	7	27	—	—	—	7	27	—	5
Delaware	—	0	3	—	—	—	0	3	—	—
District of Columbia	—	0	0	—	—	—	0	0	—	—
Florida	—	0	2	—	—	—	0	2	—	—
Georgia	—	0	7	—	—	—	0	7	—	—
Maryland [§]	—	0	3	—	—	—	0	3	—	1
North Carolina	—	3	25	—	—	—	3	25	—	2
South Carolina [§]	—	0	5	—	—	—	0	5	—	1
Virginia [§]	—	1	5	—	—	—	1	5	—	1
West Virginia	—	0	1	—	—	—	0	1	—	—
E.S. Central	—	4	16	—	—	—	3	16	—	2
Alabama [§]	—	1	7	—	—	—	1	7	—	1
Kentucky	—	0	1	—	—	—	0	1	—	—
Mississippi	—	0	1	—	—	—	0	1	—	—
Tennessee [§]	—	3	14	—	—	—	3	14	—	1
W.S. Central	—	1	28	—	—	—	1	28	—	—
Arkansas [§]	—	0	14	—	—	—	0	14	—	—
Louisiana	—	0	1	—	—	—	0	1	—	—
Oklahoma	—	0	27	—	—	—	0	27	—	—
Texas [§]	—	0	3	—	—	—	0	3	—	—
Mountain	—	0	3	—	—	—	0	3	—	—
Arizona	—	0	1	—	—	—	0	0	—	—
Colorado	—	0	1	—	—	—	0	1	—	—
Idaho [§]	—	0	1	—	—	—	0	1	—	—
Montana [§]	—	0	2	—	—	—	0	2	—	—
Nevada [§]	—	0	0	—	—	—	0	0	—	—
New Mexico [§]	—	0	1	—	—	—	0	1	—	—
Utah	—	0	1	—	—	—	0	1	—	—
Wyoming [§]	—	0	1	—	—	—	0	1	—	—
Pacific	—	0	1	—	—	—	0	1	—	—
Alaska	—	0	0	—	—	—	0	0	—	—
California	—	0	1	—	—	—	0	1	—	—
Hawaii	—	0	0	—	—	—	0	0	—	—
Oregon	—	0	0	—	—	—	0	0	—	—
Washington	—	0	0	—	—	—	0	0	—	—
American Samoa	—	0	0	—	—	—	0	0	—	—
C.N.M.I.	—	—	—	—	—	—	—	—	—	—
Guam	—	0	0	—	—	—	0	0	—	—
Puerto Rico	—	0	0	—	—	—	0	0	—	—
U.S. Virgin Islands	—	0	0	—	—	—	0	0	—	—

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* Incidence data for reporting years 2009 and 2010 are provisional.

[†] Illnesses with similar clinical presentation that result from Spotted fever group rickettsia infections are reported as Spotted fever rickettsioses. Rocky Mountain spotted fever (RMSF) caused by *Rickettsia rickettsii*, is the most common and well-known spotted fever.

[§] Contains data reported through the National Electronic Disease Surveillance System (NEDSS).

Notifiable Diseases and Mortality Tables

TABLE IV. Provisional cases of selected notifiable disease,* United States, quarter ending January 2, 2010 (52nd week)

Reporting area	Tuberculosis†				
	Current quarter	Previous 4 quarters		Cum 2009	Cum 2008
		Min	Max		
United States	1,823	1,823	2,776	9,388	12,928
New England	70	70	98	351	430
Connecticut	11	11	25	75	98
Maine	—	0	4	7	9
Massachusetts	55	55	59	228	262
New Hampshire	—	0	6	16	19
Rhode Island	2	2	7	19	36
Vermont	2	0	3	6	6
Mid. Atlantic	180	180	386	1,259	2,004
New Jersey	79	70	106	348	422
New York (Upstate)	39	39	55	186	303
New York City	20	20	204	593	893
Pennsylvania	42	15	55	132	386
E.N. Central	103	103	189	619	988
Illinois	45	45	91	287	481
Indiana	38	25	38	122	118
Michigan	—	0	22	39	172
Ohio	19	19	53	159	213
Wisconsin	1	1	6	12	4
W.N. Central	52	51	84	252	476
Iowa	4	4	12	34	49
Kansas	—	0	0	—	57
Minnesota	22	8	36	98	211
Missouri	21	13	27	81	107
Nebraska	2	2	7	20	33
North Dakota	1	1	1	4	3
South Dakota	2	2	5	15	16
S. Atlantic	313	313	604	1,915	2,635
Delaware	1	1	7	15	23
District of Columbia	9	7	13	41	54
Florida	79	79	233	696	957
Georgia	46	46	109	358	484
Maryland	70	31	70	213	278
North Carolina	11	11	74	192	331
South Carolina	33	31	51	153	188
Virginia	63	32	68	230	292
West Virginia	1	1	8	17	28
E.S. Central	134	77	163	526	676
Alabama	41	34	47	165	176
Kentucky	19	2	27	52	101
Mississippi	27	15	38	114	117
Tennessee	47	26	67	195	282
W.S. Central	175	175	453	1,440	1,914
Arkansas	3	3	27	62	84
Louisiana	11	0	67	119	227
Oklahoma	38	5	38	103	100
Texas	123	123	363	1,156	1,503
Mountain	81	66	155	444	544
Arizona	41	15	75	194	227
Colorado	12	12	23	67	103
Idaho	5	3	6	17	11
Montana	—	0	4	6	9
Nevada	6	6	43	85	102
New Mexico	7	7	14	36	60
Utah	10	7	11	37	27
Wyoming	—	0	2	2	5
Pacific	715	556	715	2,582	3,261
Alaska	8	1	12	30	50
California	475	475	604	2,189	2,784
Hawaii	23	23	37	124	124
Oregon	8	8	12	38	75
Washington	201	0	201	201	228
American Samoa	—	0	0	—	3
C.N.M.I.	—	0	0	—	34
Guam	—	0	0	—	90
Puerto Rico	—	0	5	5	95
U.S. Virgin Islands	—	0	0	—	4

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* CDC is in the process of upgrading the national surveillance data management system for human immunodeficiency virus/acquired immunodeficiency syndrome. As a result, the quarterly data scheduled for this issue of MMWR is not being published in Table IV.

† CDC is in the process of implementing Public Health Information Network tuberculosis (TB) case notification message standards, which will simplify reporting of TB cases. As a result, TB provisional incidence counts for 2009 are now reported from the National Electronic Disease Surveillance System (NEDSS) and the Tuberculosis Information Management System (TIMS) data sources. Previously, provisional TB incidence counts were reported through the National Electronic Telecommunications System for Surveillance (NETSS). The 2009 TB provisional incidence counts are low in some reporting jurisdictions as these areas continue to catch up with data entry and transmission to CDC during this transition.

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Recommended Adult Immunization Schedule — United States, 2010

MMWRTM
QuickGuide

Weekly

January 15, 2010 / Vol. 59 / No. 1

The Advisory Committee on Immunization Practices (ACIP) annually reviews the recommended Adult Immunization Schedule to ensure that the schedule reflects current recommendations for the licensed vaccines. In October 2009, ACIP approved the Adult Immunization Schedule for 2010, which includes several changes. A bivalent human papillomavirus vaccine (HPV2) was licensed for use in females in October 2009. ACIP recommends vaccination of females with either HPV2 or the quadrivalent human papillomavirus vaccine (HPV4). HPV4 was licensed for use in males in October 2009, and ACIP issued a permissive recommendation for use in males. Introductory sentences were added to the footnotes for measles, mumps, rubella, influenza, pneumococcal, hepatitis A, hepatitis B, and meningococcal vaccines. Clarifications were made to the footnotes for measles, mumps, rubella, influenza, hepatitis A, meningococcal, and *Haemophilus influenzae* type b vaccines, and schedule information was added to the hepatitis B vaccine footnote.

Additional information is available as follows: schedule (in English and Spanish) at <http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm>; adult vaccination at <http://www.cdc.gov/vaccines/default.htm>; ACIP statements for specific vaccines at <http://www.cdc.gov/vaccine/pubs/acip-list.htm>; and reporting adverse events at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

The Recommended Adult Immunization Schedule has been approved by the Advisory Committee on Immunization Practices, the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, and the American College of Physicians.

Suggested citation: Centers for Disease Control and Prevention. Recommended adult immunization schedule—United States, 2010. MMWR 2010;59(1).

Changes for 2010

Footnotes (Figures 1 and 2)

- The human papillomavirus (HPV) footnote (#2) includes language that a bivalent HPV vaccine (HPV2) has been licensed for use in females. Either HPV2 or the quadrivalent human papillomavirus vaccine (HPV4) can be used for vaccination of females aged 19 through 26 years. In addition, language has been added to indicate that ACIP issued a permissive recommendation for use of HPV4 in males.
- The measles, mumps, rubella (MMR) footnote (#5) has language added to clarify which adults born during or after 1957 do not need 1 or more doses of MMR vaccine for the measles and mumps components, and clarifies which women should receive a dose of MMR vaccine. Also, interval dosing information has been added to indicate when a second dose of MMR vaccine should be administered. Language has been added to highlight recommendations for vaccinating health-care personnel born before 1957 routinely and during outbreaks.
- The term “seasonal” has been added to the influenza footnote (#6).
- The hepatitis A footnote (#9) has language added to indicate that unvaccinated persons who anticipate close contact with an international adoptee should consider vaccination.
- The hepatitis B footnote (#10) has language added to include schedule information for the 3-dose hepatitis B vaccine.
- The meningococcal vaccine footnote (#11) clarifies which vaccine formulations are preferred for adults aged ≤ 55 years and ≥ 56 years, and which vaccine formulation can be used for revaccination. New examples have been added to demonstrate who should and should not be considered for revaccination.
- The selected conditions for *Haemophilus influenzae* type b (Hib) footnote (#13) clarifies which high-risk persons may receive 1 dose of Hib vaccine.

FIGURE 1. Recommended adult immunization schedule, by vaccine and age group — United States, 2010

VACCINE ▼	AGE GROUP ►	19–26 years	27–49 years	50–59 years	60–64 years	≥65 years
Tetanus, diphtheria, pertussis (Td/Tdap) ^{1,*}		Substitute one-time dose of Tdap for Td booster; then boost with Td every 10 years				Td booster every 10 years
Human papillomavirus ^{2,*}		3 doses (females)				
Varicella ^{3,*}		2 doses				
Zoster ⁴					1 dose	
Measles, mumps, rubella ^{5,*}		1 or 2 doses		1 dose		
Influenza ^{6,*}		1 dose annually				
Pneumococcal (polysaccharide) ^{7,8}		1 or 2 doses				1 dose
Hepatitis A ^{9,*}		2 doses				
Hepatitis B ^{10,*}		3 doses				
Meningococcal ^{11,*}		1 or more doses				

* Covered by the Vaccine Injury Compensation Program. For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection) Recommended if some other risk factor is present (e.g., based on medical, occupational, lifestyle, or other indications) No recommendation

FIGURE 2. Vaccines that might be indicated for adults, based on medical and other indications — United States, 2010

VACCINE ▼	INDICATION ►	HIV infection ^{3-5,12,13} CD4+ T lymphocyte count		Diabetes, heart disease, chronic lung disease, chronic alcoholism	Asplenia ¹³ (including elective splenectomy and persistent complement component deficiencies)	Chronic liver disease	Kidney failure, end-stage renal disease, receipt of hemodialysis	Health-care personnel	
		<200 cells/ μ L	\geq 200 cells/ μ L						
Tetanus, diphtheria, pertussis (Td/Tdap) ^{1,*}	Pregnancy	Substitute one-time dose of Tdap for Td booster; then boost with Td every 10 years							
Human papillomavirus ^{2,*}		3 doses for females through age 26 years							
Varicella ^{3,*}		Contraindicated		2 doses					
Zoster ⁴		Contraindicated		1 dose					
Measles, mumps, rubella ^{5,*}		Contraindicated		1 or 2 doses					
Influenza ^{6,*}		1 dose TIV annually							1 dose TIV or LAIV annually
Pneumococcal (polysaccharide) ^{7,8}		1 or 2 doses							
Hepatitis A ^{9,*}		2 doses							
Hepatitis B ^{10,*}				3 doses					
Meningococcal ^{11,*}		1 or more doses							

* Covered by the Vaccine Injury Compensation Program. For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection) Recommended if some other risk factor is present (e.g., based on medical, occupational, lifestyle, or other indications) No recommendation

NOTE: The above recommendations must be read along with the footnotes on pages Q3–Q4 of this schedule.

1. Tetanus, diphtheria, and acellular pertussis (Td/Tdap) vaccination

Tdap should replace a single dose of Td for adults aged 19–64 years who have not received a dose of Tdap previously.

Adults with uncertain or incomplete history of primary vaccination series with tetanus and diphtheria toxoid-containing vaccines should begin or complete a primary vaccination series. A primary series for adults is 3 doses of tetanus and diphtheria toxoid-containing vaccines; administer the first 2 doses at least 4 weeks apart and the third dose 6–12 months after the

second; Tdap can substitute for any one of the doses of Td in the 3-dose primary series. The booster dose of tetanus and diphtheria toxoid-containing vaccine should be administered to adults who have completed a primary series and if the last vaccination was received \geq 10 years previously. Tdap or Td vaccine may be used, as indicated.

If a woman is pregnant and received the last Td vaccination \geq 10 years previously, administer Td during the second or third trimester. If the woman received the last Td vaccination <10 years previously, administer Tdap

during the immediate postpartum period. A dose of Tdap is recommended for postpartum women, close contacts of infants aged <12 months, and all health-care personnel with direct patient contact if they have not previously received Tdap. An interval as short as 2 years from the last Td vaccination is suggested; shorter intervals can be used. Td may be deferred during pregnancy and Tdap substituted in the immediate postpartum period, or Tdap can be administered instead of Td to a pregnant woman.

Consult the ACIP statement for recommendations for giving Td as prophylaxis in wound management.

2. Human papillomavirus (HPV) vaccination

HPV vaccination is recommended at age 11 or 12 years with catch-up vaccination at ages 13 through 26 years.

Ideally, vaccine should be administered before potential exposure to HPV through sexual activity; however, females who are sexually active should still be vaccinated consistent with age-based recommendations. Sexually active females who have not been infected with any of the four HPV vaccine types (types 6, 11, 16, 18, all of which HPV4 prevents) or any of the two HPV vaccine types (types 16 and 18, both of which HPV2 prevents) receive the full benefit of the vaccination. Vaccination is less beneficial for females who have already been infected with one or more of the HPV vaccine types. HPV4 or HPV2 can be administered to persons with a history of genital warts, abnormal Papanicolaou test, or positive HPV DNA test, because these conditions are not evidence of prior infection with all vaccine HPV types.

HPV4 may be administered to males aged 9 through 26 years to reduce their likelihood of acquiring genital warts. HPV4 would be most effective when administered before exposure to HPV through sexual contact.

A complete series for either HPV4 or HPV2 consists of 3 doses. The second dose should be administered 1–2 months after the first dose; the third dose should be administered 6 months after the first dose.

Although HPV vaccination is not specifically recommended for persons with the medical indications described in Figure 2, “Vaccines that might be indicated for adults based on medical and other indications,” it may be administered to these persons because the HPV vaccine is not a live-virus vaccine. However, the immune response and vaccine efficacy might be less for persons with the medical indications described in Figure 2 than in persons who do not have the medical indications described or who are immunocompetent. Health-care personnel are not at increased risk because of occupational exposure and should be vaccinated consistent with age-based recommendations.

3. Varicella vaccination

All adults without evidence of immunity to varicella should receive 2 doses of single-antigen varicella vaccine if not previously vaccinated or the second dose if they have received only 1 dose, unless they have a medical contraindication. Special consideration should be given to those who 1) have close contact with persons at high risk for severe disease (e.g., health-care personnel and family contacts of persons with immunocompromising conditions) or 2) are at high risk for exposure or transmission (e.g., teachers; child-care employees; residents and staff members of institutional settings, including correctional institutions; college students; military personnel; adolescents and adults living in households with children; nonpregnant women of childbearing age; and international travelers).

Evidence of immunity to varicella in adults includes any of the following: 1) documentation of 2 doses of varicella vaccine at least 4 weeks apart; 2) U.S.-born before 1980 (although for health-care personnel and pregnant women, birth before 1980 should not be considered evidence of immunity); 3) history of varicella based on diagnosis or verification of varicella by a health-care provider (for a patient reporting a history of or having an atypical case, a mild case, or both, health-care providers should seek either an epidemiologic link with a typical varicella case or to a laboratory-confirmed case or evidence of laboratory confirmation, if it was performed at the time of acute disease); 4) history of herpes zoster based on diagnosis or verification of herpes zoster by a health-care provider; or 5) laboratory evidence of immunity or laboratory confirmation of disease.

Pregnant women should be assessed for evidence of varicella immunity. Women who do not have evidence of immunity should receive the first dose of varicella vaccine upon completion or termination of pregnancy and before discharge from the health-care facility. The second dose should be administered 4–8 weeks after the first dose.

4. Herpes zoster vaccination

A single dose of zoster vaccine is recommended for adults aged ≥60 years regardless of whether they report a prior episode of herpes zoster. Persons with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication.

5. Measles, mumps, rubella (MMR) vaccination

Adults born before 1957 generally are considered immune to measles and mumps.

Measles component: Adults born during or after 1957 should receive 1 or more doses of MMR vaccine unless they have 1) a medical contraindication; 2) documentation of vaccination with 1 or more doses of MMR vaccine; 3) laboratory evidence of immunity; or 4) documentation of physician-diagnosed measles.

A second dose of MMR vaccine, administered 4 weeks after the first dose, is recommended for adults who 1) have been recently exposed to measles or are in an outbreak setting; 2) have been vaccinated previously with killed measles vaccine; 3) have been vaccinated with an unknown type of measles vaccine during 1963–1967; 4) are students in postsecondary educational institutions; 5) work in a health-care facility; or 6) plan to travel internationally.

Mumps component: Adults born during or after 1957 should receive 1 dose of MMR vaccine unless they have 1) a medical contraindication; 2) documentation of vaccination with 1 or more doses of MMR vaccine; 3) laboratory evidence of immunity; or 4) documentation of physician-diagnosed mumps.

A second dose of MMR vaccine, administered 4 weeks after the first dose, is recommended for adults who 1) live in a community experiencing a mumps outbreak and are in an affected age group; 2) are students in postsecondary educational institutions; 3) work in a health-care facility; or 4) plan to travel internationally.

Rubella component: 1 dose of MMR vaccine is recommended for women who do not have documentation of rubella vaccination, or who lack laboratory evidence of immunity. For women of childbearing age, regardless of birth year, rubella immunity should be determined, and women should be counseled regarding congenital rubella syndrome. Women who do not have evidence of immunity should receive MMR vaccine upon completion or termination of pregnancy and before discharge from the health-care facility.

Health-care personnel born before 1957: For unvaccinated health-care personnel born before 1957 who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, health-care facilities should consider vaccinating personnel with 2 doses of MMR vaccine at the appropriate interval (for measles and mumps) and 1 dose of MMR vaccine (for rubella), respectively.

During outbreaks, health-care facilities should recommend that unvaccinated health-care personnel born before 1957, who lack laboratory evidence of measles, mumps, and/or rubella immunity or laboratory confirmation of disease, receive 2 doses of MMR vaccine during an outbreak of measles or mumps, and 1 dose during an outbreak of rubella.

Complete information about evidence of immunity is available at <http://www.cdc.gov/vaccines/recs/provisional/default.htm>.

6. Seasonal influenza vaccination

Vaccinate all persons aged ≥50 years and any younger persons who would like to decrease their risk for influenza. Vaccinate persons aged 19 through 49 years with any of the following indications.

Medical: Chronic disorders of the cardiovascular or pulmonary systems, including asthma; chronic metabolic diseases (including diabetes mellitus); renal or hepatic dysfunction, hemoglobinopathies, or immunocompromising conditions (including immunocompromising conditions caused by medications or HIV); cognitive, neurologic, or neuromuscular disorders; and pregnancy during the influenza season. No data exist on the risk for severe or complicated influenza disease among persons with asplenia; however, influenza is a risk factor for secondary bacterial infections that can cause severe disease among persons with asplenia.

Occupational: All health-care personnel, including those employed by long-term care and assisted-living facilities, and caregivers of children aged <5 years.

Other: Residents of nursing homes and other long-term care and assisted-living facilities; persons likely to transmit influenza to persons at high risk (e.g., in-home household contacts and caregivers of children aged <5 years, persons aged ≥50 years, and persons of all ages with high-risk conditions).

Healthy, nonpregnant adults aged <50 years without high-risk medical conditions who are not contacts of severely immunocompromised persons in special-care units may receive either intranasally administered live, attenuated influenza vaccine (FluMist) or inactivated vaccine. Other persons should receive the inactivated vaccine.

7. Pneumococcal polysaccharide (PPSV) vaccination

Vaccinate all persons with the following indications.

Medical: Chronic lung disease (including asthma); chronic cardiovascular diseases; diabetes mellitus; chronic liver diseases, cirrhosis; chronic alcoholism; functional or anatomic asplenia (e.g., sickle cell disease or

splenectomy [if elective splenectomy is planned, vaccinate at least 2 weeks before surgery]; immunocompromising conditions (including chronic renal failure or nephrotic syndrome); and cochlear implants and cerebrospinal fluid leaks. Vaccinate as close to HIV diagnosis as possible.

Other: Residents of nursing homes or long-term care facilities and persons who smoke cigarettes. Routine use of PPSV is not recommended for American Indians/Alaska Natives or persons aged <65 years unless they have underlying medical conditions that are PPSV indications. However, public health authorities may consider recommending PPSV for American Indians/Alaska Natives and persons aged 50 through 64 years who are living in areas where the risk for invasive pneumococcal disease is increased.

8. Revaccination with PPSV

One-time revaccination after 5 years is recommended for persons with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and for persons with immunocompromising conditions. For persons aged ≥ 65 years, one-time revaccination is recommended if they were vaccinated ≥ 5 years previously and were aged <65 years at the time of primary vaccination.

9. Hepatitis A vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis A virus (HAV) infection.

Behavioral: Men who have sex with men and persons who use injection drugs.

Occupational: Persons working with HAV-infected primates or with HAV in a research laboratory setting.

Medical: Persons with chronic liver disease and persons who receive clotting factor concentrates.

Other: Persons traveling to or working in countries that have high or intermediate endemicity of hepatitis A (a list of countries is available at <http://www.cdc.gov/travel/content/diseases.aspx>).

Unvaccinated persons who anticipate close personal contact (e.g., household contact or regular babysitting) with an international adoptee from a country of high or intermediate endemicity during the first 60 days after arrival of the adoptee in the United States should consider vaccination. The first dose of the 2-dose hepatitis A vaccine series should be administered as soon as adoption is planned, ideally ≥ 2 weeks before the arrival of the adoptee.

Single-antigen vaccine formulations should be administered in a 2-dose schedule at either 0 and 6–12 months (Havrix), or 0 and 6–18 months (Vaqta). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule, administered on days 0, 7, and 21–30 followed by a booster dose at month 12 may be used.

10. Hepatitis B vaccination

Vaccinate persons with any of the following indications and any person seeking protection from hepatitis B virus (HBV) infection.

Behavioral: Sexually active persons who are not in a long-term, mutually monogamous relationship (e.g., persons with more than one sex partner during the previous 6 months); persons seeking evaluation or treatment for a sexually transmitted disease (STD); current or recent injection-drug users; and men who have sex with men.

Occupational: Health-care personnel and public-safety workers who are exposed to blood or other potentially infectious body fluids.

Medical: Persons with end-stage renal disease, including patients receiving hemodialysis; persons with HIV infection; and persons with chronic liver disease.

Other: Household contacts and sex partners of persons with chronic HBV infection; clients and staff members of institutions for persons with

developmental disabilities; and international travelers to countries with high or intermediate prevalence of chronic HBV infection (a list of countries is available at <http://www.cdc.gov/travel/content/diseases.aspx>).

Hepatitis B vaccination is recommended for all adults in the following settings: STD treatment facilities; HIV testing and treatment facilities; facilities providing drug-abuse treatment and prevention services; health-care settings targeting services to injection-drug users or men who have sex with men; correctional facilities; end-stage renal disease programs and facilities for chronic hemodialysis patients; and institutions and nonresidential day-care facilities for persons with developmental disabilities.

Administer or complete a 3-dose series of hepatitis B vaccine to those persons not previously vaccinated. The second dose should be administered 1 month after the first dose; the third dose should be administered at least 2 months after the second dose (and at least 4 months after the first dose). If the combined hepatitis A and hepatitis B vaccine (Twinrix) is used, administer 3 doses at 0, 1, and 6 months; alternatively, a 4-dose schedule, administered on days 0, 7, and 21–30 followed by a booster dose at month 12 may be used.

Adult patients receiving hemodialysis or with other immunocompromising conditions should receive 1 dose of 40 $\mu\text{g}/\text{mL}$ (Recombivax HB) administered on a 3-dose schedule or 2 doses of 20 $\mu\text{g}/\text{mL}$ (Engerix-B) administered simultaneously on a 4-dose schedule at 0, 1, 2, and 6 months.

11. Meningococcal vaccination

Meningococcal vaccine should be administered to persons with the following indications.

Medical: Adults with anatomic or functional asplenia, or persistent complement component deficiencies.

Other: First-year college students living in dormitories; microbiologists routinely exposed to isolates of *Neisseria meningitidis*; military recruits; and persons who travel to or live in countries in which meningococcal disease is hyperendemic or epidemic (e.g., the “meningitis belt” of sub-Saharan Africa during the dry season [December through June]), particularly if their contact with local populations will be prolonged. Vaccination is required by the government of Saudi Arabia for all travelers to Mecca during the annual Hajj.

Meningococcal conjugate vaccine (MCV4) is preferred for adults with any of the preceding indications who are aged ≤ 55 years; meningococcal polysaccharide vaccine (MPSV4) is preferred for adults aged ≥ 56 years. Revaccination with MCV4 after 5 years is recommended for adults previously vaccinated with MCV4 or MPSV4 who remain at increased risk for infection (e.g., adults with anatomic or functional asplenia). Persons whose only risk factor is living in on-campus housing are not recommended to receive an additional dose.

12. Immunocompromising conditions

Inactivated vaccines generally are acceptable (e.g., pneumococcal, meningococcal, influenza [inactivated influenza vaccine]) and live vaccines generally are avoided in persons with immune deficiencies or immunocompromising conditions. Information on specific conditions is available at <http://www.cdc.gov/vaccines/pubs/acip-list.htm>.

13. Selected conditions for which *Haemophilus influenzae* type b (Hib) vaccine may be used

Hib vaccine generally is not recommended for persons aged ≥ 5 years. No efficacy data are available on which to base a recommendation concerning use of Hib vaccine for older children and adults. However, studies suggest good immunogenicity in patients who have sickle cell disease, leukemia, or HIV infection or who have had a splenectomy. Administering 1 dose of Hib vaccine to these high-risk persons who have not previously received Hib vaccine is not contraindicated.

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults aged ≥ 19 years, as of January 1, 2009. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those that are used primarily for travelers or are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (ACIP) (<http://www.cdc.gov/vaccines/pubs/acip-list.htm>).

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at <http://www.vaers.hhs.gov> or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at <http://www.hrsa.gov/vaccinecompensation> or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is available at <http://www.cdc.gov/vaccines> or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 24 hours a day, 7 days a week.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by ACIP, the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, and the American College of Physicians.