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Suicide and Attempted Suicide

Suicide is the 13th leading cause of death worldwide, the 11th in the United States (*1*), and the third among U.S. residents aged 10–24 years, accounting for 4,243 (11.7%) of all deaths in this age group. Suicide attempts and other acts of self harm that result in nonfatal injuries take a heavy toll on the health of younger persons. In 2002, an estimated 124,409 visits to U.S. emergency departments were made after attempted suicides or other self-harm incidents among persons aged 10–24 years.

To provide insights that might lead to successful prevention programs, this week's *MMWR* includes reports on 1) trends in suicide by persons aged 10–19 years, 2) suicide attempts and physical fighting among high school students, 3) school-associated suicides, 4) suicide among Hispanics, and 5) suicidal behavior in China.

Reducing the overall suicide rate and the number of suicide attempts reported by adolescents are among the 2010 national health objectives (objective nos. 18-1 and 18-2) (*2*). Integrated prevention strategies that address multiple associated factors (e.g., substance abuse prevention, family and peer support, and access to health services) are likely to be more effective in reducing suicidal behavior than programs that focus on a single risk factor (*3*). Additional information about suicide prevention is available at http://www.cdc.gov/ncipc/factsheets/suifacts.htm.

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Methods of Suicide Among Persons Aged 10–19 Years — United States, 1992–2001

In 2001, suicide was the third leading cause of death among persons aged 10–19 years (*1*). The most common method of suicide in this age group was by firearm (49%), followed by suffocation (mostly hanging) (38%) and poisoning (7%) (*1*). During 1992–2001, although the overall suicide rate among persons aged 10–19 years declined from 6.2 to 4.6 per 100,000 population (*1*), methods of suicide changed substantially. To characterize trends in suicide methods among persons in this age group, CDC analyzed data for persons living in the United States during 1992–2001. This report summarizes the results of that analysis, which indicated a substantial decline in suicides by firearm and an increase in suicides by suffocation in persons aged 10–14 and 15–19 years. Beginning in 1997, among persons aged 10–14 years, suffocation surpassed firearms as the most common suicide method. The decline in firearm suicides combined with the increase in suicides by suffocation suggests that changes have occurred in suicidal behavior among youths during the preceding decade. Public health officials should develop intervention strategies that address the challenges posed by these changes, including

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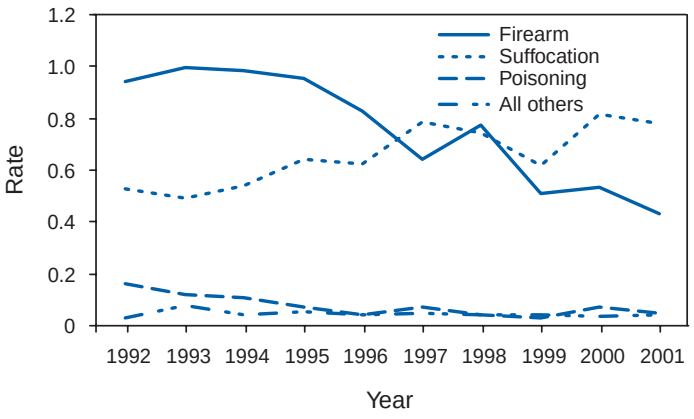
programs that integrate monitoring systems, etiologic research, and comprehensive prevention activities.

Annual data on suicides occurring in the United States during 1992–2001 (*2*) were obtained by using CDC's Web-based Injury Statistics Query and Reporting System (WISQARS™) (*1*) and examined by age group (i.e., persons aged 10–14 and 15–19 years) and method (e.g., firearm, suffocation, and poisoning) for each year and the 10-year period. To analyze these data, codes were used from the *International Classification of Diseases, Ninth Revision* (ICD-9) and the *International Classification of Diseases and Related Health Problems, Tenth Revision* (ICD-10), which was implemented in 1999. Although coding of mortality data changed in 1999, the two revisions have near 100% agreement on classification of suicides by firearm, suffocation, and poisoning (*3*); thus, the suicide method was defined consistently during the period analyzed.

For each method of suicide, annual suicide rates (per 100,000 population) were calculated by age group and overall. Because firearms and suffocation were the two most common methods of suicide among persons aged 10–19 years, accounting for approximately 90% of suicide deaths in this age group, trends for these two methods (Figures 1 and 2) were formally evaluated by using negative binomial rate regression to account for overdispersion in the data. Supplemental information on suicides by poisoning (the third most common method) and suicide by all other methods (e.g., jumping from a height) is provided for illustration purposes. Annual ratios of suffocation suicides to firearm suicides were examined as an additional means of assessing changes in the relative magnitude of these methods over time (Table).

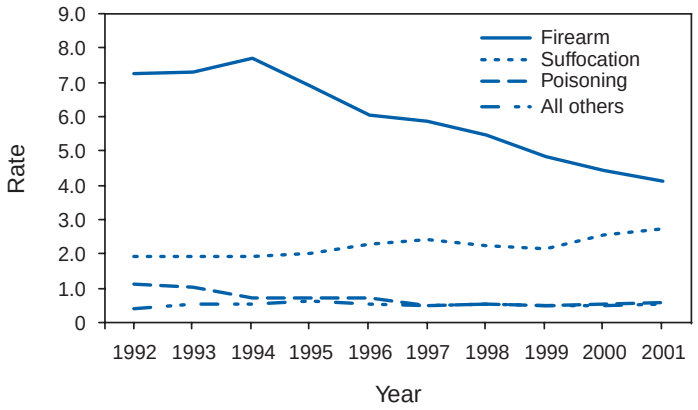
Among persons aged 10–14 years, the rate of firearm suicide decreased from 0.9 per 100,000 population in 1992 to 0.4 in 2001, whereas the rate of suffocation suicide increased

FIGURE 1. Annual suicide rates* among persons aged 10–14 years, by year and method — United States, 1992–2001



* Per 100,000 population.

FIGURE 2. Annual suicide rates* among persons aged 15–19 years, by year and method — United States, 1992–2001



* Per 100,000 population.

from 0.5 in 1992 to 0.8 in 2001. Rate regression analyses indicated that, during the study period, firearm suicide rates decreased an average of approximately 8.8% annually ($p<0.0001$), and suffocation suicide rates increased approximately 5.1% annually ($p<0.0001$). Among persons aged 15–19 years, the firearm suicide rate declined from 7.3 in 1992 to 4.1 in 2001; the suffocation suicide rate increased from 1.9 to 2.7. Rate regression analyses indicated that, during the study period, the average annual decrease in firearm suicide rates for this age group was approximately 6.8% ($p<0.0001$), and the average annual increase in suffocation suicide rates was approximately 3.7% ($p<0.0001$). Poisoning suicide rates also decreased in both age groups, at an average annual rate of 13.4% among persons aged 10–14 years (Figure 1) and 8.0% among persons aged 15–19 years (Figure 2). Because of the small number of suicides by poisoning, these decreases have had minimal impact on changes in the overall profile of suicide methods of youths.

Among persons aged 10–14 years, suffocation suicides began occurring with increasing frequency relative to firearm suicides in the early- to mid-1990s, eclipsing (i.e., ratio >1.0) firearm suicides by the late 1990s (Table). In 2001, a total of 1.8 suffocation suicides occurred for every firearm suicide among youths aged 10–14 years. Among youths aged 15–19 years, an increase in the frequency of suffocation suicides relative to firearm suicides began in the mid-1990s; however, in 2001, firearms remained the most common method of suicide in this age group, with a ratio of 0.7 suffocation suicides for every firearm suicide.

Reported by: *KM Lubell, PhD, MH Swahn, PhD, AE Crosby, MD, Div of Violence Prevention; SR Kegler, PhD, Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC.*

Editorial Note: The findings in this report indicate that the overall suicide rate for persons aged 10–19 years in the United States declined during 1992–2001 and that substantial changes occurred in the types of suicide methods used among those persons aged 10–14 and 15–19 years. Rates of suicide using firearms and poisoning decreased, whereas suicides by suffocation increased. By the end of the period, suffocation had surpassed firearms to become the most common method of suicide death among persons aged 10–14 years.

The reasons for the changes in suicide methods are not fully understood. Increases in suffocation suicides and concomitant decreases in firearm suicides suggest that persons aged 10–19 years are choosing different kinds of suicide methods than in the past. Data regarding how persons choose among various methods of suicide suggest that some persons without ready access to highly lethal methods might choose not to engage in a suicidal act or, if they do engage in suicidal behavior, are more likely to survive their injuries (*4*). However, certain subsets of suicidal persons might substitute other methods (*5*). Substitution of methods depends on both the availability of alternatives and their acceptability. Because the means for suffocation (e.g., hanging) are widely available, the escalating use of suffocation as a method of suicide among persons aged 10–19 years implies that the acceptability of suicide by suffocation has increased substantially in this age group.

The findings in this report are subject to at least two limitations. First, because U.S. mortality data include a limited number of variables, direct testing of whether method substitution is occurring is not possible; however, no sizeable

TABLE. Number and ratio of suicides by suffocation and firearms, by year and age group — United States, 1992–2001

Age group (yrs)	Year									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
10–14										
Suffocation	96	92	103	123	121	154	148	125	168	163
Firearm	172	186	187	183	161	126	153	103	110	90
Ratio	0.6	0.5	0.6	0.7	0.8	1.2	1.0	1.2	1.5	1.8
15–19										
Suffocation	333	340	344	371	434	473	442	434	514	551
Firearm	1,251	1,273	1,377	1,266	1,147	1,135	1,087	975	897	838
Ratio	0.3	0.3	0.2	0.3	0.4	0.4	0.4	0.4	0.6	0.7

demographic changes in the composition of youth suicide decedents have been documented that might explain the changes in methods (*1*). Second, official mortality data for suicide are known to reflect some degree of undercount; however, such undercounts do not appear to affect conclusions about trends over time (*6*).

The findings in this report demonstrate that rapid shifts in youth suicidal behavior can occur, underscoring the need for early effective suicide-prevention efforts that focus on suicidal thoughts and pressures. Moreover, statistical simulations comparing the impacts of different types of suicide-prevention approaches suggest that widely implemented population-based strategies will have a greater effect in reducing overall suicide rates than the more traditional strategies that concentrate on persons at high risk (*7*). One of the most common population-based strategies focuses on restricting access to highly lethal means (e.g., bridge barriers and bubble-packaging for over-the-counter medications) to diminish the likelihood of death from self-inflicted injuries (*8*). However, the private nature of suffocation, its widespread availability, and its high lethality suggest that population-based prevention efforts addressing access to lethal means also must confront the underlying reasons for suicidality to avoid the potential for method substitution.

Suicide is a multifaceted problem for which several risk factors exist, including societal beliefs regarding the acceptability of suicidal behavior, social isolation and community disintegration, stressful life events, mental illness, and substance abuse (*9*). When such factors combine with widespread availability of lethal means, higher rates of suicide tend to result (*8*). The actual effectiveness of existing population-based prevention approaches in reducing the number of suicide deaths is unclear. In addition to improving data-collection methods, public health officials should emphasize the need to evaluate the effectiveness of current suicide-prevention activities and examine how effective strategies can be implemented in diverse communities. CDC supports various efforts to evaluate suicide-prevention programs for youth. Additional information is available at http://www.cdc.gov/ncipc.

Acknowledgment

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Suicide Attempts and Physical Fighting Among High School Students — United States, 2001

Violence is a major cause of morbidity and mortality, particularly among youths. In the United States, homicide and suicide are the second and third leading causes of death, respectively, for persons aged 13–19 years (*1*). Although suicide commonly is associated with anxiety, depression, and social withdrawal, research suggests a link between violent behaviors directed at oneself (i.e., suicidal behaviors) and violent behaviors directed at others among adolescents (*2–6*). Certain students who engage in extreme forms of violence, such as school shootings, exhibit suicidal ideation or behavior before or during the attack (*2,3*). However, suicidal behavior also might be associated with involvement in less extreme forms of violent behaviors, such as physical fighting, which might be a risk factor for more severe forms of violence (*3*). To characterize any potential association between suicide attempts and fighting, CDC analyzed self-reported 2001 data from a nationally representative sample of high school students in the United States. The results of that analysis indicated that students who reported attempting suicide during the preceding 12 months were nearly four times more likely also to have reported fighting than those who reported not attempting suicide. Prevention programs that seek to reduce both suicidal and violent behaviors are needed. Because prevalence of this association was determined to be highest in the 9th grade, these efforts might be most effective if implemented before students reach high school.

Analyses were based on data from 11,815 (out of 13,601) nationally representative high school students in grades 9–12 who participated in the 2001 Youth Risk Behavior Survey (YRBS) and responded to questions about whether they had attempted suicide and whether they had participated in physical fighting in the preceding 12 months (*7*). Participation in YRBS was voluntary, anonymous, and required parental permission. Students completed a self-administered booklet consisting of 95 items and recorded responses directly on a computer-scannable answer sheet. The data were weighted to be representative of students in grades 9–12 in public and private schools in the United States.

The prevalence of reporting a suicide attempt among all students was 8.9% and the prevalence of involvement in any physical fight was 33.2%. Overall, 5.3% of the students reported both attempting suicide and participating in a fight (females, 6.0%; males, 4.5%). Logistic regression analyses were used to test whether the prevalence of fighting differed by suicide attempt status within each demographic population. Students who reported attempting suicide were more likely to have been in a physical fight than students who reported not attempting suicide (61.5% versus 30.3%). Results from the stratified models indicated an association between attempting suicide and fighting for each demographic population (Table). Higher proportions of both male and female suicide attempters (77.8% and 54.0%, respectively) reported fighting than males and females who had not attempted suicide (41.2% and 19.8%, respectively). Among those who reported attempting suicide, the proportion who reported fighting was highest among 9th graders (64.5%) and decreased with each subsequent grade.

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Editorial Note: The findings of this analysis indicate that one in 20 high school students reported both suicide attempts and participation in physical fighting in the preceding year. Moreover, the majority (61.5%) of those students who attempted suicide also reported physical fighting, compared with less than one third (30.3%) of those who had not attempted suicide. This analysis extends earlier study (*2–6*) of the link between suicidal behavior and interpersonal violence by documenting the strength of the association across demographic populations. The findings indicate that suicide attempt status was

TABLE. Number* and odds ratio (OR) for student participation in physical fighting, by suicide attempt status and demographic population† — Youth Risk Behavior Survey, United States, 2001

Demographic population	Reported not attempting suicide				Reported attempting suicide				
	No.	Participated in fighting No.	(%)§	OR (95% CI¶)	No.	Participated in fighting No.	(%)§	OR	(95% CI)
Sex									
Male	5,289	2,128	(41.2)	1	332	243	(77.8)	5.0	(3.6–7.0)
Female	5,453	1,128	(19.8)	1	711	369	(54.0)	4.8	(4.1–5.6)
Grade									
9th	2,536	916	(36.6)	1	304	193	(64.5)	3.1	(2.4–4.1)
10th	2,646	843	(31.3)	1	290	175	(64.1)	3.9	(3.0–5.1)
11th	2,773	767	(26.6)	1	261	140	(56.2)	3.5	(2.4–5.1)
12th	2,762	716	(24.8)	1	180	94	(53.7)	3.5	(2.4–5.2)
Race/Ethnicity									
Black**	1,847	613	(33.8)	1	164	96	(60.7)	3.0	(2.3–4.0)
Hispanic	2,205	683	(32.4)	1	279	154	(58.2)	2.9	(2.2–3.8)
Other	1,126	358	(32.5)	1	162	90	(57.8)	2.8	(1.9–4.3)
White**	5,438	1,570	(29.4)	1	433	269	(63.5)	4.2	(3.3–5.3)
Residence									
Urban	3,784	1,244	(34.6)	1	428	239	(61.4)	3.0	(2.1–4.3)
Suburban	5,847	1,699	(28.2)	1	523	320	(62.2)	4.2	(3.4–5.1)
Rural	1,057	308	(30.8)	1	95	55	(59.4)	3.3	(2.2–5.0)
Total††	**10,764**	**3,263**	**(30.3)**	**1**	**1,051**	**616**	**(61.5)**	**3.7**	**(3.1–4.3)**

* Numbers are crude and do not generate the weighted percentages.
† Data are from participants who completed questions about whether they had attempted suicide and whether they had been involved in physical fighting (N = 11,815).
§ Percentages are calculated by using populations weighted to be representative of students in grades 9–12 in public and private schools in the United States.
¶ OR and confidence interval (CI) were computed by using logistic regression analyses to predict fighting by suicide attempt status within each demographic population.
** Non-Hispanic.
†† Numbers do not add to total because of missing data.

associated with involvement in physical fighting for both males and females; students in grades 9–12; four racial/ethnic populations; and youths living in urban, suburban, and rural areas.

The observed association between suicide attempts and fighting across demographic populations suggests that violence prevention programs directed at reducing both suicide and fighting are likely to be relevant for youths. However, the mechanisms linking suicidal behavior and interpersonal violence are unclear; these results do not permit an assessment of the extent to which suicidal and fighting behaviors are directly associated or the direction of the association. The two behaviors might be linked because they share common risk factors. Aggressiveness, impulsivity, substance abuse, depression, and hopelessness can increase the risk for both suicidal and violent behaviors (*8,9*). Additional research is needed to examine these and other factors to better determine the underlying mechanisms that link suicidal and violent behaviors as well as the overlap between multiple types of violent behavior.

The findings in this report are subject to at least three limitations. First, all participants were high school students and do not reflect the experiences of youths who have dropped out of school. Second, suicide attempts and fights were self-reported and therefore subject to reporting bias. Finally, the data do not permit either an assessment of the temporal ordering between suicide attempts and physical fights or a determination of whether the two behaviors occurred within a narrower period during the preceding 12 months.

Prevention strategies to reduce both suicide attempts and fighting might be possible and advantageous to design. Strategies determined effective in reducing youth problem behaviors (e.g., skill and competence-building programs, positive youth development, and parent training) (*10*) might reduce underlying risks and provide the skills and support students need to avoid fighting and suicidal behavior. Additional research is needed to determine whether strategies that reduce youth risk for interpersonal violence also can be implemented to prevent suicidal behavior.

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School-Associated Suicides — United States, 1994–1999

During 1994–1999, at least 126 students carried out a homicide or suicide that was associated with a private or public school in the United States (*1*). Although previous research has described students who commit school-associated homicides, little is known about student victims of suicide. To describe the psychosocial and behavioral characteristics of school-associated suicide victims, CDC analyzed data from school and police officials. The results of that analysis indicated that, among the 126 students who carried out school-associated homicides or suicides, 28 (22%) died by suicide, including eight who intentionally injured someone else immediately before killing themselves. Two (7%) of the suicide victims were reported for fighting and four (14%) for disobedient behavior in the year preceding their deaths; none were associated with a gang. However, potential indicators of suicide risk such as expressions of suicidal thoughts, recent social stressors, and substance use were common among the victims. These findings underscore the need for school staff to learn to recognize and respond to chronic and situational risk factors for suicide.

Included in this analysis were suicides for which the victim was an elementary or secondary school student and the death occurred during July 1, 1994–June 30, 1999, in one of the following settings: 1) on the grounds of an operating public or private elementary or secondary school in the United States, 2) while the victim was en route to or from regular school sessions, or 3) while the victim was attending or traveling to

or from an official school-sponsored event. Cases of school-associated suicide were identified through a systematic search of two computerized newspaper and broadcast media databases (i.e., Lexis-Nexis and Dialog). Data on the victims were collected through structured and standardized interviews with school and police officials and by reviewing police reports.

The 28 school-associated suicide victims included four students who first committed homicide and four other students who first inflicted nonfatal injuries on others. Among the suicide victims, 22 (78%) were males, 22 (78%) were non-Hispanic whites, and 17 (60%) lived with two parents (Table). Twenty-six (93%) of the suicide victims used firearms.

Eleven (39%) students were reported to be weekly users of alcohol or drugs, and five (18%) were reported intoxicated at the time of their suicides. Six (21%) of the students had a history of criminal charges; four (14%) had been reported for disobedience; two (7%) had been reported for fighting with peers; and no student was a known gang member. The majority (61%) of the students were involved in extracurricular activities. A total of 16 (57%) of the students had expressed suicidal thoughts, including 10 who confided in a peer. Eight (29%) students had experienced a romantic breakup and nine (32%) a household disruption such as moving or having a household member move out.

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TABLE. Number* and percentage of student victims of school-associated suicide, by selected characteristics† — United States, 1994–1999

Characteristic	No.	(%)
Weekly alcohol or drug use	11	(39)
Intoxicated at time of event	5	(18)
History of criminal charges	6	(21)
Reported for disobedience§	4	(14)
Reported for fighting peers§	2	(7)
Gang member	0	(0)
Bullied by peers§	4	(14)
Involved in extracurricular activities	17	(61)
Expressed suicidal thoughts/behavior§	16	(57)
Expressed suicidal thoughts to a peer§	10	(36)
Received school-sponsored psychological counseling§	7	(25)
Treated for depression§	6	(21)
Experienced a romantic breakup§	8	(29)
Family moved or anyone in household moved out§	9	(32)
Suspected family history of child abuse or neglect	6	(21)

* N = 28.
† Certain data were unknown for certain students. Percentages reflect the proportion of suicide victims who were reported to have the specific characteristic.
§ During the 12 months preceding suicide.

Editorial Note: The need for safe schools has prompted considerable interest in understanding and preventing all types of lethal school-associated violence. The finding that 22% of students who carried out such violence took their own lives indicates that a sizeable proportion of lethal school-associated violence was self-directed. In addition, the finding that approximately one in four suicide victims injured or killed someone else immediately before their suicide suggests an overlap between risk for committing school-associated homicide and risk for suicide. Efforts to prevent incidents of lethal school-associated violence should address youth suicidal ideation and behavior.

Suicide-prevention efforts are needed not only to address the risk for school-associated violence, but also to reduce the much larger problem of self-directed violence among adolescents overall. In 2001, suicide was the third leading cause of death in the United States among youths aged 13–18 years, accounting for 11% of deaths in this age group (*2*). In 2003, approximately one in 12 high school students in the United States reported attempting suicide during the preceding 12 months (*3*). Data from Oregon indicate that approximately 5% of adolescents treated in hospitals for injuries from a suicide attempt made that attempt at school (*4*).

The finding that the majority of students who were school-associated suicide victims were involved in extracurricular activities suggests that these students could be familiar to school staff who might recognize warning signs. Although these students were unlikely to stand out (e.g., by fighting or involvement in gangs) in the manner of those who commit school-associated homicides (*1*), other established risk factors for suicidal behavior were common (e.g., expression of suicidal thoughts, recent household move, and romantic breakup). These findings support the need for school-based efforts to identify and assist students who describe suicidal thoughts or have difficulty coping with social stressors. School-based prevention efforts are likely to benefit from school officials working closely with community mental health professionals to enhance the abilities of school counselors, teachers, nurses, and administrators to recognize and respond to risk factors for suicide. CDC's School Health Guidelines recommend that school personnel be provided with regular staff development opportunities to prepare them to help prevent suicide (*5*). In 2000, only 15% of required health education courses were taught by teachers who received staff development on suicide prevention during the preceding 2 years, suggesting that additional opportunities for staff development are needed (*6*).

The findings that one in four of the school-associated suicides were preceded by a recent romantic breakup and nearly one in five suicide victims were under the influence of drugs or alcohol at the time of their deaths underscore the potential importance of situational risk factors. Youth suicidal behavior often is an impulsive response to circumstances rather than a wish to die (*7*). Efforts to help students cope with stressors and avoid substance abuse are important elements of suicide-prevention strategies (*8*).

The findings in this report are subject to at least four limitations. First, because events were identified from news media reports, any event not reported in the media was excluded; the nature of the events might have resulted in an undercount of the number of school-associated suicides. Second, certain estimates might be unstable because of the small cell sizes. Third, the data are from secondary sources and are subject to recall error or bias; the nature of these events might have influenced responses. Finally, the number of school-associated suicide victims reported with each characteristic might be undercounted, and the percentages of students with these characteristics might not be representative of all students who died by suicide during 1994–1999.

Prevention of youth suicide is a critical public health priority. The findings in this report underscore the need to "develop and implement safe and effective programs in educational settings for youth that address adolescent distress, crisis intervention and incorporate peer support for seeking help" as described in the Surgeon General's *Call to Action to Prevent Suicide, 1999* (*8*).

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Suicide Among Hispanics — United States, 1997–2001

By 2020, Hispanics are expected to represent 17% of the U.S. population and to surpass all other racial/ethnic minority populations in size (*1*). In 1996, the U.S. Department of Health and Human Services established the Hispanic Agenda for Action initiative; a major goal of this initiative is to identify health problems that affect Hispanics (*2*). In 2001, although the overall age-adjusted suicide rate per 100,000 population among Hispanics (5.6) was lower than the U.S. national rate (10.7), suicide was the third leading cause of death among young (i.e., aged 10–24 years) Hispanics and the seventh leading cause of years of potential life lost before age 75 years (*3*). To identify demographic groups at risk for suicide and to help guide prevention efforts, CDC analyzed mortality data for 1997–2001. This report summarizes the results of that analysis, which indicated that, among Hispanics, the largest proportion of suicides occurred among young persons; suicide rates were higher among males; and the most common method of suicide was by firearms. To reduce the number of suicides, additional prevention strategies are needed, including 1) improving methods for collecting data about suicides, suicide attempts, and related behaviors; 2) expanding evaluation of prevention efforts aimed at reducing suicidal behaviors; and 3) examining how effective interventions can be modified for diverse and culturally specific populations.

Data were obtained from CDC's National Center for Health Statistics Underlying Cause of Death Mortality file (*3*). Hispanic ethnicity included persons of Mexican, Puerto Rican, Cuban, Central and South American, and other/unknown Hispanic origins* (*1*). Data for 1997–1998 and 1999–2001 were based on External Cause of Injury codes from the *International Classification of Diseases, Ninth* (ICD-9)† and *Tenth* (ICD-10)§ *Revisions*, respectively (*4*).

Suicide data for 1997–2001 were examined for the Hispanic population by sex, age group, and subpopulation. Suicide data for the most recent 3-year period available (1999–2001) also were examined by the three leading suicide methods: firearms (X72–X74), suffocation (X70), and poisoning (X60–X69). Population estimates for 1997–2001 from the U.S. Census bridged-race population estimates were used

* Central American: Costa Rican, Guatemalan, Honduran, Nicaraguan, Panamanian, Salvadoran, and other Central American (excludes Mexican); South American: Argentinean, Bolivian, Chilean, Colombian, Ecuadorian, Paraguayan, Peruvian, Uruguayan, Venezuelan, and other South American; and other/unknown Hispanic origin: Dominican (Dominican Republic), Spaniard, and all other Hispanic or Latino.
† Codes E950–E959 for 1997–1998.
§ Codes X60–X84, Y87.0, and U03 for 1999–2001.

to calculate rates (*5*). The intercensal estimates used for 1997–1999 take into account the increase observed in this population between Census 1990 and Census 2000. Age-adjusted rates per 100,000 population were calculated on the basis of the 2000 U.S. standard population. Rates based on <20 deaths or with a coefficient of variation of >30% were considered unstable and therefore not reported.

During 1997–2001, a total of 8,744 Hispanics (age-adjusted rate: 5.95 per 100,000 population) died from suicide; 7,439 (85%) were males. The age-adjusted rate for males was 5.9 times the rate for females (10.46 versus 1.78, respectively). Approximately 50% of all suicides occurred among persons aged 10–34 years, although the highest overall rate was among persons aged ≥85 years (Table 1). For Hispanic males, the suicide rate was highest among those aged ≥85 years, followed by those aged 80–84 years and those aged 75–79 years (36.54 versus 31.55 and 21.69, respectively). For Hispanic females, rates were highest among those aged 50–54 years, followed by those aged 45–49 years and those aged 15–19 years (3.12 versus 2.52 and 2.36, respectively). Persons of Mexican origin accounted for the majority of suicides (4,934 [56%]), followed by persons of other/unknown Hispanic origin (1,219 [14%]), Central and South Americans (950 [11%]), Puerto Ricans (932 [11%]), and Cubans (709 [8%]). Although rates could not be calculated for these subpopulations, the distribution of suicide was similar to the proportionate distribution of the U.S. Hispanic population by subpopulation (*1*).

During 1999–2001, a total of 5,332 Hispanics died from suicide; 4,531 (85%) were males. Firearms were the suicide method reported most frequently (2,405 [45%]), followed by suffocation (1,834 [34%]) and poisoning (542 [10%]) (Table 2). Among Hispanic males, firearms were the most common suicide method (48%), followed by suffocation (35%) and poisoning (7%). In contrast, Hispanic females used firearms (29%), suffocation (29%), and poisoning (27%) each in similar frequency. Among Hispanic males aged 10–24 years (n = 1,135), firearms accounted for 52% of all suicides, followed by suffocation (38%) and poisoning (3%), whereas among females in the same age group (n = 211), suffocation accounted for 44% of all suicides, followed by firearms (33%) and poisoning (11%).

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Editorial Note: This report highlights the magnitude and demographics of Hispanic suicides, which occurred predominantly among males. Overall, firearms were the most frequently reported method used, although suffocation also was common among males and females.

TABLE 1. Number and crude rate (CR)* of Hispanic suicides†, by sex and age group — United States, 1997–2001

Age group	Male			Female			Total		
(yrs)	No.	CR	(95% CI§)	No.	CR	(95% CI)	No.	CR	(95% CI)
0–4	0	—¶	—	0	—	—	**0**	**—**	**—**
5–9	4	—	—	0	—	—	**4**	**—**	**—**
10–14	98	1.27	(1.02–1.52)	45	0.61	(0.43–0.79)	**143**	**0.94**	**(0.79–1.10)**
15–19	732	9.11	(8.45–9.77)	168	2.36	(2.00–2.71)	**900**	**5.94**	**(5.55–6.32)**
20–24	1,102	12.49	(11.75–13.22)	144	1.97	(1.65–2.29)	**1,246**	**7.72**	**(7.29–8.15)**
25–29	1,021	11.52	(10.81–12.23)	145	1.93	(1.62–2.24)	**1,166**	**7.12**	**(6.71–7.53)**
30–34	899	10.94	(10.23–11.66)	145	2.02	(1.69–2.34)	**1,044**	**6.78**	**(6.37–7.19)**
35–39	870	12.23	(11.41–13.04)	149	2.28	(1.92–2.65)	**1,019**	**7.47**	**(7.01–7.93)**
40–44	701	12.42	(11.50–13.34)	118	2.18	(1.79–2.57)	**819**	**7.41**	**(6.90–7.91)**
45–49	491	11.64	(10.61–12.67)	107	2.52	(2.04–3.00)	**598**	**7.07**	**(6.50–7.64)**
50–54	369	11.75	(10.55–12.95)	103	3.12	(2.52–3.72)	**472**	**7.33**	**(6.67–7.99)**
55–59	258	11.78	(10.35–13.22)	52	2.15	(1.57–2.73)	**310**	**6.73**	**(5.98–7.48)**
60–64	192	11.44	(9.82–13.06)	31	1.60	(1.03–2.16)	**223**	**6.16**	**(5.35–6.97)**
65–69	199	15.18	(13.07–17.29)	24	1.48	(0.89–2.08)	**223**	**7.61**	**(6.62–8.61)**
70–74	164	16.57	(14.03–19.10)	30	2.30	(1.48–3.12)	**194**	**8.45**	**(7.26–9.64)**
75–79	139	21.69	(18.09–25.30)	21	2.30	(1.32–3.28)	**160**	**10.29**	**(8.70–11.89)**
80–84	104	31.55	(25.49–37.61)	13	—	—	**117**	**13.31**	**(10.90–15.72)**
≥85	87	36.54	(28.86–44.22)	10	—	—	**97**	**13.35**	**(10.69–16.01)**
Unknown	9	—	—	0	—	—	**9**	**—**	**—**
Total	**7,439**	**8.53**	**(8.33–8.72)**	**1,305**	**1.58**	**(1.50–1.67)**	**8,744**	**5.15**	**(5.04–5.26)**

* Per 100,000 population.
† *International Classification of Diseases, Ninth Revision* (ICD–9) codes E950–E959 and *International Classification of Diseases, Tenth Revision* (ICD–10) codes X60–X84, Y87.0, and U03.
§ Confidence interval.
¶ Rates based on <20 deaths or with a coefficient of variation of >30% were considered unstable and therefore not reported.

TABLE 2. Number of Hispanic suicides*, by method of death, sex, and age group — United States, 1999–2001

Age group (yrs)	Male (n = 4,531)			Female (n = 801)			Total† (N = 5,332)		
	Firearm	Suffocation	Poisoning	Firearm	Suffocation	Poisoning	Firearm	Suffocation	Poisoning
0–4	0	0	0	0	0	0	**0**	**0**	**0**
5–9	0	2	0	0	0	0	**0**	**2**	**0**
10–14	18	46	1	7	18	1	**25**	**64**	**2**
15–19	217	169	11	32	45	13	**249**	**214**	**24**
20–24	356	217	25	31	29	10	**387**	**246**	**35**
25–29	304	209	37	33	30	20	**337**	**239**	**57**
30–34	228	216	40	22	25	29	**250**	**241**	**69**
35–39	201	213	69	30	22	30	**231**	**235**	**99**
40–44	178	158	47	18	20	27	**196**	**178**	**74**
45–49	164	101	36	26	9	29	**190**	**110**	**65**
50–54	113	70	22	19	14	23	**132**	**84**	**45**
55–59	85	43	15	4	6	14	**89**	**49**	**29**
60–64	63	36	5	2	5	6	**65**	**41**	**11**
65–69	68	26	10	4	2	2	**72**	**28**	**12**
70–74	57	30	2	2	5	6	**59**	**35**	**8**
75–79	51	19	4	1	1	5	**52**	**20**	**9**
80–84	39	21	2	1	3	0	**40**	**24**	**2**
≥85	28	22	0	0	1	0	**28**	**23**	**0**
Unknown	3	1	1	0	0	0	**3**	**1**	**1**
Total	**2,173**	**1,599**	**327**	**232**	**235**	**215**	**2,405**	**1,834**	**542**

* *International Classification of Diseases, Tenth Revision* (ICD–10) code: firearms (X72–X74), suffocation (X70), and poisoning (X60–X69).
† Includes methods of suicides presented and all other methods.

The findings in this report are subject to at least five limitations. First, because reporting of Hispanic ethnicity by all 50 states and the District of Columbia has been in effect only since 1997, the years for which complete data are available are limited. Second, although Census 2000 was the first to include a separate question on Hispanic origin in the Commonwealth of Puerto Rico, national statistics do not include its 3.4 million Hispanic residents (*1*). Third, during 1997–2001, rates could not be compared by geographic location because a large percentage (17 [33%]) of states had unstable rates. Fourth, unavailability of comparability ratios for individual method of suicide at the time of analysis precluded the ability to perform trend analysis or combine 1997–1998 and 1999–2001 data to examine further certain subcategories, such as mechanism of injury (*6*). Finally, numerator data on suicides by Hispanic subpopulations are available, but the corresponding denominator data are not available using the bridged-race population estimates, which precluded calculating age-adjusted rates or comparing rates between subpopulations.

Although higher suicide rates were among older males, young Hispanics also are at risk. Hispanic youth are the fastest-growing segment of the U.S. population, accounting for 48% of the total Hispanic population and 26% of Hispanic suicides (versus 2% and 4% for Hispanics aged ≥75 years, respectively). Hispanics in grades 9–12, particularly females, report more feelings of sadness or hopelessness and of suicidal ideation and attempt, compared with their white or black non-Hispanic counterparts (*7*). Higher prevalence of these risk factors for suicidal behavior from previous studies and the high incidence of suicide among Hispanic youth reported in this study suggest that Hispanic youth should be targeted for self-harm prevention efforts. To intervene and prevent suicide successfully, organizations should apply the knowledge gained from studies on risk and protective factors.

Risk- and protective-factor research focusing on Hispanic youth is limited. However, mental illness, substance abuse, acculturative stress, family dysfunction, and lower socioeconomic status have been associated with increased risk for suicidal behavior, and family support has been shown protective against suicidal behavior (*8*). Additional data are needed for comparison before definitive statements about similarities or differences across racial/ethnic categories and among Hispanic subpopulations can be made. Data about specific risk and protective factors in the Hispanic population (e.g., the effects of physical and mental health, immigration, acculturation, religious beliefs, substance abuse, and access to health care) also are necessary to develop culturally appropriate prevention and treatment programs. For example, one study focused on a predominantly Hispanic group of patients evaluated for suicide attempts in a hospital emergency department (*9*). In that study, staff training, outpatient therapy, family therapy, and a video explaining the treatment resulted in lower rates of suicide reattempts and suicidal reideation (*9*).

To reduce the number of suicides, additional prevention strategies are needed, including 1) improving methods for collecting data about suicides, attempted suicides, and related behaviors; 2) expanding evaluation of prevention efforts aimed at reducing suicidal behaviors; and 3) examining how effective interventions can be modified for diverse and culturally distinct populations. Effective suicide-prevention strategies need not be specific to suicide, but can address factors that are associated but not unique to suicidal behavior. A comprehensive, strategic plan for suicide prevention should include multiple points for prevention, maximizing the likelihood of reaching persons in need. The National Strategy for Suicide Prevention, developed in collaboration with multiple federal, state, academic, and community partners, provides a framework for action to prevent suicide (*10*).

Acknowledgments

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Suicide and Attempted Suicide — China, 1990–2002

Suicide is the fifth leading cause of death overall in China and the leading cause of death in persons aged 15–34 years (*1*). During 1995–1999, approximately 287,000 persons died each year from suicide, a national rate of 23 per 100,000 population (*1*). In addition, an estimated 2 million suicide attempts occur each year (*2*). To characterize suicides and attempted suicides in China, analyses were conducted of 1) a psychological autopsy study comparing suicides with other injury deaths and 2) three studies of attempted suicides. This report summarizes the results of these analyses, which indicated that 58% of China's suicides were caused by ingesting pesticide, 91% of suicide victims had never visited a mental health professional, and 45% of suicide attempts were impulsive acts performed after considering suicide for ≤10 minutes. To reduce suicides and suicide attempts, prevention strategies directed at disrupting patterns of suicidal behavior should be implemented in China.

Information about 895 persons who died from suicide (i.e., cases) and 701 who died from other injuries (i.e., controls) was obtained from a national case-control psychological autopsy study (which collected information about the psychological state of the deceased and risk factors for suicide) conducted during 1996–2000 by Beijing Hui Long Guan Hospital and the Chinese Center for Disease Control and Prevention (*3*). The selected sample initially totaled 1,854 persons; 258 persons were excluded for various reasons (e.g., persons were aged ≤10 years or appropriate family members declined to participate or could not be located), and 29 additional persons were not included in the logistic regression analysis because data were missing on one or more variables. Deaths attributed to suicide and other injuries were investigated at three urban and 20 rural disease surveillance points (DSPs), selected to be geographically representative of the 145 DSPs in the national surveillance system. Data regarding demographics of the decedents, potential risk factors for suicide, and methods of suicide were provided by family members and other associates in two independent interviews. The median time from death to interview was 11 months (range: 8–14 months). Both backward and forward inclusion of variables in unconditional logistic regression equations were used to identify the most stable model of risk factors for suicide. Age, sex, and location of residence were considered known risk factors for suicide in China; all odds ratios were adjusted to account for these variables. Details of these methods have been described previously (*3*).

Information about attempted suicides was collected from a retrospective study of all reported suicide attempters (approximately 15,000 persons), based on review of emergency department records at 24 hospitals in northern China during 1990–2002. In addition, demographic and risk factor information was collected from two case-control studies of 635 subjects treated for serious suicide attempts (i.e., requiring ≥6 hours of hospitalization), identified from a total of 1,450 suicide attempters treated in nine general hospitals primarily serving rural populations of northern China during 1998–2002.

Suicides

In the psychological autopsy study, among the 895 suicide victims, the median age was 42 years (range: 12–94 years); 49% (441) were female; 63% (563) suffered from a mental illness*; 27% (239) had made previous suicide attempts; 47% (414) had relatives, friends, or associates with a history of suicidal behavior; and 9% (77) had visited a mental health professional at any time in their lives. The most common negative life events in the year before death were financial problems, 40% (358); serious physical illness, 38% (341); and marital conflict, 35% (310). A total of 58% (517) of the suicide victims died by ingesting pesticide or rat poison; of these persons, 62% (320 of 517) received unsuccessful medical resuscitation before death, and 70% (344 of 494) used pesticides stored in the home, usually in an unlocked cupboard.

Results of the unconditional logistic regression analysis identified 10 independent risk factors for suicide (Table). Among

* Based on results of a standardized instrument using criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

TABLE. Multivariate model* of risk for suicide comparing 882 persons who died from suicide with 685 persons who died from other types of injuries†, by risk factor — psychological autopsy study, China, 1996–2000

Risk factor	Suicides No.	Suicides (%)	Deaths by other injuries No.	Deaths by other injuries (%)	AOR§	(95% CI¶)
Severity of depression during 2 weeks preceding death (range: 0–100)						
0	308	(34.9)	616	(89.9)	1.0	
1–25.4	255	(28.9)	60	(8.8)	6.4	(4.4–9.3)
>25.4	319	(36.2)	9	(1.3)	41.1	(19.5–86.7)
Previous suicide attempt	235	(26.6)	7	(1.0)	21.5	(7.7–60.2)
Acute stress score at time of death						
Lowest tertile	101	(11.5)	415	(60.6)	1.0	
Middle tertile	336	(38.1)	189	(27.6)	3.4	(2.5–4.7)
Highest tertile	445	(50.5)	81	(11.8)	11.8	(6.5–21.7)
Quality of life score during month preceding death (range: 0–100)						
High tertile (>67.0)	104	(11.8)	395	(57.7)	1.0	
Middle tertile (52.5–67.0)	309	(35.0)	208	(30.4)	2.6	(1.9–3.5)
Low tertile (<52.5)	469	(53.2)	82	(12.0)	6.7	(3.7–12.2)
Severe life event during 2 days preceding death	224	(25.4)	23	(3.4)	6.1	(3.1–11.8)
Chronic stress score during year preceding death						
Lowest tertile	125	(14.2)	386	(56.4)	1.0	
Middle tertile	322	(36.5)	212	(30.9)	2.1	(1.6–2.7)
Highest tertile	435	(49.3)	87	(12.7)	4.3	(2.5–7.6)
Friends or associates had suicidal behavior	334	(37.9)	138	(20.1)	2.9	(1.8–4.6)
Relative had suicidal behavior	154	(17.5)	37	(5.4)	2.3	(1.2–4.3)
Employment status						
Wage earner or student	149	(16.9)	280	(40.9)	1.0	
Homemaker, retiree, or unemployed	210	(23.8)	86	(12.6)	2.0	(1.0–3.9)
Agricultural laborer	523	(59.3)	319	(46.6)	2.0	(1.2–3.5)
Social activities outside of home during month preceding death						
Very frequent	282	(32.0)	391	(57.1)	1.0	
Often	159	(18.0)	98	(14.3)	1.2	(1.0–1.5)
Infrequent	222	(25.2)	91	(13.3)	1.5	(1.1–2.2)
None	219	(24.8)	105	(15.3)	1.9	(1.1–3.3)

* Nagelkerke R^2 for the model is 0.79, and C statistic is 0.97.
† N = 1,567; a total of 29 decedents were excluded because data were missing on one or more risk factor.
§ Adjusted odds ratio; adjusted for age (six levels), sex, location of residence (i.e., rural or urban), reporting surveillance point (23 sites), interaction term for age by sex, and other variables in the model. Except for age and employment status, the multilevel variables are fitted as linear variables.
¶ Confidence interval.

the 1,567 persons who died from suicide and other injuries, suicide risk increased with exposure to multiple risk factors. One percent (two of 223) of persons with fewer than two risk factors died from suicide; 20% (73 of 366) with two or three risk factors died from suicide; 72% (379 of 524) with four or five risk factors died from suicide; and 94% (428 of 454) with six or more risk factors died from suicide.

Suicide Attempts

Among 14,771 suicide attempters treated in 24 general hospitals in northern China, females outnumbered males by 2.5 to 1 (10,492 to 4,279), the median age was 29 years (range: 10–97 years), and two thirds (9,676) of all attempters were young adults aged 15–34 years. Approximately 90% (13,433 of 14,771) of the attempts were by self-poisoning; 54% (7,973) of all attempts were by ingestion of medications (usually anti-anxiety agents or sleeping pills), 28% (4,103) by ingestion of pesticides, and 9% (1,357) by ingestion of other toxins (e.g., household cleaners). Among the 10,581 patients treated in hospitals that primarily serve rural or urban populations, ingestion of pesticides was four times more common among persons treated in rural hospitals (43%; 2,533 of 5,954) than among those treated in urban hospitals (10%; 457 of 4,627) ($p<0.01$), and 66% (1,667 of 2,533) of the pesticide self-poisonings treated in rural hospitals were among women. Often, the suicide attempts were impulsive; among 594 serious suicide attempters treated in nine hospitals in northern China, 45% (270) reported considering suicide for ≤10 minutes before their attempts.

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Editorial Note: This report characterizes suicides and suicide attempts in China, which are marked by a high proportion of pesticide ingestion and infrequent previous treatment by mental health providers. The studies described in this report also support the substantial roles of impulsive behavior and acute stressors in suicidal behavior in China. A previous comparison of 164 impulsive suicide attempts (i.e., those in which victims reported considering suicide for <2 hours before their attempts) and 142 nonimpulsive attempts determined that impulsive attempters were younger, were more likely to live in rural villages, had a better quality of life before the attempt, had less severe depressive symptoms, were less likely to have a mental disorder, had less suicidal intent, and had more acute precipitating life events (*5*).

Similar to other countries, suicide attempts in China are more common among women than men (*6*). However, in China, especially in rural areas, a high proportion of suicide attempters ingest pesticide, and the resuscitating capabilities of local health-care providers are less than optimal. Therefore, self-inflicted injuries are more likely to result in death in rural China than in locations where less lethal suicide methods are used or where resuscitation services are more successful (*7*). These factors result in an overall increase in rural suicide rates and a relative increase in female suicide rates.

The findings in this report are subject to at least three limitations. First, the psychological autopsy study might be subject to bias by those providing information about the deceased and the lack of blinding of the interviewer regarding cause of death; however, data obtained by the study's methods have been determined valid (*8*). Second, unlike the majority of psychological autopsy studies, this study used deceased persons rather than living persons as controls. The advantage of using deceased persons as controls is that information providers have all experienced the recent death of a family member or associate, but the disadvantage is that statistical methods are required to adjust for differences in age and sex distributions. Finally, the retrospective studies on attempted suicides were limited to sites in northern China and did not include suicide attempts managed without hospital care or attempts misreported by the patient as unintentional.

To develop targeted prevention strategies, several efforts are under way to improve surveillance and better understand the characteristics of suicidal behavior in China. Possible prevention activities include 1) restricting access to suicide means, particularly pesticides and toxic drugs, 2) expanding social support networks for persons at high risk, 3) implementing health-promotion campaigns focused on mental health and suicide, 4) improving health providers' ability to recognize and manage psychiatric problems associated with suicide, 5) instituting community-based screening programs to identify persons at high risk, 6) expanding crisis support services and targeted mental health services for persons at high risk, and 7) increasing the ability of primary care facilities to manage the medical complications of suicide attempts. Further development, implementation, and evaluation of these interventions will require the participation and coordination of multiple ministries (e.g., health, agriculture, education, public security, labor and welfare, broadcasting, and media) and organizations (e.g., Women's Federation, Youth League, academic associations, and funding organizations).

The Chinese government is considering development of a national suicide prevention plan (*9*). A workshop on the proposed plan held in Beijing in November 2003 included government leaders, leaders of nongovernment organizations, and representatives of international organizations. The consensus

of participants was that the State Council and local governments in China should establish suicide-prevention committees with the responsibility and resources needed to develop, implement, and monitor national, regional, and local suicide-prevention plans.

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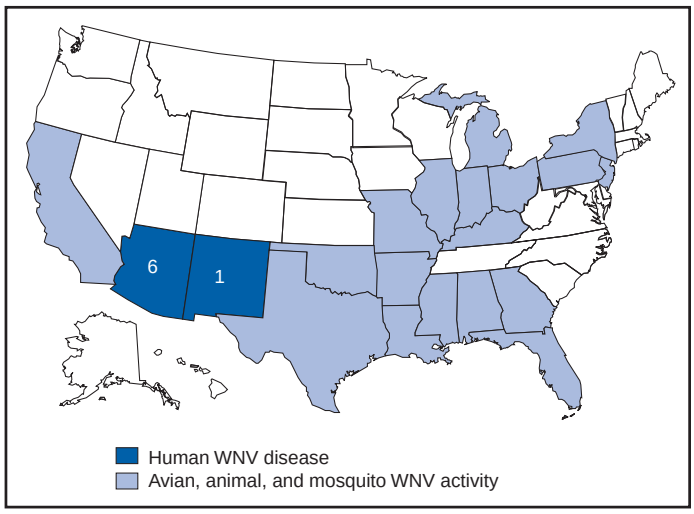
West Nile Virus Activity — United States, June 2–8, 2004

As of June 8, two states had reported a total of seven human cases of West Nile virus (WNV) illness to CDC through ArboNET. Six cases were reported from Arizona and one case from New Mexico (Figure). Four (57%) of the cases occurred in males; the median age of patients was 53 years (range: 22–69 years), and the dates of onset of illness ranged from May 9 to June 1.

In addition, during 2004, a total of 334 dead corvids and 55 other dead birds with WNV infection have been reported from 16 states, and seven WNV infections in horses have been reported from three states (Alabama, Arizona, and Texas). WNV seroconversions have been reported in 64 sentinel chicken flocks from four states (Arizona, California, Florida, and Louisiana), and 58 WNV-positive mosquito pools have been reported from six states (Arizona, California, Illinois, Indiana, Louisiana, and Pennsylvania).

Additional information about national WNV activity is available from CDC at http://www.cdc.gov/ncidod/dvbid/westnile/index.htm and at http://westnilemaps.usgs.gov.

FIGURE. Areas reporting West Nile virus (WNV) activity — United States, 2004*



* As of 3 a.m., Mountain Standard Time, June 8, 2004.

Outbreak of *Salmonella* Serotype Enteritidis Infections Associated with Raw Almonds — United States and Canada, 2003–2004

On June 4, this report was posted as an MMWR Dispatch *on the* MMWR *website* (http://www.cdc.gov/mmwr).

On May 12, 2004, the Oregon State Public Health Laboratory identified a cluster of five patients infected with *Salmonella enterica* serotype Enteritidis (SE) isolates that were matched by using two-enzyme pulsed-field gel electrophoresis (PFGE). The five patients were from four Oregon counties; their onsets of illness occurred during February–April 2004. A subsequent investigation, still ongoing, has identified a total of 29 patients in 12 states and Canada with matching SE isolates, since at least September 2003. Seven patients have been hospitalized; no one has died. Raw almonds distributed throughout the United States and internationally have been implicated as the source of the SE infections. As of May 21, approximately 13 million pounds of raw almonds had been recalled by the producer.

Routine interviews of the initial five patients with salmonellosis had not indicated a common exposure. However, prompted by the May 12 laboratory data, the patients were reinterviewed by using a standard hypothesis–generating questionnaire that included questions about consumption of approximately 400 specific food items and their shopping and eating venues during the 5 days before illness onset. Using

binomial distribution, consumption rates for selected foods were compared with background rates estimated from a 2002–2003 population-based survey of residents of Oregon (*1*).

The initial five patients from Oregon all reported consuming Kirkland Signature brand raw almonds, purchased at Costco warehouse stores. Survey data (*1*) indicated that an estimated 9% of Oregon residents (86 of 921 surveyed) consumed raw almonds from any source in the preceding week. Even assuming that 20% of all Oregon residents ate Kirkland Signature brand raw almonds each week, the binomial probability of finding five of five sporadic cases with that history is <0.001. No other foods or food sources were associated with illness.

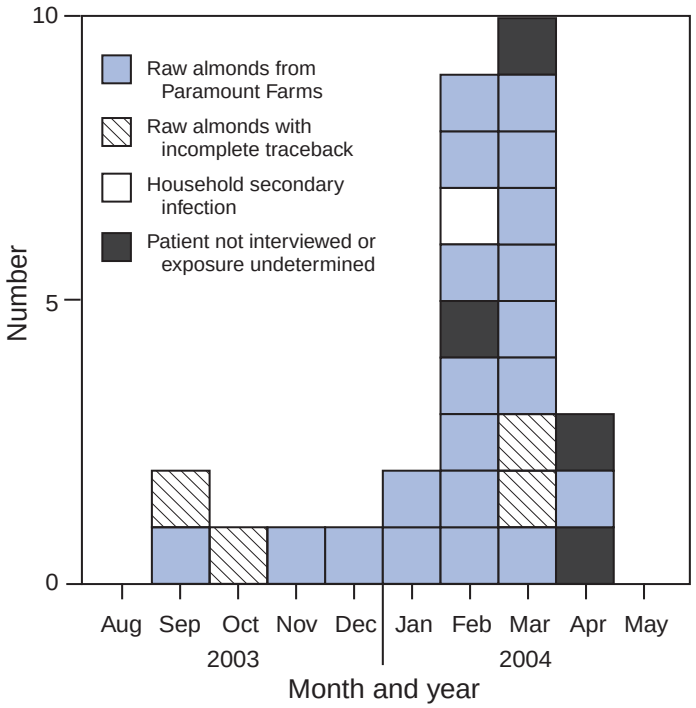
After determining that the raw almonds were distributed widely, U.S. and Canadian epidemiologists and state and federal regulatory agencies were notified on May 13 via electronic information networks. Through PulseNet, the national molecular subtyping network (*2*), laboratories were queried for reports of isolates matching the outbreak PFGE patterns (*Xba*I: JEGX01.0049; *Bln*I: JEGA26.0008 or JEGA26.0009, reflecting minor variation later observed with the second enzyme). Laboratories that did not routinely screen SE isolates by using PFGE were encouraged to do so for isolates collected since February 1, 2004. Phage typing was performed by standard methods. As additional PFGE-matching isolates were identified, a brief, customized questionnaire was used in interviews with persons about their nut consumption.

Raw almonds from an opened package recovered from one patient's household were tested for *Salmonella* by enzyme immunoassay. Unopened packages of nuts from the supplier's warehouse and environmental samples collected at the almond processor and at huller-shellers supplying the processor were tested for *Salmonella* by using standard microbiologic methods.

As of June 2, a total of 29 patients with SE infections matching both *Xba*I and *Bln*I PFGE patterns had been identified in 12 states and one Canadian province. Symptom onsets ranged from September 2003 to April 2004 (Figure). Patients ranged in age from 11 months to 91 years (median: 40 years); 17 (59%) were female. Seven patients were hospitalized; no one died. Multiple other cases with matching PFGE patterns and onsets earlier in 2003 remain under review. To date, nine isolates from the current outbreak have been phage typed; all are type 9c, which is uncommon.

Among 26 patients interviewed, 24 recalled eating raw almonds during the week before illness onset; 20 patients identified brands packaged or supplied by Paramount Farms (Lost Hills, California). One infant patient was presumed secondarily infected. Through retailer computer records linked to membership cards or customer receipts, dates and places of

FIGURE. Number* of PFGE† -matched cases of salmonellosis associated with raw almonds, by date of illness onset and mode of exposure — United States and Canada, September 2003–April 2004



*N = 29.
†Pulsed-field gel electrophoresis.

almond purchase were verified for 10 households of patients. The dates of verified almond purchases ranged from November 3, 2003, to January 28, 2004.

Efforts to identify specific production lots associated with illness, based on almond purchase dates and locations and store inventory data, are ongoing. On May 18, Paramount announced a nationwide recall* of all raw almonds sold under the Kirkland Signature, Trader Joe's, and Sunkist labels. Costco mailed 1,107,552 letters to members known to have purchased the recalled product in the United States. The recall was expanded subsequently to include nuts sold in bulk to approximately 50 other commercial customers, some of whom repackaged almonds for sale under other brand names. In addition to sales in the United States, almonds were exported to France, Italy, Japan, Korea, Malaysia, Mexico, Taiwan, the United Kingdom. The majority of the recalled almonds likely were consumed months ago; however, raw

*Notice available at http://www.fda.gov/oc/po/firmrecalls/almonds.html.

almonds have a shelf life of >1 year, and consumers might still have the implicated products.

Tests of raw almonds recovered from a patient's household and samples collected at Paramount were negative for *Salmonella*; however, *Salmonella* was isolated from one environmental sample collected at Paramount and from three samples from two huller-shellers that supplied Paramount during the period of interest. Serotype and PFGE analyses of these isolates have not been completed, and additional sampling continues.

Reported by: *S Keady, Alaska Div of Public Health. G Briggs, Arizona Dept of Health Svcs. J Farrar, DVM, JC Mohle-Boetani, MD, J OConnell, SB Werner, MD, California Dept of Health and Human Svcs. D Anderson, North Central Idaho District Health Dept; L Tenglesen, DVM, Idaho Dept of Health and Welfare. S Bidols, MPH, Michigan Dept of Community Health. B Albanese, MD, C Gordan, New Mexico Dept of Health. E DeBess, DVM, J Hatch, WE Keene, PhD, M Plantenga, J Tierheimer, Oregon Dept of Human Svcs. AL Hackman, CE Rinehardt, CH Sandt, PhD, Pennsylvania State Dept of Health. A Ingram, MPH, Tennessee Dept of Health. S Hansen, Salt Lake Valley Health Dept; S Hurt, Summit County Public Health Dept; M Poulson, Utah Dept of Health. R Pallipamu, J Wicklund, MPH, Washington Dept of Health. Food and Drug Administration. C Braden, MD, J Lockett, S Van Duyne, MA, Div of Bacterial and Mycotic Diseases, National Center for Infectious Diseases; A Dechet, MD, C Smelser, MD, EIS officers, CDC.*

Editorial Note: The only previously recognized outbreak of salmonellosis associated with tree nuts was identified in 2001, when raw almonds were linked to an outbreak of SE infections, mostly in Canada, during a 6-month period (*3*). The SE isolates from that 2000–2001 outbreak had different PFGE patterns and a different phage type (PT30) than those in the current investigation. The almonds in the previous outbreak were traced to three California orchards that were all contaminated with SE of identical phage and PFGE patterns; SE also was isolated from unopened packages of nuts. Since that outbreak, almonds from the implicated orchards reportedly have been diverted for use in processed foods only.

Approximately 1 billion pounds of California almonds were produced in 2003 (*4*), of which 5% were sold for raw consumption. Almonds are California's largest agricultural crop, with an annual value of $1.5 billion; California produces approximately 80% of the world's almonds and almost 100% of the almonds sold in the United States (*4*).

California and federal regulatory agencies are continuing to investigate how almonds become contaminated with *Salmonella*; the mechanisms are poorly understood. Typical harvesting, drying, and hulling-shelling practices readily enable cross-contamination. Raw nuts can be treated with dry heat, steam, propylene oxide, or other methods to reduce the risk for bacterial contamination; at least one almond processor has been treating all raw almonds since the 2001 outbreak. No evidence has been presented that roasted, blanched, or otherwise heat-processed nuts pose any risk for *Salmonella* contamination.

Fewer than 5% of *Salmonella* infections are ever reported in the United States (*5*). More cases in the current outbreak are being identified as more SE isolates are screened by PFGE. Screening has focused on isolates submitted since February 1, although sales of the almonds in the recalled lots date back to the summer of 2003.

Although declining in incidence (*6*), SE remains the second most common *Salmonella* serotype (*Salmonella* Typhimurium is the most common) isolated from salmonellosis patients in the United States; nationwide, 5,116 (15.8%) of 32,308 isolates serotyped in 2002 were SE (*7*). Shell eggs and poultry have been identified as the most common vehicles for both outbreaks and sporadic infections attributed to SE (*8*), but multiple other sources also have been identified, including raw milk, meat, and sprouts (*8–10*).

The current outbreak continued for months, and possibly for more than 1 year, without being detected. Although serotyping is an invaluable epidemiologic tool, the added distinguishing power of phage typing or molecular techniques (e.g., PFGE) can be critical to separating outbreak cases from background cases, especially for common *Salmonella* serotypes such as Typhimurium, Enteritidis, Heidelberg, or Newport. Outbreaks caused by products with long shelf lives, wide distribution, and low attack rates might not cause notable spikes in serotype-specific incidence locally or even nationally. To identify these outbreaks, isolates must be screened rapidly by additional methods (e.g., PFGE), and those results must be pooled rapidly over networks such as PulseNet. Appropriate epidemiologic follow-up and coordinated use of standardized hypothesis-generating questionnaires across multiple jurisdictional lines often are necessary to identify sources of infection. At present, certain state health departments do not have the resources to subtype all *Salmonella* isolates as they are identified. In the United States, all state public health laboratories can perform PFGE and participate in PulseNet; however, phage typing is available only on a limited basis at CDC.

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J Fontana, PhD, E Gould, MPH, Massachusetts Dept of Public Health. MG Stobierski, DVM, Michigan Dept of Community Health; A Bonnema, MD, MA Jhung, MD, Univ of Michigan, School of Public Health Preventive Medicine Residency, Ann Arbor, Michigan. J Madden, Oregon Dept of Agriculture; R Vega, MS, Oregon Dept of Human Svcs. CR Cook, DA Krouse, JM Tait, Pennsylvania State Dept of Health. K Lofy, MD, EIS Officer, CDC.

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Notice to Readers

Change in Source for Arboviral Disease Data Reported to the National Notifiable Diseases Surveillance System

Beginning July 2, 2004 (representing data reported through week 25), the arboviral disease surveillance data reported to the National Notifiable Diseases Surveillance System (NNDSS) and displayed in *MMWR* Tables I and II (*1*) will be compiled solely from data reported to CDC's ArboNET system (*2*) and no longer will reflect data reported to CDC via the National Electronic Telecommunications System for Surveillance (NETSS) (*3*). This change applies to all human cases of nationally notifiable arboviral meningitis or encephalitis meeting the national surveillance case definition for illness caused by any of the following six arboviruses or arbovirus groups: California serogroup, eastern equine encephalitis, Powassan, St. Louis encephalitis, West Nile, and western equine encephalitis (*4*). The change also will apply to all yellow fever cases (*5*). Timely reporting of domestic yellow fever cases is required by international health regulations, which stipulate that the United States must report all cases of suspected and confirmed yellow fever to the World Health Organization within 24 hours. This change also will apply to finalized arboviral disease surveillance data collected in 2003 or later and published in the *MMWR Summary of Notifiable Diseases—United States*.

Since 2000, state health departments have reported human and animal West Nile virus surveillance data to ArboNET (*2,6–8*) and human arboviral disease data to NETSS. This duplicate reporting became more labor intensive to state health departments and CDC as the incidence of West Nile virus disease increased and more staff time was devoted to reconciling discrepancies in data reported to the two systems.

In 2003, ArboNET was enhanced to enable reporting of the other five nationally notifiable domestic arboviral diseases, and the 2004 version will accept case reports of yellow fever, which is rare in the United States. ArboNET uses the data and transmission standards defined by the Public Health Information Network (*9*) and will be incorporated as a module into the National Electronic Disease Surveillance System (NEDSS) (*10*). NEDSS provides a standards-based approach to disease surveillance across multiple surveillance systems and, when fully implemented, will connect public health surveillance to the clinical information infrastructure. State health departments can report data to ArboNET via a web-based application, stand-alone software, or direct data messaging. Direct data messaging to ArboNET from states' surveillance information systems is the preferred mechanism. Additional information is available from Richard Hopkins, telephone 404-498-6207, e-mail rhopkins@cdc.gov; or Roy Campbell, telephone 970-221-6459, e-mail glcampbell@cdc.gov.

References

1. CDC. Table 1: Summary of provisional cases of selected notifiable diseases, United States, cumulative, week ending May 15, 2004 (19th week) and Table II: Provisional cases of selected notifiable diseases, United States, weeks ending May 15, 2004 and May 10, 2003 (19th week). MMWR 2004;53:416–24.
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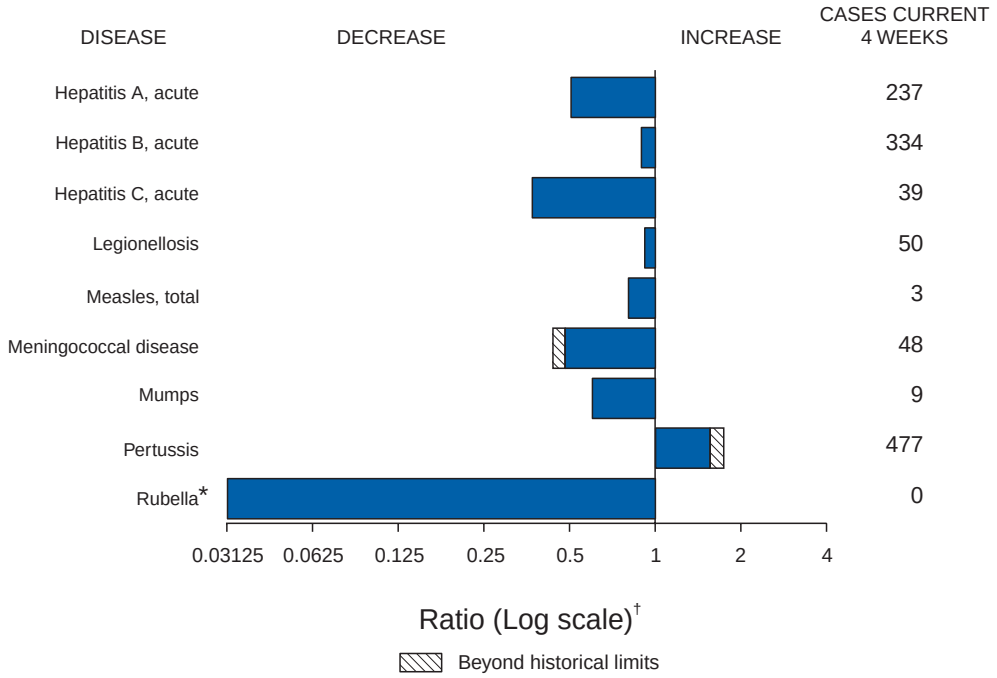
FIGURE I. Selected notifiable disease reports, United States, comparison of provisional 4-week totals June 5, 2004, with historical data



* No rubella cases were reported for the current 4-week period yielding a ratio for week 22 of zero (0).
† 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.

TABLE I. Summary of provisional cases of selected notifiable diseases, United States, cumulative, week ending June 5, 2004 (22nd Week)*

	Cum. 2004	Cum. 2003		Cum. 2004	Cum. 2003
Anthrax	-	-	Hemolytic uremic syndrome, postdiarrheal†	27	46
Botulism:	-	-	HIV infection, pediatric†§	72	101
foodborne	6	6	Measles, total	16¶	24**
infant	25	30	Mumps	76	96
other (wound & unspecified	3	8	Plague	-	-
Brucellosis†	41	37	Poliomyelitis, paralytic	-	-
Chancroid	14	26	Psittacosis†	2	5
Cholera	2	1	Q fever†	16	32
Cyclosporiasis†	50	18	Rabies, human	-	-
Diphtheria	-	-	Rubella	10	4
Ehrlichiosis:	-	-	Rubella, congenital syndrome	-	1
human granulocytic (HGE)†	33	34	SARS-associated coronavirus disease† ††	-	5
human monocytic (HME)†	20	28	Smallpox† §§	-	NA
human, other and unspecified	-	5	*Staphylococcus aureus*:	-	-
Encephalitis/Meningitis:	-	-	Vancomycin-intermediate (VISA)† §§	4	NA
California serogroup viral†	1	-	Vancomycin-resistant (VRSA)† §§	1	1
eastern equine†	-	1	Streptococcal toxic-shock syndrome†	45	96
Powassan†	-	-	Tetanus	4	3
St. Louis†	-	2	Toxic-shock syndrome	47	60
western equine†	-	-	Trichinosis	3	-
Hansen disease (leprosy)†	33	34	Tularemia†	15	9
Hantavirus pulmonary syndrome†	6	11	Yellow fever	-	-

-: No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).
† Not notifiable in all states.
§ Updated monthly from reports to the Division of HIV/AIDS Prevention — Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention. Last update May 2, 2004.
¶ Of 16 cases reported, 11 were indigenous, and five were imported from another country.
** Of 24 cases reported, 17 were indigenous, and seven were imported from another country.
†† Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (notifiable as of July 2003).
§§ Not previously notifiable.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	AIDS		Chlamydia†		Coccidiodomycosis		Cryptosporidiosis		Encephalitis/Meningitis West Nile	
	Cum. 2004§	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	12,299	19,194	338,204	361,644	1,866	1,363	893	795	-	-
NEW ENGLAND	370	655	12,130	11,556	-	-	55	53	-	-
Maine	5	27	719	802	N	N	10	5	-	-
N.H.	20	15	684	655	-	-	14	7	-	-
Vt.	10	6	433	434	-	-	6	9	-	-
Mass.	117	277	5,834	4,327	-	-	16	23	-	-
R.I.	44	50	1,417	1,347	-	-	1	7	-	-
Conn.	174	280	3,043	3,991	N	N	8	2	-	-
MID. ATLANTIC	2,398	4,072	45,486	43,519	-	-	147	121	-	-
Upstate N.Y.	185	271	9,317	7,879	N	N	36	28	-	-
N.Y. City	1,134	1,976	12,815	14,499	-	-	33	44	-	-
N.J.	521	780	5,316	6,362	-	-	9	8	-	-
Pa.	558	1,045	18,038	14,779	N	N	69	41	-	-
E.N. CENTRAL	1,279	1,986	54,786	66,442	5	3	198	192	-	-
Ohio	235	302	12,082	17,995	-	-	53	24	-	-
Ind.	166	260	7,072	7,229	N	N	30	18	-	-
Ill.	602	959	14,127	20,436	-	-	13	33	-	-
Mich.	208	363	15,954	13,556	5	3	48	37	-	-
Wis.	68	102	5,551	7,226	-	-	54	80	-	-
W.N. CENTRAL	309	360	19,780	20,802	4	2	104	75	-	-
Minn.	68	73	3,596	4,580	N	N	40	35	-	-
Iowa	19	41	1,087	2,116	N	N	15	10	-	-
Mo.	134	180	8,258	7,633	3	1	19	7	-	-
N. Dak.	11	1	592	567	N	N	1	3	-	-
S. Dak.	5	6	1,070	1,015	-	-	11	16	-	-
Nebr.¶	17	24	2,143	1,898	1	1	6	3	-	-
Kans.	55	35	3,034	2,993	N	N	12	1	-	-
S. ATLANTIC	4,239	5,393	63,597	67,796	-	1	179	107	-	-
Del.	55	105	1,241	2,610	N	N	-	1	-	-
Md.	478	555	7,492	6,826	-	1	9	8	-	-
D.C.	150	595	1,476	1,421	-	-	2	-	-	-
Va.	213	478	9,172	7,725	-	-	23	11	-	-
W. Va.	30	41	1,180	1,055	N	N	2	1	-	-
N.C.	246	564	11,275	10,816	N	N	34	15	-	-
S.C.¶	267	326	6,788	5,555	-	-	7	2	-	-
Ga.	688	736	7,766	14,289	-	-	51	38	-	-
Fla.	2,112	1,993	17,207	17,499	N	N	51	31	-	-
E.S. CENTRAL	566	835	21,932	23,405	2	1	40	50	-	-
Ky.	71	78	2,312	3,440	N	N	11	9	-	-
Tenn.	210	373	9,488	8,163	N	N	12	17	-	-
Ala.	173	185	4,483	6,336	-	-	10	21	-	-
Miss.	112	199	5,649	5,466	2	1	7	3	-	-
W.S. CENTRAL	1,723	2,085	44,758	45,328	2	-	20	18	-	-
Ark.	87	63	3,245	3,088	1	-	8	3	-	-
La.	342	365	10,660	8,317	1	-	-	1	-	-
Okla.	68	91	4,591	4,655	N	N	8	4	-	-
Tex.	1,226	1,566	26,262	29,268	-	-	4	10	-	-
MOUNTAIN	495	716	17,206	21,472	1,165	933	49	34	-	-
Mont.	-	10	790	932	N	N	9	7	-	-
Idaho	3	13	1,280	1,076	N	N	4	6	-	-
Wyo.	4	5	461	428	-	-	2	1	-	-
Colo.	98	157	3,160	5,457	N	N	24	6	-	-
N. Mex.	52	51	2,298	3,143	9	2	2	1	-	-
Ariz.	207	336	5,965	6,377	1,118	913	6	2	-	-
Utah	29	32	1,421	1,553	12	3	1	8	-	-
Nev.	102	112	1,831	2,506	26	15	1	3	-	-
PACIFIC	920	3,092	58,529	61,324	688	423	101	145	-	-
Wash.	166	211	7,347	6,558	N	N	9	12	-	-
Oreg.	92	126	2,069	3,216	-	-	12	16	-	-
Calif.	610	2,697	46,810	47,683	688	423	79	117	-	-
Alaska	11	12	1,552	1,603	-	-	-	-	-	-
Hawaii	41	46	751	2,264	-	-	1	-	-	-
Guam	1	1	-	320	-	-	-	-	-	-
P.R.	209	514	1,002	826	N	N	N	N	-	-
V.I.	4	15	143	138	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	2	U	32	U	-	U	-	U	-	U

N: Not notifiable. U: Unavailable. -: No reported cases. C.N.M.I.: Commonwealth of Northern Mariana Islands.

* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

† Chlamydia refers to genital infections caused by *C. trachomatis*.

§ Updated monthly from reports to the Division of HIV/AIDS Prevention — Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention. Last update March 26, 2004.

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

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	*Escherichia coli*, Enterohemorrhagic (EHEC)						Giardiasis		Gonorrhea	
	O157:H7		Shiga toxin positive, serogroup non-O157		Shiga toxin positive, not serogrouped					
	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	457	470	63	85	53	36	5,875	6,409	116,845	134,639
NEW ENGLAND	35	29	18	13	9	2	512	469	2,849	2,875
Maine	1	3	-	-	-	-	57	51	106	90
N.H.	5	7	3	1	-	-	15	20	55	49
Vt.	-	1	-	-	-	-	42	35	34	34
Mass.	13	8	2	5	9	2	270	225	1,338	1,068
R.I.	3	1	-	-	-	-	47	44	379	405
Conn.	13	9	13	7	-	-	81	94	937	1,229
MID. ATLANTIC	41	52	3	6	12	11	1,350	1,349	14,407	17,032
Upstate N.Y.	15	17	1	3	4	5	437	329	3,052	2,993
N.Y. City	5	3	-	-	-	-	420	499	4,103	5,535
N.J.	6	5	1	-	4	-	123	188	2,105	3,785
Pa.	15	27	1	3	4	6	370	333	5,147	4,719
E.N. CENTRAL	77	123	12	16	7	6	697	1,163	21,698	28,659
Ohio	19	26	1	9	7	6	285	337	5,762	9,226
Ind.	8	16	-	-	-	-	-	-	2,411	2,702
Ill.	15	22	-	1	-	-	84	344	5,882	8,763
Mich.	17	22	2	-	-	-	217	272	6,139	5,500
Wis.	18	37	9	6	-	-	111	210	1,504	2,468
W.N. CENTRAL	81	61	9	9	10	8	712	627	6,525	6,958
Minn.	26	22	3	6	2	-	249	217	1,406	1,112
Iowa	17	8	-	-	-	-	100	83	160	499
Mo.	12	18	6	1	3	1	188	189	3,336	3,551
N. Dak.	2	1	-	1	3	1	11	16	50	25
S. Dak.	3	2	-	-	-	-	28	19	113	74
Nebr.	11	5	-	1	-	-	55	51	424	620
Kans.	10	5	-	-	2	6	81	52	1,036	1,077
S. ATLANTIC	44	41	13	29	7	1	928	945	28,309	33,014
Del.	-	-	N	N	N	N	20	15	405	1,002
Md.	6	1	-	-	1	1	36	46	3,174	3,166
D.C.	1	1	-	-	-	-	25	14	1,003	1,033
Va.	2	17	6	3	-	-	152	113	3,708	3,622
W. Va.	1	1	-	-	-	-	12	10	361	343
N.C.	-	-	4	11	-	-	N	N	6,036	6,103
S.C.	3	-	-	-	-	-	24	53	3,125	3,169
Ga.	15	7	1	2	-	-	231	307	3,426	6,875
Fla.	16	14	2	13	6	-	428	387	7,071	7,701
E.S. CENTRAL	26	23	1	-	7	4	138	134	9,405	11,299
Ky.	10	8	1	-	4	4	N	N	980	1,460
Tenn.	4	10	-	-	3	-	69	58	3,346	3,311
Ala.	6	3	-	-	-	-	69	76	2,633	3,766
Miss.	6	2	-	-	-	-	-	-	2,446	2,762
W.S. CENTRAL	25	20	1	2	1	1	106	103	16,669	18,063
Ark.	7	2	-	-	-	-	48	56	1,569	1,648
La.	1	1	-	-	-	-	14	6	4,771	4,669
Okla.	4	3	-	-	-	-	44	41	1,939	1,751
Tex.	13	14	1	2	1	1	-	-	8,390	9,995
MOUNTAIN	49	52	5	8	-	3	490	501	4,033	4,520
Mont.	2	1	-	-	-	-	15	25	34	55
Idaho	14	13	3	4	-	-	69	59	35	34
Wyo.	-	1	-	-	-	-	7	7	23	20
Colo.	8	15	1	1	-	3	155	152	1,023	1,238
N. Mex.	4	1	-	3	-	-	23	21	267	524
Ariz.	7	11	N	N	N	N	79	83	1,666	1,683
Utah	8	7	-	-	-	-	106	106	200	147
Nev.	6	3	1	-	-	-	36	48	785	819
PACIFIC	79	69	1	2	-	-	942	1,118	12,950	12,219
Wash.	27	21	-	1	-	-	114	106	1,143	1,214
Oreg.	11	8	1	1	-	-	160	137	265	406
Calif.	34	39	-	-	-	-	608	800	11,117	9,934
Alaska	1	1	-	-	-	-	25	35	255	224
Hawaii	6	-	-	-	-	-	35	40	170	441
Guam	N	N	-	-	-	-	-	-	-	32
P.R.	-	1	-	-	-	-	10	60	91	92
V.I.	-	-	-	-	-	-	-	-	49	37
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	U	-	U	-	U	-	U	3	U

N: Not notifiable. U: Unavailable. - : No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	*Haemophilus influenzae*, invasive								Hepatitis (viral, acute), by type	
	All ages		Age <5 years							
	All serotypes		Serotype b		Non-serotype b		Unknown serotype		A	
	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	852	819	9	11	45	59	94	102	2,233	2,621
NEW ENGLAND	80	59	1	1	4	5	3	3	385	113
Maine	7	2	-	-	-	-	-	1	8	3
N.H.	12	6	-	-	2	-	-	-	7	7
Vt.	5	6	-	-	-	-	1	-	5	4
Mass.	32	31	1	1	-	5	2	1	329	59
R.I.	2	3	-	-	-	-	-	1	7	10
Conn.	22	11	-	-	2	-	-	-	29	30
MID. ATLANTIC	171	142	-	-	3	1	24	21	262	560
Upstate N.Y.	62	45	-	-	3	1	3	6	36	45
N.Y. City	35	25	-	-	-	-	7	5	89	210
N.J.	25	31	-	-	-	-	2	4	52	87
Pa.	49	41	-	-	-	-	12	6	85	218
E.N. CENTRAL	125	139	-	1	10	4	18	27	198	249
Ohio	59	36	-	-	2	-	10	7	23	42
Ind.	25	21	-	-	4	2	1	-	15	20
Ill.	19	58	-	-	-	-	5	16	72	79
Mich.	10	9	-	1	4	2	1	-	70	80
Wis.	12	15	-	-	-	-	1	4	18	28
W.N. CENTRAL	50	56	2	-	3	6	4	6	71	74
Minn.	20	22	1	-	3	6	-	1	10	20
Iowa	1	-	1	-	-	-	-	-	22	14
Mo.	15	23	-	-	-	-	2	5	23	21
N. Dak.	3	1	-	-	-	-	-	-	1	-
S. Dak.	-	1	-	-	-	-	-	-	2	-
Nebr.	5	-	-	-	-	-	-	-	7	5
Kans.	6	9	-	-	-	-	2	-	6	14
S. ATLANTIC	209	157	-	-	11	7	18	10	423	589
Del.	8	-	-	-	-	-	2	-	4	4
Md.	35	38	-	-	2	4	-	-	59	57
D.C.	-	-	-	-	-	-	-	-	4	17
Va.	18	16	-	-	-	-	1	4	41	36
W. Va.	10	7	-	-	-	-	3	-	2	8
N.C.	25	10	-	-	3	-	-	-	31	26
S.C.	2	2	-	-	-	-	-	-	17	23
Ga.	55	32	-	-	-	-	11	4	156	237
Fla.	56	52	-	-	6	3	1	2	109	181
E.S. CENTRAL	33	42	-	1	-	2	7	4	74	74
Ky.	-	3	-	-	-	1	-	-	10	13
Tenn.	23	23	-	-	-	1	5	3	45	39
Ala.	10	16	-	1	-	-	2	1	6	11
Miss.	-	-	-	-	-	-	-	-	13	11
W.S. CENTRAL	34	43	1	1	3	6	1	3	172	267
Ark.	1	4	-	-	-	1	-	-	33	13
La.	7	15	-	-	-	2	1	3	11	23
Okla.	25	23	-	-	3	3	-	-	16	5
Tex.	1	1	1	1	-	-	-	-	112	226
MOUNTAIN	114	95	3	5	11	13	14	12	211	170
Mont.	-	-	-	-	-	-	-	-	3	2
Idaho	4	2	-	-	-	-	2	1	10	9
Wyo.	-	-	-	-	-	-	-	-	2	1
Colo.	25	16	-	-	-	-	3	4	21	24
N. Mex.	23	12	-	-	3	3	3	1	5	8
Ariz.	45	54	-	5	7	6	1	4	138	94
Utah	9	7	2	-	-	2	3	2	27	12
Nev.	8	4	1	-	1	2	2	-	5	20
PACIFIC	36	86	2	2	-	15	5	16	437	525
Wash.	3	3	2	-	-	2	1	1	26	29
Oreg.	23	22	-	-	-	-	1	3	30	31
Calif.	3	37	-	2	-	13	2	7	370	456
Alaska	2	18	-	-	-	-	1	5	4	5
Hawaii	5	6	-	-	-	-	-	-	7	4
Guam	-	-	-	-	-	-	-	-	-	1
P.R.	-	-	-	-	-	-	-	-	7	35
V.I.	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	U	-	U	-	U	-	U	-	U

N: Not notifiable. U: Unavailable. -: No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	Hepatitis (viral, acute), by type				Legionellosis		Listeriosis		Lyme disease	
	B		C							
	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	2,413	2,744	498	460	402	438	174	204	3,117	3,556
NEW ENGLAND	132	134	3	2	10	16	10	8	295	433
Maine	1	-	-	-	-	-	2	-	46	-
N.H.	21	9	-	-	-	2	1	2	18	7
Vt.	1	1	1	2	1	1	-	-	10	4
Mass.	67	95	2	-	4	6	2	4	106	226
R.I.	2	3	-	-	1	1	1	-	35	94
Conn.	40	26	U	U	4	6	4	2	80	102
MID. ATLANTIC	386	358	48	52	96	93	38	38	2,393	2,593
Upstate N.Y.	42	32	4	7	22	27	14	8	860	836
N.Y. City	41	120	-	-	4	10	3	10	-	39
N.J.	179	97	-	-	23	5	9	7	535	635
Pa.	124	109	44	45	47	51	12	13	998	1,083
E.N. CENTRAL	200	207	28	69	88	98	22	24	38	121
Ohio	61	63	2	4	42	41	9	3	31	13
Ind.	8	10	2	1	8	6	5	1	1	6
Ill.	21	11	2	11	2	14	-	7	-	3
Mich.	110	100	22	50	34	28	7	9	-	-
Wis.	-	23	-	3	2	9	1	4	6	99
W.N. CENTRAL	169	118	180	101	9	20	4	6	51	38
Minn.	17	14	1	3	-	2	2	2	17	21
Iowa	6	4	-	-	2	5	1	-	6	4
Mo.	126	80	179	97	5	8	1	2	24	10
N. Dak.	1	-	-	-	1	1	-	-	-	-
S. Dak.	-	1	-	-	1	-	-	-	-	-
Nebr.	11	11	-	1	-	2	-	2	3	1
Kans.	8	8	-	-	-	2	-	-	1	2
S. ATLANTIC	769	738	81	73	101	119	26	48	278	270
Del.	16	4	-	-	3	-	N	N	32	50
Md.	64	45	7	5	15	21	4	4	162	168
D.C.	12	1	1	-	3	1	-	-	2	3
Va.	82	58	11	1	8	8	3	7	12	14
W. Va.	2	7	10	1	2	-	1	2	2	1
N.C.	74	76	6	3	9	9	5	9	41	17
S.C.	48	72	7	17	1	4	-	2	1	1
Ga.	242	227	6	6	9	14	5	13	2	8
Fla.	229	248	33	40	51	62	8	11	24	8
E.S. CENTRAL	182	175	52	39	16	22	13	6	20	20
Ky.	22	36	14	7	4	6	4	-	6	3
Tenn.	88	62	24	8	10	9	8	1	9	6
Ala.	26	34	1	5	2	5	1	3	1	1
Miss.	46	43	13	19	-	2	-	2	4	10
W.S. CENTRAL	73	471	60	83	26	24	14	24	2	43
Ark.	22	42	-	3	-	1	-	-	-	-
La.	26	67	33	48	1	1	1	1	-	4
Okla.	16	25	2	-	2	2	-	1	-	-
Tex.	9	337	25	32	23	20	13	22	2	39
MOUNTAIN	204	249	21	14	29	24	8	13	8	3
Mont.	1	8	2	1	1	1	-	1	-	-
Idaho	6	3	-	1	3	2	1	-	2	1
Wyo.	5	14	-	-	4	1	-	-	1	-
Colo.	21	40	4	4	4	4	2	5	-	-
N. Mex.	6	19	4	-	-	2	-	2	-	-
Ariz.	113	122	2	4	5	6	-	4	1	-
Utah	20	16	1	-	10	5	-	1	4	1
Nev.	32	27	8	4	2	3	5	-	-	1
PACIFIC	298	294	25	27	27	22	39	37	32	35
Wash.	23	30	7	10	5	2	6	3	3	-
Oreg.	41	-	5	5	N	N	4	1	12	8
Calif.	220	255	10	11	22	20	29	33	17	26
Alaska	12	3	-	-	-	-	-	-	-	1
Hawaii	2	6	3	1	-	-	-	-	N	N
Guam	-	3	-	1	-	-	-	-	-	-
P.R.	14	63	-	-	1	-	-	-	N	N
V.I.	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	U	-	U	-	U	-	U	-	U

N: Not notifiable. U: Unavailable. -: No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	Malaria		Meningococcal disease		Pertussis		Rabies, animal		Rocky Mountain spotted fever	
	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	404	394	673	855	3,538	2,751	1,999	2,913	243	143
NEW ENGLAND	35	9	32	41	732	277	206	192	11	-
Maine	3	1	8	5	2	2	25	19	-	-
N.H.	-	2	3	3	20	15	7	9	-	-
Vt.	1	-	1	-	30	29	6	11	-	-
Mass.	20	6	19	25	659	210	86	71	10	-
R.I.	2	-	-	2	9	5	13	25	1	-
Conn.	9	-	1	6	12	16	69	57	-	-
MID. ATLANTIC	89	96	83	101	959	263	178	342	19	11
Upstate N.Y.	15	18	19	18	685	100	145	127	1	-
N.Y. City	34	51	14	26	55	36	4	4	2	4
N.J.	18	13	18	13	81	44	-	62	5	4
Pa.	22	14	32	44	138	83	29	149	11	3
E.N. CENTRAL	25	43	95	133	423	205	15	22	10	6
Ohio	9	6	40	34	166	90	7	7	6	2
Ind.	-	-	10	21	39	25	3	2	1	1
Ill.	2	22	9	37	-	14	4	4	-	2
Mich.	9	12	30	23	41	18	1	9	3	1
Wis.	5	3	6	18	177	58	-	-	-	-
W.N. CENTRAL	24	15	42	65	209	121	197	285	14	5
Minn.	11	9	12	16	40	33	21	11	-	-
Iowa	1	2	9	10	30	33	27	28	-	1
Mo.	3	1	10	27	109	27	7	2	11	4
N. Dak.	2	-	1	-	8	2	26	25	-	-
S. Dak.	1	-	1	1	9	2	10	64	-	-
Nebr.	1	-	2	5	2	2	53	61	3	-
Kans.	5	3	7	6	11	22	53	94	-	-
S. ATLANTIC	123	96	123	151	205	183	735	1,184	117	97
Del.	3	-	1	8	5	1	9	19	-	-
Md.	28	25	7	13	38	27	50	166	9	21
D.C.	7	5	4	1	2	-	-	-	-	-
Va.	10	7	8	11	57	33	195	224	1	1
W. Va.	-	3	4	1	3	4	30	28	-	-
N.C.	9	6	18	16	33	62	280	318	97	47
S.C.	7	1	12	12	25	9	61	83	5	8
Ga.	16	20	7	19	8	17	107	158	1	16
Fla.	43	29	62	70	34	30	3	188	4	4
E.S. CENTRAL	14	9	29	35	48	54	57	89	37	21
Ky.	1	1	3	3	8	15	11	14	-	-
Tenn.	3	4	10	8	28	24	19	64	21	12
Ala.	8	2	6	12	6	10	24	10	7	3
Miss.	2	2	10	12	6	5	3	1	9	6
W.S. CENTRAL	35	47	64	107	139	160	507	675	28	2
Ark.	5	3	12	10	7	9	24	25	6	-
La.	2	2	16	30	3	4	-	-	3	-
Okla.	2	2	3	8	13	14	55	108	19	-
Tex.	26	40	33	59	116	133	428	542	-	2
MOUNTAIN	13	13	31	45	434	462	41	43	3	1
Mont.	-	-	1	2	12	-	5	7	-	-
Idaho	1	1	4	3	17	9	-	1	1	-
Wyo.	-	-	2	2	3	119	-	-	-	1
Colo.	5	9	9	11	231	170	5	2	-	-
N. Mex.	1	-	4	4	49	23	-	2	-	-
Ariz.	1	2	6	19	83	83	31	29	1	-
Utah	3	1	3	-	29	43	-	1	1	-
Nev.	2	-	2	4	10	15	-	1	-	-
PACIFIC	46	66	174	177	389	1,026	63	81	4	-
Wash.	2	10	18	16	188	189	-	-	-	-
Oreg.	8	5	36	29	152	153	-	1	2	-
Calif.	35	49	115	123	35	681	55	75	2	-
Alaska	-	-	1	2	8	-	8	5	-	-
Hawaii	1	2	4	7	6	3	-	-	-	-
Guam	-	-	-	-	-	-	-	-	-	-
P.R.	-	-	2	5	2	1	19	27	N	N
V.I.	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	-	U	-	U	-	U	-	U	-	U

N: Not notifiable. U: Unavailable. - : No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	Salmonellosis		Shigellosis		Streptococcal disease, invasive, group A		*Streptococcus pneumoniae*, invasive			
							Drug resistant, all ages		Age <5 years	
	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	10,451	11,595	4,074	8,985	2,224	3,158	1,191	1,197	255	276
NEW ENGLAND	530	573	94	112	108	304	13	59	4	1
Maine	32	36	1	4	4	17	1	-	-	-
N.H.	34	39	4	4	12	18	-	-	N	N
Vt.	18	18	2	4	5	14	6	5	1	1
Mass.	285	330	58	72	71	137	N	N	N	N
R.I.	41	31	6	3	16	5	6	7	3	-
Conn.	120	119	23	25	-	113	-	47	U	U
MID. ATLANTIC	1,376	1,470	489	870	377	543	85	71	54	51
Upstate N.Y.	350	295	237	128	128	196	40	33	40	38
N.Y. City	372	425	135	161	53	82	U	U	U	U
N.J.	210	234	68	168	66	112	N	N	N	N
Pa.	444	516	49	413	130	153	45	38	14	13
E.N. CENTRAL	1,375	1,623	289	764	395	784	259	247	83	95
Ohio	369	455	71	114	135	171	192	165	51	53
Ind.	149	182	54	51	50	64	67	82	17	13
Ill.	321	521	87	430	35	214	-	-	-	-
Mich.	280	244	41	107	157	231	N	N	N	N
Wis.	256	221	36	62	18	104	N	N	15	29
W.N. CENTRAL	768	651	148	289	171	194	125	96	27	26
Minn.	181	170	19	37	79	93	-	-	23	23
Iowa	157	123	30	22	N	N	N	N	N	N
Mo.	215	167	59	130	40	42	6	6	4	1
N. Dak.	14	14	1	3	7	8	-	3	-	2
S. Dak.	28	30	6	8	8	15	3	-	-	-
Nebr.	55	60	7	59	9	19	-	-	N	N
Kans.	118	87	26	30	28	17	116	87	N	N
S. ATLANTIC	2,308	2,670	1,140	2,753	462	497	553	580	7	6
Del.	16	36	3	127	2	5	3	1	N	N
Md.	205	283	47	223	98	138	-	4	-	-
D.C.	14	12	20	24	5	4	3	-	3	-
Va.	273	274	41	127	41	62	N	N	N	N
W. Va.	49	25	-	-	14	22	63	35	4	6
N.C.	285	399	136	274	65	36	N	N	U	U
S.C.	139	140	183	172	35	21	51	87	N	N
Ga.	335	393	234	610	97	106	121	143	N	N
Fla.	992	1,108	476	1,196	105	103	312	310	N	N
E.S. CENTRAL	609	712	231	422	125	103	74	77	-	-
Ky.	111	121	33	49	41	25	19	6	N	N
Tenn.	180	235	93	143	84	78	55	71	N	N
Ala.	175	185	81	142	-	-	-	-	N	N
Miss.	143	171	24	88	-	-	-	-	-	-
W.S. CENTRAL	903	1,282	866	2,489	114	155	30	49	52	63
Ark.	132	151	19	33	6	4	5	17	7	4
La.	135	214	94	203	1	1	25	32	8	14
Okla.	105	101	208	348	31	48	N	N	24	26
Tex.	531	816	545	1,905	76	102	N	N	13	19
MOUNTAIN	832	762	304	367	275	274	16	16	28	34
Mont.	53	42	3	2	-	1	-	-	-	-
Idaho	57	76	5	9	4	11	N	N	N	N
Wyo.	20	45	1	1	5	1	4	2	-	-
Colo.	187	198	52	56	73	78	-	-	26	32
N. Mex.	75	64	42	79	50	69	5	13	-	-
Ariz.	282	206	165	182	118	95	N	N	N	N
Utah	87	68	16	21	24	18	5	1	2	2
Nev.	71	63	20	17	1	1	2	-	-	-
PACIFIC	1,750	1,852	513	919	197	304	36	2	-	-
Wash.	157	214	36	81	24	29	-	-	N	N
Oreg.	136	168	28	37	N	N	N	N	N	N
Calif.	1,295	1,358	428	785	135	225	N	N	N	N
Alaska	32	36	3	4	-	-	-	-	N	N
Hawaii	130	76	18	12	38	50	36	2	-	-
Guam	-	19	-	20	-	-	-	-	-	-
P.R.	55	260	1	4	N	N	N	N	N	N
V.I.	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	3	U	-	U	-	U	-	U	-	U

N: Not notifiable. U: Unavailable. - : No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

TABLE II. (*Continued*) Provisional cases of selected notifiable diseases, United States, weeks ending June 5, 2004, and May 31, 2003 (22nd Week)*

Reporting area	Syphilis: Primary & secondary		Syphilis: Congenital		Tuberculosis		Typhoid fever		Varicella (Chickenpox)	
	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003	Cum. 2004	Cum. 2003
UNITED STATES	2,846	2,955	119	194	3,556	4,973	96	124	7,945	8,492
NEW ENGLAND	68	88	1	-	138	158	9	10	390	1,839
Maine	-	4	-	-	-	10	-	-	44	575
N.H.	2	12	-	-	7	8	-	-	-	-
Vt.	-	-	-	-	-	5	-	-	346	394
Mass.	48	58	-	-	86	68	9	5	-	87
R.I.	9	6	-	-	11	20	-	2	-	3
Conn.	9	8	1	-	34	47	-	3	-	780
MID. ATLANTIC	420	329	22	32	775	879	23	22	31	10
Upstate N.Y.	39	13	1	3	88	93	2	3	-	-
N.Y. City	209	179	9	19	409	484	5	12	-	-
N.J.	71	71	12	10	153	156	9	6	-	-
Pa.	101	66	-	-	125	146	7	1	31	10
E.N. CENTRAL	302	409	31	37	422	448	4	16	3,498	3,291
Ohio	94	88	1	2	71	76	1	-	906	839
Ind.	22	19	7	7	56	50	-	4	-	-
Ill.	90	161	1	12	196	207	-	6	-	-
Mich.	86	130	22	16	72	90	2	6	2,339	1,962
Wis.	10	11	-	-	27	25	1	-	253	490
W.N. CENTRAL	55	82	-	3	150	198	2	3	114	27
Minn.	7	25	-	-	64	70	1	1	-	-
Iowa	2	6	-	-	15	11	-	1	N	N
Mo.	30	28	-	3	37	59	1	1	2	-
N. Dak.	-	-	-	-	3	-	-	-	69	27
S. Dak.	-	-	-	-	4	12	-	-	43	-
Nebr.	4	3	-	-	6	9	-	-	-	-
Kans.	12	20	-	-	21	37	-	-	-	-
S. ATLANTIC	766	776	13	41	732	906	17	26	1,270	1,185
Del.	3	8	-	-	-	-	-	-	4	9
Md.	140	110	2	7	88	84	2	7	-	-
D.C.	31	25	1	-	-	-	-	-	16	7
Va.	44	36	1	1	81	85	3	11	317	297
W. Va.	2	1	-	-	10	9	-	-	721	738
N.C.	62	71	1	9	82	95	2	4	N	N
S.C.	46	48	-	4	83	53	-	-	212	134
Ga.	120	191	-	8	11	211	8	2	-	-
Fla.	318	286	8	12	377	369	2	2	-	-
E.S. CENTRAL	157	145	4	7	231	276	4	2	2	-
Ky.	23	21	-	1	37	47	2	-	-	-
Tenn.	63	62	1	1	81	85	2	1	-	-
Ala.	58	51	2	4	80	105	-	1	-	-
Miss.	13	11	1	1	33	39	-	-	2	-
W.S. CENTRAL	454	341	19	29	186	800	5	5	1,160	1,862
Ark.	17	19	-	1	56	42	-	-	-	-
La.	91	43	-	-	-	-	-	-	34	8
Okla.	12	20	2	-	55	58	-	-	-	-
Tex.	334	259	17	28	75	700	5	5	1,126	1,854
MOUNTAIN	145	130	26	18	152	151	5	4	1,480	278
Mont.	-	-	-	-	-	-	-	-	-	-
Idaho	10	4	1	-	-	1	-	-	-	-
Wyo.	1	-	-	-	1	2	-	-	18	23
Colo.	8	18	-	3	37	38	1	3	1,110	-
N. Mex.	25	27	1	4	-	23	-	-	63	-
Ariz.	92	73	24	11	95	62	2	1	-	-
Utah	2	2	-	-	19	13	1	-	289	255
Nev.	7	6	-	-	-	12	1	-	-	-
PACIFIC	479	655	3	27	770	1,157	27	36	-	-
Wash.	37	31	-	-	85	100	2	2	-	-
Oreg.	9	16	-	-	28	40	1	1	-	-
Calif.	431	602	3	27	597	948	18	33	-	-
Alaska	-	-	-	-	11	26	-	-	-	-
Hawaii	2	6	-	-	49	43	6	-	-	-
Guam	-	1	-	-	-	27	-	-	-	-
P.R.	54	80	2	8	14	38	-	-	137	252
V.I.	4	1	-	-	-	-	-	-	-	-
Amer. Samoa	U	U	U	U	U	U	U	U	U	U
C.N.M.I.	2	U	-	U	10	U	-	U	-	U

N: Not notifiable. U: Unavailable. - : No reported cases.
* Incidence data for reporting years 2003 and 2004 are provisional and cumulative (year-to-date).

TABLE III. Deaths in 122 U.S. cities,* week ending June 5, 2004 (22nd Week)

Reporting Area	All causes, by age (years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	369	251	81	27	5	5	31
Boston, Mass.	111	74	24	6	3	4	8
Bridgeport, Conn.	33	22	6	5	-	-	2
Cambridge, Mass.	18	13	4	1	-	-	1
Fall River, Mass.	25	18	5	2	-	-	3
Hartford, Conn.	U	U	U	U	U	U	U
Lowell, Mass.	28	18	5	5	-	-	1
Lynn, Mass.	14	9	3	2	-	-	-
New Bedford, Mass.	17	11	3	2	1	-	1
New Haven, Conn.	U	U	U	U	U	U	U
Providence, R.I.	U	U	U	U	U	U	U
Somerville, Mass.	8	6	2	-	-	-	-
Springfield, Mass.	34	17	14	2	1	-	4
Waterbury, Conn.	26	19	6	-	-	1	5
Worcester, Mass.	55	44	9	2	-	-	6
MID. ATLANTIC	2,024	1,402	419	126	44	30	112
Albany, N.Y.	40	25	11	2	-	2	2
Allentown, Pa.	20	15	5	-	-	-	-
Buffalo, N.Y.	96	70	18	7	1	-	10
Camden, N.J.	25	15	6	1	1	2	1
Elizabeth, N.J.	13	11	2	-	-	-	-
Erie, Pa.	36	27	6	1	2	-	1
Jersey City, N.J.	23	16	5	1	-	1	-
New York City, N.Y.	990	690	203	66	18	10	51
Newark, N.J.	59	28	15	8	3	5	4
Paterson, N.J.	21	12	5	1	2	1	-
Philadelphia, Pa.	373	237	91	28	12	5	17
Pittsburgh, Pa.§	27	16	7	2	-	2	2
Reading, Pa.	27	21	4	1	1	-	1
Rochester, N.Y.	107	82	19	3	1	2	11
Schenectady, N.Y.	28	25	3	-	-	-	3
Scranton, Pa.	26	19	5	2	-	-	-
Syracuse, N.Y.	68	55	9	3	1	-	6
Trenton, N.J.	12	9	2	-	1	-	-
Utica, N.Y.	16	14	1	-	1	-	2
Yonkers, N.Y.	17	15	2	-	-	-	1
E.N. CENTRAL	1,807	1,199	391	99	76	42	100
Akron, Ohio	41	27	6	2	2	4	-
Canton, Ohio	28	24	4	-	-	-	-
Chicago, Ill.	280	174	71	23	7	5	23
Cincinnati, Ohio	62	34	20	5	2	1	-
Cleveland, Ohio	180	129	38	10	3	-	6
Columbus, Ohio	179	115	38	12	9	5	17
Dayton, Ohio	96	66	22	5	-	3	5
Detroit, Mich.	168	71	45	15	33	4	8
Evansville, Ind.	38	25	6	3	1	3	-
Fort Wayne, Ind.	45	36	7	-	1	1	6
Gary, Ind.	32	14	13	1	2	2	-
Grand Rapids, Mich.	95	64	23	3	1	4	8
Indianapolis, Ind.	150	111	26	5	3	5	9
Lansing, Mich.	29	23	3	1	1	1	2
Milwaukee, Wis.	104	71	25	2	5	1	3
Peoria, Ill.	39	29	6	3	1	-	2
Rockford, Ill.	53	44	6	2	1	-	3
South Bend, Ind.	66	50	11	3	-	2	-
Toledo, Ohio	61	41	12	4	4	-	5
Youngstown, Ohio	61	51	9	-	-	1	3
W.N. CENTRAL	557	355	122	45	17	18	34
Des Moines, Iowa	41	30	9	-	-	2	2
Duluth, Minn.	23	17	4	2	-	-	1
Kansas City, Kans.	34	19	9	3	2	1	-
Kansas City, Mo.	61	40	11	7	2	1	3
Lincoln, Nebr.	25	20	4	-	1	-	1
Minneapolis, Minn.	59	32	13	6	1	7	7
Omaha, Nebr.	84	59	17	6	-	2	7
St. Louis, Mo.	70	37	14	10	5	4	1
St. Paul, Minn.	43	34	7	1	-	1	6
Wichita, Kans.	117	67	34	10	6	-	6
S. ATLANTIC	1,070	675	230	110	32	23	69
Atlanta, Ga.	95	58	19	13	4	1	2
Baltimore, Md.	183	90	52	28	8	5	18
Charlotte, N.C.	64	48	7	8	1	-	7
Jacksonville, Fla.	117	77	27	8	4	1	3
Miami, Fla.	125	87	17	12	4	5	-
Norfolk, Va.	60	38	11	8	1	2	3
Richmond, Va.	43	25	11	3	1	3	4
Savannah, Ga.	36	23	10	2	1	-	1
St. Petersburg, Fla.	67	47	11	4	2	3	7
Tampa, Fla.	166	113	37	13	2	1	21
Washington, D.C.	100	59	24	11	4	2	1
Wilmington, Del.	14	10	4	-	-	-	2
E.S. CENTRAL	630	416	128	53	15	17	37
Birmingham, Ala.	120	79	26	11	-	3	13
Chattanooga, Tenn.	50	38	6	4	-	2	6
Knoxville, Tenn.	84	61	15	5	3	-	1
Lexington, Ky.	58	37	12	5	2	2	4
Memphis, Tenn.	97	57	24	10	3	3	1
Mobile, Ala.	49	33	7	6	2	1	3
Montgomery, Ala.	52	37	12	1	1	1	-
Nashville, Tenn.	120	74	26	11	4	5	9
W.S. CENTRAL	1,108	664	282	89	47	26	62
Austin, Tex.	68	41	15	9	1	2	3
Baton Rouge, La.	21	10	6	5	-	-	-
Corpus Christi, Tex.	24	14	5	4	1	-	1
Dallas, Tex.	157	80	49	13	10	5	10
El Paso, Tex.	69	51	14	2	2	-	3
Ft. Worth, Tex.	83	51	21	5	3	3	3
Houston, Tex.	308	172	93	22	14	7	22
Little Rock, Ark.	68	38	14	9	3	4	1
New Orleans, La.	48	26	13	5	4	-	-
San Antonio, Tex.	171	123	34	10	2	2	16
Shreveport, La.	48	27	14	2	3	2	1
Tulsa, Okla.	43	31	4	3	4	1	2
MOUNTAIN	947	626	199	74	30	18	56
Albuquerque, N.M.	114	72	27	11	3	1	7
Boise, Idaho	45	34	7	3	1	-	1
Colo. Springs, Colo.	55	41	11	2	-	1	-
Denver, Colo.	75	42	15	9	4	5	6
Las Vegas, Nev.	250	172	50	17	8	3	17
Ogden, Utah	34	24	7	2	-	1	2
Phoenix, Ariz.	104	58	25	12	6	3	8
Pueblo, Colo.	26	19	3	3	1	-	4
Salt Lake City, Utah	112	72	27	6	3	4	6
Tucson, Ariz.	132	92	27	9	4	-	5
PACIFIC	1,185	793	242	94	31	25	93
Berkeley, Calif.	12	10	1	-	-	1	-
Fresno, Calif.	69	47	13	5	3	1	5
Glendale, Calif.	10	7	1	2	-	-	1
Honolulu, Hawaii	62	52	7	3	-	-	5
Long Beach, Calif.	73	53	17	1	2	-	13
Los Angeles, Calif.	130	83	23	21	3	-	17
Pasadena, Calif.	29	19	5	3	-	2	2
Portland, Oreg.	67	44	15	6	1	1	6
Sacramento, Calif.	217	142	47	18	8	2	15
San Diego, Calif.	142	103	21	4	5	9	8
San Francisco, Calif.	U	U	U	U	U	U	U
San Jose, Calif.	130	78	32	14	2	4	11
Santa Cruz, Calif.	19	14	4	1	-	-	1
Seattle, Wash.	92	59	20	5	6	2	-
Spokane, Wash.	44	27	11	4	-	2	1
Tacoma, Wash.	89	55	25	7	1	1	8
TOTAL	9,697¶	6,381	2,094	717	297	204	594

U: Unavailable. -:No reported cases.

* Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of ≥100,000. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

† Pneumonia and influenza.

§ Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶ Total includes unknown ages.

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