Centers for Disease Control and Prevention
MMWR
Morbidity and Mortality Weekly Report
Weekly / Vol. 61 / No. 41
October 19, 2012

Health Hazards Associated with Laundry Detergent Pods — United States, May–June 2012

During May and early June 2012, the Carolinas Poison Center and the Poison Control Center at the Children's Hospital of Philadelphia received four reports of children with vomiting, mental status changes, and respiratory distress after ingesting the contents of laundry detergent pods. Laundry detergent pods are single-load capsules that contain concentrated liquid detergent within a water-soluble membrane that dissolves when in contact with moisture (*1*). Laundry detergent pods were introduced in the U.S. market in 2010, and multiple manufacturers now sell laundry detergent packaged in pods (*2–4*). On May 17, 2012, CDC and the American Association of Poison Control Centers (AAPCC) began tracking and characterizing reported exposures to laundry detergent from pods. During May 17–June 17, 2012, poison centers reported 1,008 laundry detergent exposures to the National Poison Data System (NPDS), of which 485 (48%) exposures involved laundry detergent pods. Age was recorded for 481 exposures, of which 454 (94%) exposures involved children aged ≤5 years. Among children aged ≤5 years, a significantly greater proportion of those exposed to laundry detergent from pods had gastrointestinal and respiratory adverse health effects and mental status changes compared with those with non-pod laundry detergent exposures. Parents and caregivers should keep laundry detergent pods, as well as other household cleaning products, out of reach and out of sight of children. Health-care providers should be aware that exposure to laundry detergent from pods might be associated with adverse health effects more often than exposure to non-pod laundry detergents.

Case Reports

Charlotte, North Carolina. In early May 2012, the Carolinas Poison Center received reports of two critically ill young children who had been exposed to laundry detergent from pods. The first patient was aged 20 months and found spitting, but otherwise appeared well, after ingesting the liquid contents of a punctured laundry detergent pod. Within 10 minutes, he developed profuse vomiting. He subsequently developed respiratory distress, became unresponsive, and developed seizure-like activity. He was intubated and later found to have a right perihilar infiltrate on chest radiography. He rapidly improved and was discharged 36 hours after the exposure. The second patient was aged 15 months and was brought to an emergency department after biting into a laundry detergent pod. He soon began to vomit profusely, had depressed sensorium, and required intubation for airway protection. The breathing tube was removed 6 hours later. The child's chest radiograph was clear and he was discharged 24 hours after the exposure. Poison center staff members followed up with the child's parents 4 days later and the only complaint was a sore throat.

Philadelphia, Pennsylvania. In early May 2012, the Poison Control Center at Children's Hospital of Philadelphia received notification of a boy aged 17 months who had bitten into a laundry detergent pod and soon began to vomit. He developed

INSIDE

Continuing Education examination available at http://www.cdc.gov/mmwr/cme/conted_info.html#weekly.

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

marked somnolence and respiratory distress requiring intubation for 1 day. In early June 2012, a girl aged 10 months was brought to a local health-care facility with vomiting, difficulty breathing, and drooling after biting into a laundry detergent pod and was admitted to the intensive care unit. She experienced respiratory distress, was found to have epiglottic swelling on radiography, and underwent emergency endoscopy. She was treated with racemic epinephrine and steroids, but did not require intubation. Both Philadelphia patients had subsequent swallowing dysfunction requiring nasogastric feeds, but eventually were discharged home on thickened foods with outpatient speech therapy follow-up.

Investigation and Results

These reports of exposure prompted an investigation by the Carolinas Poison Center, the Poison Control Center at Children's Hospital of Philadelphia, and CDC to characterize pod-associated laundry detergent exposures reported to poison centers using NPDS, the national poison center reporting database, to help assess the extent of the problem. On May 17, 2012, AAPCC, working with CDC, developed a new, unique code specifically for laundry detergent pods and asked poison control staff members to use this code for any laundry detergent pod-related call. This made it easy to identify and track laundry detergent pod-related calls quickly in NPDS. The investigators sought to further characterize potential risk factors associated with laundry detergent pod exposures and any related health effects. For comparison, the investigators identified and characterized all non-pod (i.e., granules, liquids, bars, and tablets) laundry detergent exposures that were reported to NPDS during the same period.

When sufficient information is available, poison centers classify the medical outcome of an exposure into the following categories: minor, moderate, major, death, no effect, or unrelated effect (*5*). Any reported exposure for which poison centers could not determine the final clinical outcome, that was ultimately determined to have an effect unrelated to the exposure, or that was ultimately determined to not have occurred based on poison center follow-up activities was excluded from this analysis (*5*).

Descriptive statistics for whether the exposure was unintentional, route of exposure, age, medical outcome, and the most frequent signs and symptoms associated with pod-exposure and non-pod exposure were calculated for pod and non-pod laundry detergent exposures. Categorical data comparisons were performed using the chi-square test or, when cell sizes were <5, Fisher's exact test. Nonparametric testing (Wilcoxon rank sum test) was performed when continuous data were not normally distributed. Significance was defined as a $p<0.05$. Where pairwise testing was performed, the step-down Bonferroni-Holm correction was applied, resulting in tests that are more powerful than the Bonferroni correction, while still controlling the familywise error rate.

The *MMWR* series of publications is published by the Office of Surveillance, Epidemiology, and Laboratory Services, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

Suggested citation: Centers for Disease Control and Prevention. [Article title]. MMWR 2012;61:[inclusive page numbers].

During May 17–June 17, 2012, a total of 1,008 laundry detergent exposures were reported to poison centers. Of these, 485 (48%) were exposures to laundry detergent contained in pods, and 523 (52%) were non-pod laundry detergent exposures. Among pod-related laundry detergent exposures, 482 (99%) were unintentional (defined as occurring from an unseen or unplanned event, such as when a child gains access to a toxic substance and does not realize the danger of the action), compared with 494 (94%) of non-pod laundry detergent exposures (p<0.001). Ingestion accounted for at least one of the potential routes of exposure to laundry detergent in 435 (90%) of the pod-related exposures, compared with 422 (81%) of non-pod–related exposures (p<0.001). Overall, laundry detergents (pod and non-pod) also were associated with 175 (17%) eye, 114 (11%) skin, and 14 (1%) inhalational exposures, with no significant differences between pod-related and non-pod–related exposures among these noningestion routes of exposure.

Among all 992 laundry detergent exposures for which age was recorded, the median age was 2 years (range: 7 months–85 years), and the mean age was 3 years for the 481 persons with pod-related laundry detergent exposure. For the 511 persons with non-pod–related exposure, the median age was 2 years (range: 19 days–90 years), and the mean age was 7 years. Age data were not normally distributed. The pod-exposed persons were significantly younger than the non-pod laundry detergent exposed persons (Wilcoxon rank sum p=0.006).

To account for significant differences in age data, an additional analysis compared exposure as a function of age using four categories: ≤5 years, 6–10 years, 11–20 years, and >20 years. Among exposures, 868 (88%) occurred among persons aged ≤5 years. Children aged ≤5 years represented 454 (94%) of 481 pod exposures and 414 (81%) of 511 non-pod laundry detergent exposures. A significant difference in pod versus non-pod laundry detergent exposure was noted between age groups (overall chi-square p<0.001), with those aged 11–20 years and >20 years being significantly less likely to be exposed to laundry detergent pods compared with children aged ≤5 years (p<0.001) (Table 1).

Given the difference in age groups among the pod-exposed and non-pod–exposed groups, to account for confounding by age, subsequent analyses of medical outcomes and specific clinical signs and symptoms focused on children aged ≤5 years. Among pod-exposed persons, a minor, moderate, or major medical outcome was noted for 364 (80%) of persons, and no effect was noted for 90 (20%) persons. Among non-pod laundry detergent exposed persons, 261 (63%) had a minor, moderate, or major medical outcome, while 153 (37%) were noted to have no effect. Compared with non-pod laundry detergent exposed persons, pod-exposed persons were significantly more likely to have a minor, moderate, or major medical outcome compared with no effect (p<0.001). No deaths were reported among pod-exposed or non-pod–exposed persons.

TABLE 1. Reported age categories among persons exposed to laundry detergent in pods or other (non-pod) packaging methods — United States, May–June 2012

Age group (yrs)	Pods (n = 481)		Non-pods (n = 511)		Chi-square p-value
	No.	(%)	No.	(%)	
0–5	454	(94)	414	(81)	Referent
6–10	17	(4)	17	(3)	>0.05*
11–20	4	(1)	25	(5)	<0.001*
>20	6	(1)	55	(11)	<0.001*

* p-values for pairwise comparisons were adjusted using the step-down Bonferroni-Holm correction.

The most frequently reported signs and symptoms of laundry detergent exposure (excluding the symptom category labeled "other") included vomiting (pod-exposed: 251, 55%; non-pod–exposed: 139, 34%), coughing or choking (pod-exposed: 70, 15%; non-pod–exposed: 45, 11%), eye irritation or pain (pod-exposed: 51, 11%; non-pod–exposed: 68, 16%), red eyes/conjunctivitis (pod-exposed: 38, 8%; non-pod–exposed: 36, 9%), drowsiness or lethargy (pod-exposed: 34, 7%; non-pod–exposed: nine, 2%), and nausea (pod-exposed: 26, 6%; non-pod–exposed: 18, 4%). Only vomiting (p<0.001), drowsiness (p<0.001), and coughing or choking (p=0.048) were significantly more common with reported exposures to laundry detergent pods when compared with reported exposures to non-pod laundry detergents. Eye irritation or pain was significantly more common in non-pod laundry detergent exposures (p=0.026). No significant association was found for red eyes/conjunctivitis or nausea in the comparison between pod and non-pod laundry detergent exposures (p>0.05) (Table 2).

TABLE 2. Reported clinical characteristics among children aged ≤5 years exposed to laundry detergent in pods or other (non-pod) packaging methods — United States, May–June 2012

Clinical characteristics	Pods (n = 454)		Non-pods (n = 414)		p-value
	No.	(%)	No.	(%)	
Vomiting	251	(55)	139	(34)	<0.001
Coughing/choking	70	(15)	45	(11)	0.048
Eye irritation/pain	51	(11)	68	(16)	0.026
Red eyes/ conjunctivitis	38	(8)	36	(9)	>0.05
Drowsiness/lethargy	34	(7)	9	(2)	<0.001
Nausea	26	(6)	18	(4)	>0.05
No effects	90	(20)	153	(37)	<0.001

Reported by

Michael C. Beuhler, MD, Carolinas Poison Center, Charlotte, North Carolina. Fred M. Henretig, MD, Payal Gala, MD, Peter Meaney, MD, Heather Wolfe, MD, Poison Control Center at the Children's Hospital of Philadelphia, Pennsylvania. Lauren Lewis, MD, Joshua Schier, MD, Royal Law, MPH, Mohan Punja, MD, Stephanie Kieszak, MPH, Div of Environmental Hazards and Health Effects, National Center for Environmental Health; Satish K. Pillai, MD, EIS Officer, CDC. ***Corresponding contributor:*** *Satish K. Pillai, vig8@cdc.gov, 770-488-3411.*

Editorial Note

In 2010, according to NPDS data, 180,493 exposures to household cleaning products were reported in the United States. Laundry detergents, irrespective of delivery form, accounted for 8,685 (4.8%) of these exposures (*5*). In 2000, NPDS data indicated that laundry detergents accounted for 5.7% of the exposures to household cleaners, suggesting no substantial change has occurred in the last 10 years based on poison center data (*6*). An analysis of National Electronic Injury Surveillance System data from 1990–2006 found that the total number of emergency department visits for children exposed to household cleaning products dropped by 46%. Visits for all types of detergent exposures, which included laundry detergents, accounted for 7.2% of these emergency department visits for the period 1990–2006, and similarly declined during the 17-year period (*7*). These data do not suggest that laundry detergent exposures, as a whole, have increased in the United States; they might be decreasing.

Laundry detergent pods, a specific type of laundry detergent product, were introduced in the U.S. market in 2010. Since the beginning of 2012, multiple manufacturers have begun selling additional laundry detergent pod products in the United States (*2–4*). In Europe, laundry detergent pods (also known as capsules, liquitabs, or sachets) were introduced a decade ago. Although direct comparisons between poison center data from different countries might not be possible, the experiences from Europe can provide some additional context. Exposures to laundry detergent pods represented the highest percentage of household cleaning product exposure in a recent national poison center study from the United Kingdom (*8*). Among these laundry detergent pod exposures, 96% occurred in children aged ≤5 years. Ingestion was the route of exposure in 80% of the children in this age group; reported signs and symptoms included nausea and vomiting, coughing, drowsiness, and rash (*8*). A study of laundry detergent pod exposures conducted during 2010–2011 by the poison control center in Milan, Italy, found that persons exposed to liquid laundry capsules were more likely to be symptomatic (76%) compared with those exposed to traditional laundry detergent products (27%) (*1*).

What is already known on this topic?

Since 2010, laundry detergent pods have become a growing component of the U.S. laundry detergent market, and have been available in other countries. Based on data from other countries, exposures to laundry detergent pods more often occur among children, and exposure to laundry detergent from pods appears to be associated with adverse health effects more often than does non-pod laundry detergent exposure.

What is added by this report?

Exposure to laundry detergent in pods, especially among children aged ≤5 years, is an emerging public health hazard in the United States. Ingestion appears to be a more common route of exposure for laundry detergent pods compared with non-pod laundry detergents. Among children aged ≤5 years, clinical symptoms, including vomiting, drowsiness, and coughing, might occur more often in pod-exposed persons than among those with non-pod laundry detergent exposures.

What are the implications for public health practice?

To children, laundry detergent pods might look like candy. As with other household cleaners, these products should be kept out of reach and out of sight of children. Laundry detergent pod exposures might be associated with increased frequency and severity of adverse health effects when compared with non-pod exposures.

As found in Europe, this initial analysis of NPDS data suggests that laundry detergent pod exposures in the United States have occurred more frequently among children aged ≤5 years. In this age group, pod-related laundry detergent exposures are more likely to occur by ingestion and to be associated with clinical signs and symptoms than non-pod–related exposures. Children might be attracted to the pods because their colorful appearance and size are similar to candy (*1,4,9*). It remains unclear whether the significant adverse health effects observed with laundry detergent pod exposures relate to unique ingredients, differences in pH or other chemical properties (e.g., concentration), or the delivery mechanism.

Recently, the largest manufacturer of laundry detergent pods in the United States added a double-latch lid safety feature to the container in which its pods are sold (*10*). The company also is collaborating with poison centers to collect data and identify risk factors and health outcomes associated with laundry detergent pod exposure (J Colvin, Drug and Poison Information Center, Cincinnati Children's Hospital Medical Center, personal communication, 2012).

The findings in this report are subject to at least five limitations. First, NPDS relies on data voluntarily reported to poison centers by health-care providers. Exposures not reported to poison centers were not captured or analyzed in this dataset.

Second, health-care providers and parents might be more likely to contact poison centers for new products with which they are unfamiliar, such as laundry detergent pods. Third, NPDS data consist of a variety of different codes used to describe the features (e.g., product type, clinical effects, and outcome) of the exposure. Although, poison center staff members across the country are trained in uniform coding techniques and undergo continuous training and review of documentation, unintentional coding errors might have occurred, which could have affected the results. Fourth, this report excluded exposures that were not followed by poison centers beyond the initial consultation. This can occur when poison centers are unable to obtain additional information regarding outcome of the case or if the patient leaves against medical advice. Finally, information regarding how often households with children aged ≤5 years used laundry pods versus non-pod laundry detergent was not available, which might limit the ability to extrapolate the results to the population at large.

Clinicians should be aware that all household cleaning products and detergents have the potential to cause illness, but that laundry detergent pod exposures might represent an emerging public health concern because laundry pod exposures had an increased frequency of adverse signs, symptoms, and health outcomes versus non-pod laundry detergent exposures in a vulnerable population. Parents and caregivers should be particularly aware that young children might be drawn to laundry detergent pods because of their candy-like appearance, and that exposure to laundry detergent from pods has been associated with more severe adverse health effects. Parents need to ensure they can prevent children from gaining access to household cleaning products, particularly laundry detergent pods. Clinicians and caregivers are encouraged to report laundry detergent exposures and cases of associated illness to their local poison center by calling 1-800-222-1222.

Acknowledgments

Alvin C. Bronstein, American Association of Poison Control Centers. Mary Ann McEachern, Kristi Stout, Carolinas Poison Center, Charlotte, North Carolina. Jonathan Colvin, Drug and Poison Information Center, Cincinnati Children's Hospital Medical Center, Ohio.

References

1. Celentano A, Sesana F, Settimi L, et al. Accidental exposures to liquid detergent capsules [Abstract 300]. 2012 International Congress of the European Association of Poisons Centres and Clinical Toxicologists; May 25–June 1, 2012; London, UK. Clin Toxicol 2012;50:353.
2. Kaciewicz R. Tide pods are not a new idea. Examiner.com. March 5, 2012. Available at http://www.examiner.com/article/tide-pods-are-not-a-new-idea. Accessed October 10, 2012.
3. McDonald RA. P&G 2012 annual report letter. Cincinnati, OH: Procter & Gamble Company; 2012. Available at http://annualreport.pg.com/annualreport2012/files/PG_2012_AnnualReport_letter.pdf. Accessed October 12, 2012.
4. O'Conner A. New detergent pods pose poisoning risk. New York Times. June 27, 2012. Available at http://well.blogs.nytimes.com/2012/06/27/new-detergent-pods-pose-poisoning-risk. Accessed October 10, 2012.
5. Bronstein AC, Spyker DA, Cantilena LR, Green JL, Rumack BH, Dart RC. 2010 annual report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 28th annual report. Clin Toxicol 2011;49:910–41.
6. Litovitz TL, Klein-Schwartz W, White S, et al. 2000 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 2001;19:337–95.
7. McKenzie L, Ahir N, Stolz U, Nelson NG. Household cleaning product-related injuries treated in US emergency departments in 1990–2006. Pediatrics 2010;126:509.
8. Williams H, Moyns E, Bateman DN, Thomas SH, Thompson JP, Vale JA. Hazard of household cleaning products: a study undertaken by the UK National Poisons Information Service. Clin Toxicol 2012;50:770–5.
9. Davis L. Laundry detergent pods poisoning children. ABC News. May 23, 2012. Available at http://abcnews.go.com/blogs/headlines/2012/05/laundry-detergent-pods-poisoning-children. Accessed October 9, 2012.
10. Wohl J. Update 2–Tide to change pods lid over child safety concerns. Reuters. May 25, 2012. Available at http://www.reuters.com/article/2012/05/25/procter-tide-idusl1e8gp9pi20120525. Accessed October 9, 2012.

Years of Potential Life Lost from Unintentional Injuries Among Persons Aged 0–19 Years — United States, 2000–2009

Unintentional injuries are the leading cause of deaths among persons aged 0–19 years in the United States. Quantifying years of potential life lost (YPLL) highlights childhood causes of mortality and provides a simple method to identify important causes of premature death and specific groups in need of intervention (*1*). Deaths attributed to unintentional injuries among persons aged 0–19 years number approximately 12,000 each year in the United States; another 9 million young persons are treated for nonfatal injuries in emergency departments (*2*). To estimate the burden of premature deaths attributed to unintentional injuries among persons aged 0–19 years, CDC calculated state-specific YPLL by sex, age, race, and injury mechanism based on data from the National Vital Statistics System multiple cause of death files for the period 2000–2009. This report summarizes the results of that analysis, which found that an average of 890 years of potential life were lost each year because of unintentional injuries for every 100,000 persons aged 0–19 years. The burden of unintentional injuries was higher among males compared with females, among persons aged <1 year and those aged 15–19 years compared with the other 5-year age groups, among American Indian/Alaska Native (AI/AN) compared with those of any other race/ethnicity, and among those residing in two clusters of adjacent states (the South Central states of Arkansas, Louisiana, Mississippi, and Alabama, and the Mountain states of Montana, Wyoming, and South Dakota) compared with any other region. These estimates can be used to target injury prevention strategies to young persons most at risk.

CDC analyzed data from the National Vital Statistics System multiple cause of death files for the period 2000–2009 (*3*), the most recent data available. Unintentional injury deaths were defined as those with the underlying cause of death classified by the *International Classification of Diseases, 10th Revision* (ICD-10) as drowning (W65–W74), falls (W00–W19), fires or burns (X00–X19), transport-related injuries (V01–V99), poisoning (X40–X49), and suffocation (W75–W84) (*4*), or falling in a category of other injury deaths comprising all other mechanisms of unintentional injuries: cut or pierced, unintentional firearm, machinery, natural and environmental, overexertion, struck by or against an object, and other specified and unspecified.

YPLL was calculated for each decedent by subtracting the age at death in years from 75. Annualized YPLL during 2000–2009 for each demographic group, injury mechanism, and geographic area was calculated by summing its associated YPLL for the 10 years and dividing by 10.

The annualized YPLL per 100,000 for each demographic group, injury mechanism, or geographic area was calculated by dividing its YPLL for 2000–2009 by the sum of the mid-year annual population estimates of the relevant population for 2000–2009. Population estimates used for YPLL rate calculations were bridged-race population figures (*5*). Annualized YPLL and YPLL rates were calculated at the national and state level; by sex, age, and race; and for the injury mechanisms of drowning, falls, fires or burns, motor vehicle traffic–related, other transportation, poisoning, suffocation, and "all other" mechanisms.

National Level YPLL

Unintentional childhood injuries accounted for 115,613 deaths during 2000–2009. Males contributed almost twice the number of YPLL as females, with an annual rate of 1,137 per 100,000, compared with 630 (Table 1). Persons aged 15–19 years contributed 51% of the total YPLL from unintentional injuries. The YPLL rate per 100,000 by 5-year age group ranged from 367 in persons aged 5–9 years to 1,768 in those aged 15–19 years, but the highest rate in any single-year age group was in persons aged <1 year with 1,977 YPLL per 100,000 each year, of which 71% were attributed to suffocation injuries.

YPLL rates differed by race/ethnicity. The rate was highest among AI/AN males at 1,790 per 100,000, followed by black males at 1,194, and white males at 1,147 (Table 1). Among females, AI/AN females had a YPLL rate nearly twice that of both white and black females and three times that of Asian/Pacific Islander females, who lost an average of 320 years of potential life per 100,000 each year.

Injuries attributed to motor vehicle traffic crashes contributed the bulk (55%) of all YPLL during the period analyzed. The YPLL per 100,000 for motor vehicle traffic–related injuries was 491, five times higher than that for suffocation, the second leading YPLL contributor at 95. Drowning was third, with a YPLL rate of 91 per 100,000. Motor vehicle traffic–related pedestrian injuries contributed more to YPLL (52 per 100,000) than injuries from fire or burns (45), poisoning (52), and falls (14).

State Level YPLL

Thirty states had YPLL rates greater than or equal to the national YPLL rate of 890 per 100,000 persons aged 0–19 years. The YPLL per 100,000 varied among the states, from 416 in Massachusetts to 1,770 in Mississippi. States with the highest YPLL rates were Mississippi (1,770), Alaska (1,592),

TABLE 1. Estimated annual number of deaths and annualized years of potential life lost (YPLL) per 100,000 persons aged 0–19 years, by sex, age group, race, and mechanism of unintentional injury — United States, 2000–2009

Characteristic	Annualized no. of deaths	YPLL per year per 100,000
Sex		
Male	7,632	1,137
Female	3,930	630
Age group (yrs)		
<1	1,081	1,977
1–4	1,634	739
5–9	1,076	367
10–14	1,347	408
15–19	6,423	1,768
Sex and Race		
Male		
White	6,050	1,147
Black	1,246	1,194
American Indian/Alaska Native	162	1,790
Asian/Pacific Islander	173	566
Female		
White	3,077	630
Black	668	683
American Indian/Alaska Native	93	1,080
Asian/Pacific Islander	92	320
Injury mechanism		
Drowning	1,105	91
Falls	180	14
Fire or burns	541	45
Motor vehicle traffic–related*	6,647	491
Occupant	3,250	239
Pedestrian	670	52
Pedal cyclist	141	11
Other	222	16
Unspecified	2,364	174
Transportation-related, all other	636	50
Poisoning	722	52
Suffocation	1,067	95
Other injuries†	664	52
Total	**11,561**	**890**

* Categorized by injured person and includes motor vehicle traffic occupant, motorcyclist, pedal cyclist, pedestrian, occupant or rider of other modes of transport in a motor vehicle traffic crash, and motor vehicle traffic crashes for which the injured person is unspecified.

† Cut or pierced, unintentional firearm-related injury, machinery-related injury, injury via natural and environmental cause, overexertion, struck by or against an object, and other specified and unspecified.

South Dakota (1,573), and Wyoming (1,543). States with the lowest YPLL rates were Massachusetts (416), New Jersey (470), New York (484), and Connecticut (521) (Table 2 and Figure).

Reported by

Nagesh N. Borse, PhD, Div of Global HIV and AIDS, Center for Global Health; Rose A. Rudd, MSPH, Ann M. Dellinger, David A. Sleet, PhD, Div of Unintentional Injury Prevention, National Center for Injury Prevention and Control, CDC. ***Corresponding contributor:*** *Nagesh N. Borse, nborse@cdc.gov, 404-639-8339.*

What is already known on this topic?

Nationally, deaths attributed to unintentional injuries among persons aged 0–19 years number approximately 12,000 each year in the United States; another 9 million young persons are treated for nonfatal injuries in emergency departments. Quantifying years of potential life lost (YPLL) highlights causes of premature mortality and provides a simple method to identify important causes of early death and specific groups in need of intervention. Although recent declines have been observed in the unintentional injury–related crude mortality rate per 100,000 persons aged 0–19 years (from 15.46 in 2000 to 10.96 in 2009), unintentional injuries remain the number one killer among this population in the United States.

What is added by this report?

This report provides new information on YPLL from unintentional injuries among persons aged 0–19 years, by state, which can be used for prioritization and identifying subgroups of the population most at risk. The burden of unintentional injuries was higher among males, persons aged <1 year and those aged 15–19 years, American Indian/Alaska Native children, and those residing in two clusters of adjacent states (the South Central states of Arkansas, Louisiana, Mississippi, and Alabama, and the Mountain states of Montana, Wyoming, and South Dakota) compared with any other region.

What are the implications for public health practice?

Federal, state, and local health departments can use these estimates to help guide activities toward meeting *Healthy People 2020* objectives for children and adolescents and to help identify and target injury prevention strategies to specific subgroups of this population. In 2012, CDC launched the National Action Plan on Childhood Injury Prevention (available online at http://www.cdc.gov/safechild/nap) to help reduce this major killer of children and adolescents.

Editorial Note

This report provides new information on YPLL attributed to unintentional injuries among persons aged 0–19 years, by state, which can be used to prioritize and identify subgroups of the population most at risk. Although recent declines have been observed in the unintentional injury–related crude mortality rate per 100,000 persons aged 0–19 years (from 15.46 in 2000 to 10.96 in 2009), unintentional injuries remain the number one killer among this population in the United States. The burden of unintentional injuries was highest among males, persons aged <1 year and those aged 15–19 years, and AI/ANs. Injuries related to motor vehicle traffic, drowning, and suffocation contributed most to YPLL.

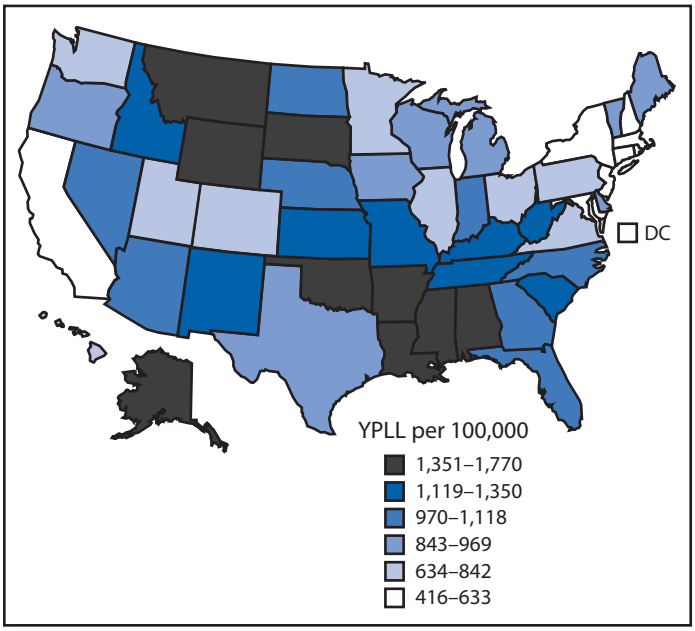
By taking into account the decedent's age at death, YPLL measures premature mortality. Unlike other mortality indicators, YPLL is a more relevant measure for children because it incorporates both the number of those who died and the

TABLE 2. Total number of deaths, annualized years of potential life lost (YPLL) attributed to unintentional injuries per 100,000 persons aged 0–19 years, by state and sex (in descending order of overall YPLL rate) — United States, 2000–2009

State	Total no. of deaths			YPLL per year per 100,000				
	Male	Female	Total	Male	Female	Non-MVT*	MVT†	Total
U.S. overall	**76,315**	**39,298**	**115,613**	**1,137**	**630**	**399**	**491**	**890**
States with YPLL rate > national rate								
Mississippi	1,541	837	**2,378**	2,228	1,292	751	1,019	**1,770**
Alaska	336	177	**513**	1,997	1,159	1,072	520	**1,592**
South Dakota	353	196	**549**	1,963	1,162	691	882	**1,573**
Wyoming	222	121	**343**	1,920	1,142	680	863	**1,543**
Arkansas	1,214	664	**1,878**	1,928	1,128	619	919	**1,538**
Louisiana	1,961	1,000	**2,961**	1,878	1,023	736	723	**1,459**
Montana	380	201	**581**	1,841	1,049	552	905	**1,457**
Alabama	1,850	977	**2,827**	1,812	1,019	598	826	**1,424**
Oklahoma	1,418	729	**2,147**	1,730	958	598	757	**1,355**
South Carolina	1,664	819	**2,483**	1,750	931	569	781	**1,350**
Kentucky	1,546	789	**2,335**	1,697	938	609	718	**1,327**
Missouri	2,065	1,180	**3,245**	1,599	982	566	732	**1,298**
Tennessee	2,114	1,120	**3,234**	1,619	922	551	728	**1,279**
West Virginia	597	296	**893**	1,634	860	476	781	**1,257**
New Mexico	707	376	**1,083**	1,523	869	455	747	**1,202**
Idaho	507	291	**798**	1,433	888	509	658	**1,167**
Kansas	902	500	**1,402**	1,412	841	450	684	**1,134**
Florida	5,216	2,508	**7,724**	1,458	761	551	567	**1,118**
North Dakota	185	111	**296**	1,323	835	368	718	**1,086**
North Carolina	2,652	1,355	**4,007**	1,352	747	415	642	**1,057**
Indiana	1,866	1,050	**2,916**	1,298	790	521	529	**1,050**
Arizona	1,861	978	**2,839**	1,318	747	466	574	**1,040**
Georgia	2,788	1,434	**4,222**	1,297	720	466	550	**1,016**
Nebraska	489	320	**809**	1,186	828	353	658	**1,011**
Nevada	669	370	**1,039**	1,237	740	500	495	**995**
Texas	7,056	3,739	**10,795**	1,226	700	406	563	**969**
Wisconsin	1,424	743	**2,167**	1,160	651	415	496	**911**
Iowa	743	394	**1,137**	1,139	646	347	552	**899**
Delaware	206	115	**321**	1,114	664	338	556	**894**
Maine	307	156	**463**	1,154	621	382	512	**894**
States with YPLL rate ≤ national rate								
Michigan	2,498	1,339	**3,837**	1,109	641	447	434	**881**
Oregon	867	470	**1,337**	1,103	646	414	466	**880**
Vermont	139	77	**216**	1,054	638	344	508	**852**
Utah	720	407	**1,127**	1,041	632	390	452	**842**
Ohio	2,690	1,388	**4,078**	1,060	588	422	407	**829**
Colorado	1,078	617	**1,695**	1,000	620	317	498	**815**
Pennsylvania	2,851	1,299	**4,150**	1,075	526	372	435	**807**
Minnesota	1,114	620	**1,734**	971	577	363	415	**778**
Virginia	1,668	822	**2,490**	1,003	529	338	433	**771**
Washington	1,399	655	**2,054**	1,003	507	372	389	**761**
Illinois	2,674	1,404	**4,078**	914	518	364	357	**721**
Hawaii	251	98	**349**	928	401	333	341	**674**
Maryland	1,024	523	**1,547**	813	445	235	398	**633**
New Hampshire	251	97	**348**	888	366	313	320	**633**
California	6,802	3,435	**10,237**	787	429	246	366	**612**
District of Columbia	79	36	**115**	759	380	288	282	**570**
Rhode Island	160	80	**240**	705	376	232	312	**544**
Connecticut	574	215	**789**	731	300	249	272	**521**
New York	2,656	1,279	**3,935**	633	328	236	248	**484**
New Jersey	1,207	550	**1,757**	626	306	231	239	**470**
Massachusetts	774	341	**1,115**	564	262	177	239	**416**

* Non–motor vehicle traffic (MVT)–related YPLL rate, which includes injury mechanisms of drowning, falls, fires or burns, other transportation, poisoning, suffocation, and "all other" mechanisms.
† MVT-related YPLL rate.

FIGURE. Annualized years of potential life lost (YPLL) attributed to unintentional injuries per 100,000 persons aged 0–19 years — United States, 2000–2009



number of years lost because of premature death. With different injury mechanisms disproportionally affecting persons of different ages (e.g., suffocation being the leading mechanism of death only in those aged <1 year), YPLL reflects this variation. Injury researchers can use state YPLL estimates to develop and evaluate injury prevention programs that reduce YPLL. In addition, federal, state, and local health departments can use these estimates to help guide activities toward meeting *Healthy People 2020* objectives for children and adolescents and to help identify and target injury prevention strategies.

The findings of this report are subject to at least one limitation. The analysis was based on death certificate data indicating that an unintentional injury was the underlying cause of death; previous studies have shown that some injury-related deaths are underestimated or misclassified by mechanism on death certificates (*6*).

Decreasing the burden of injuries is a central challenge for public health in the United States. Most injuries are preventable, and many effective strategies are available to reduce child injury and mortality (*7,8*). Measuring the burden of injuries with YPLL gives greater weight to the injuries that disproportionately affect younger persons and permits comparison of the premature injury death by sex, age group, race, and state. YPLL will help prioritize implementation of known and effective interventions, such as using safety belts, wearing bicycle and motorcycle helmets, reducing drinking and driving, strengthening graduated driver licensing laws, using safety equipment during sports participation, requiring four-sided residential pool fencing, and encouraging safe sleep practices for infants. Implementing these strategies widely can reduce the burden of injuries to all persons aged 0–19 years (*2,7–9*). In 2009, in an effort to raise parent's awareness about the leading causes of child injury in the United States and how they can be prevented, CDC published its childhood injury report on patterns of unintentional injuries among persons aged 0–19 years (*2*), launched a Protect the Ones You Love initiative, and made available a number of resources that can be accessed online at http://www.cdc.gov/safechild. In 2012, CDC launched the National Action Plan on Childhood Injury Prevention (available online at http://www.cdc.gov/safechild/nap) to mobilize action around a set of recommendations for research, communications, policy, health services, education and training, and data and surveillance that can save children's lives (*10*).

References

1. CDC. Premature mortality in the United States: public health issues in the use of years of potential life lost. MMWR 1986;35(2 Suppl):1S–11S.
2. Borse NN, Gilchrist J, Dellinger AM, et al. Unintentional childhood injuries in the United States: key findings from the CDC childhood injury report. J Safety Res 2009;40:71–4.
3. Xu JQ, Kochanek KD, Murphy SL, et al. Deaths: final data for 2007. Natl Vital Stat Rep 2010;58(19).
4. World Health Organization. Manual of the international statistical classification of disease, injuries, and causes of death, 10th revision. Geneva, Switzerland: World Health Organization; 1999.
5. CDC. Postcensal estimates of the resident population of the United States for July 1, 2000–July 1, 2006, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2006). Available at http://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2006. Accessed October 9, 2012.
6. Nagaraja J, Menkedick J, Phelan KJ, et al. Deaths from residential injuries in US children and adolescents, 1985–1997. Pediatrics 2005;116:454–61.
7. Peden M, Oyegbite K, Ozanne-Smith J, et al, eds. World report on child injury prevention. Geneva, Switzerland: World Health Organization; 2008. Available at http://www.who.int/violence_injury_prevention/child/injury/world_report/report/en/index.html. Accessed October 9, 2012.
8. Doll LS, Bonzo SE, Mercy JA, et al, eds. Handbook of injury and violence prevention. New York, NY: Springer Science Business Media, LLC; 2007.
9. Sleet DA, Ballesteros MF, Borse NN. A review of unintentional injuries in adolescents. Annu Rev Public Health 2010;31:195–212.
10. CDC. National action plan for child injury prevention. Atlanta, GA: US Department of Health and Human Services, CDC, National Center for Injury Prevention and Control; 2012. Available at http://www.cdc.gov/safechild/nap. Accessed October 9, 2012.

Mycoplasma pneumoniae Respiratory Illness — Two Rural Counties, West Virginia, 2011

On October 28, 2011, the West Virginia Department of Health and Human Resources notified CDC of an increase in pneumonia cases among school-aged children in two rural counties. *Mycoplasma pneumoniae* was the suspected cause, based on epidemiology, clinical presentation, and testing of specimens sent to CDC. Three of six nasopharyngeal swabs were positive for *M. pneumoniae* in testing by quantitative real-time polymerase chain reaction (qPCR). The West Virginia Department of Health and Human Resources and CDC conducted an outbreak investigation to confirm the etiology of the outbreak, establish active case surveillance, and provide recommendations for treatment and containment. The investigation confirmed *M. pneumoniae* as the cause and identified 125 cases, including two caused by macrolide-resistant isolates. The outbreak was contained with public health interventions that included communicating to the public the importance of respiratory hygiene, providing hand sanitizer in schools, and informing health-care providers about macrolide resistance; antibiotic prophylaxis was not used. Despite the large number of cases and macrolide-resistant strains, no severe extrapulmonary manifestations (e.g., erythema multiforme) were reported.

M. pneumoniae, transmitted through respiratory droplets, is a common cause of acute upper and lower respiratory infections in children and young adults. An estimated 2 million infections are caused by *M. pneumoniae* each year in the United States; radiologically confirmed pneumonia is noted in 3%–10% of cases. In rare cases, extrapulmonary manifestations occur (*1*). Pneumonia caused by *M. pneumoniae* has an incubation period of 3 weeks; outbreaks can be prolonged (*1*–*3*). For treatment, macrolides and tetracyclines are first-line antibiotics. In this outbreak, possible cases were defined as *Mycoplasma*-like illness, with cough lasting ≥3 days and fever ≥100.0°F (≥37.8°C), with symptom onset on or after August 26, 2011 (the start of the school year) in a resident of Gilmer County or Calhoun County. Probable cases were defined as *Mycoplasma*-like illness with radiologically confirmed pneumonia (a positive chest radiograph reading by a local medical provider). Confirmed cases were defined as *Mycoplasma*-like illness with *M. pneumoniae* detected in nasopharyngeal or oropharyngeal swabs by qPCR, with or without radiologically confirmed pneumonia.

Beginning November 16, 2011, active surveillance was conducted in all elementary, middle, and high schools and all primary-care clinics and emergency departments in the two counties. In clinics, providers obtained nasopharyngeal and oropharyngeal swabs from patients with *Mycoplasma*-like illness and referred them to local health departments for questionnaire administration. In schools, officials reported acutely ill students to local health departments for screening and questionnaire administration and referred them to clinics for swab collection. In addtion, to identify cases with symptom onset before surveillance began, medical records from health-care providers were searched for possible pneumonia cases, which were followed up by telephone.

Swabs were placed in viral or universal transport medium and sent to CDC for culture and *M. pneumoniae* testing using qPCR. Mycoplasma isolates and specimens with sufficient *M. pneumoniae* nucleic acid were tested for macrolide resistance by qPCR, followed by high-resolution melt analysis for mutations in the 23S rRNA associated with macrolide resistance (*4*). Each specimen also was tested for 29 additional respiratory pathogens with qPCR technology used for research (*5*). Patients with confirmed *M. pneumoniae* were invited for follow-up oropharyngeal swab collection at least 5 days after completion of antibiotic therapy (or initial specimen collection, if no antibiotics were taken) to assess for persistence of the organism and development of antibiotic resistance. Active surveillance was discontinued December 8 at clinics and December 22 at schools. The last case was identified on December 14, 2011.

During August 29–December 14, a total of 125 cases were identified, including 23 confirmed, 39 probable, and 63 possible cases (Table 1). Of the 125 cases, 43 (34%) had specimens tested for *M. pneumoniae* by qPCR, and 23 (53%) of those tested were positive. Sixty-nine (55%) of 125 cases had chest imaging performed, and 48 chest radiographs (70%) showed infiltrates consistent with pneumonia. The median age of patients was 10.2 years (range: 0–65.3 years); 68% lived in Gilmer County. The earliest symptom onset date was August 29, although most patients became ill from late October to mid-November (Figure). In addition to fever and cough, common symptoms included sore throat (57%), chills (55%), and muscle aches (54%) (Table 1). No extrapulmonary manifestations or fatalities occurred. Seven (6%) patients were hospitalized; none of the seven required intensive care. Among patients, 92 (79%) were treated with macrolide antibiotics. Eighty-three patients (70%) attended or worked at schools. Among those who did not, 55% had household contacts attending or working at schools (Table 1). All eight schools in the two counties were affected. The mean illness attack rate among students in the four schools in Gilmer County was

TABLE 1. Number and percentage of patients with *Mycoplasma pneumoniae* respiratory illness, by case type and selected characteristics — Gilmer and Calhoun counties, West Virginia, 2011

	Case type							
	Laboratory-confirmed (n = 23[†])		Radiologically confirmed pneumonia (n = 39[§])		*Mycoplasma*-like illness (n = 63[¶])		Total (N = 125)	
Characteristic*	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Age groups (yrs)								
<12	12	(52)	22	(56)	31	(49)	**65**	**(52)**
12–17	6	(26)	12	(31)	8	(13)	**26**	**(21)**
18–24	1	(4)	0	—	6	(10)	**7**	**(6)**
≥25	4	(17)	5	(13)	18	(29)	**27**	**(22)**
Sex								
Male	14	(61)	18	(46)	23	(37)	**55**	**(44)**
Female	9	(39)	21	(54)	40	(63)	**70**	**(56)**
County								
Gilmer	15	(65)	31	(80)	39	(31)	**85**	**(68)**
Calhoun	8	(35)	8	(21)	24	(38)	**40**	**(32)**
Underlying medical condition								
Asthma	5	(24)	8	(21)	16	(29)	**29**	**(25)**
Symptom**								
Median temperature in °F (range)	101	(100–105)	102	(100–105)	102	(100–104)	**102**	**(100–105)**
Sore throat	8	(38)	21	(60)	37	(63)	**66**	**(57)**
Chills	7	(37)	25	(71)	32	(52)	**64**	**(55)**
Muscle aches	10	(56)	19	(61)	29	(50)	**58**	**(54)**
Runny nose	12	(57)	16	(46)	30	(49)	**58**	**(50)**
Wheezing	7	(33)	18	(51)	24	(55)	**59**	**(50)**
Productive cough	7	(33)	19	(56)	30	(50)	**56**	**(49)**
Hospitalized	2	(9)	3	(8)	2	(3)	**7**	**(6)**
Attends/Works at school††								
All ages	13	(59)	32	(84)	38	(64)	**83**	**(70)**
Among those not attending/working at school								
Household school contact reported§§	6	(86)	1	(20)	10	(53)	**17**	**(55)**
No school contact reported	1	(14)	4	(80)	9	(53)	**14**	**(45)**

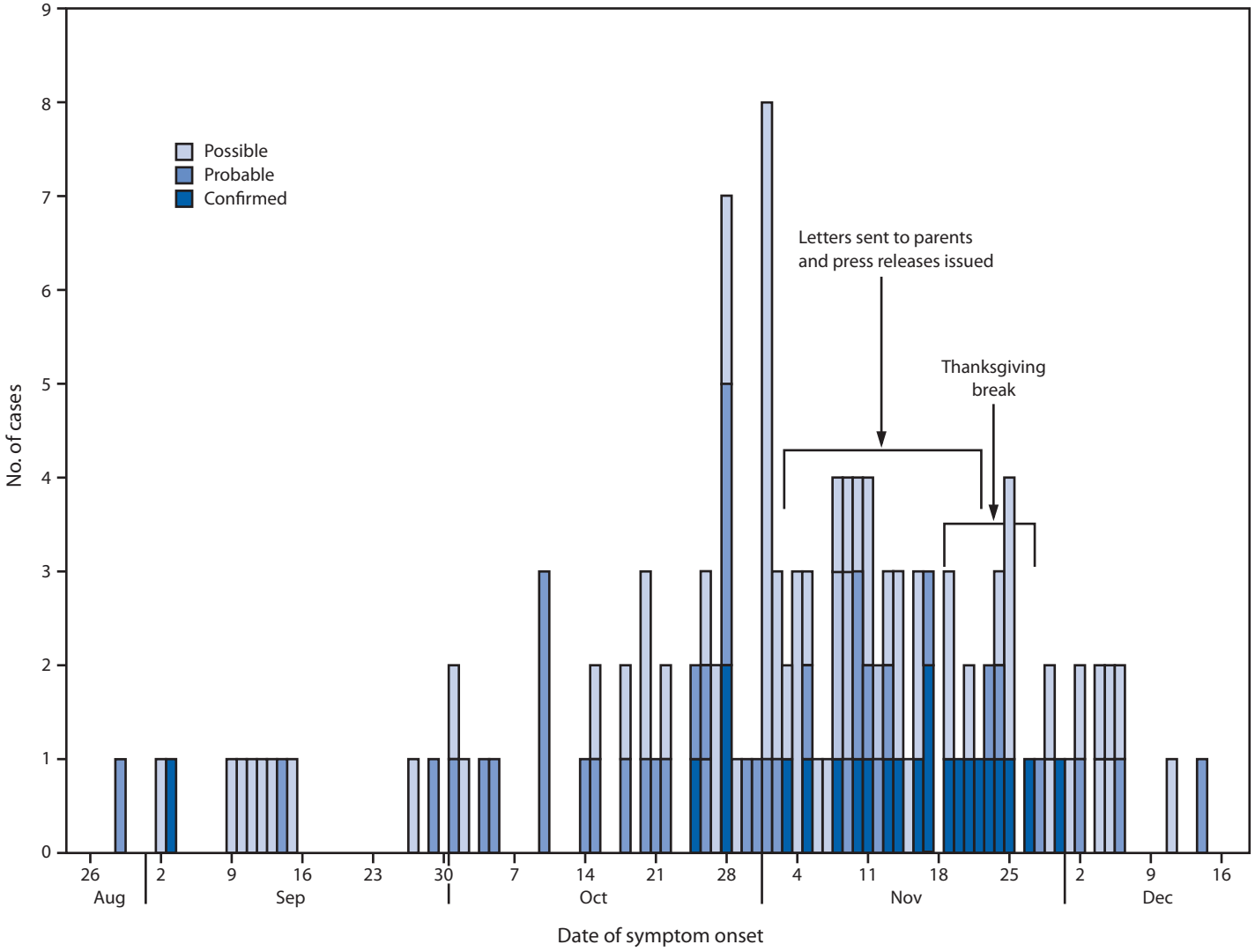
* Denominators for individual questions vary because of missing data.
† Confirmed cases.
§ Probable cases.
¶ Possible cases.
** Fever ≥100°F (≥37.8°C) and cough for ≥3 days was required to meet all case definitions.
†† Gilmer County has four elementary schools and one middle/high school. Calhoun County has two elementary schools and one middle/high school.
§§ Household school contact was defined as having one or more more household members who attend or work at school.

5.2% (range: 3.5%–8.0%), and the mean attack rate among students in the three schools in Calhoun County was 3.6% (range: 1.5%–7.7%).

Other than *M. pneumoniae,* no other primary causative pathogens were detected among the 43 persons with qPCR. Eleven (47%) laboratory-confirmed cases yielded sufficient *M. pneumoniae* nucleic acid for macrolide resistance testing; two (18%) of the cases were resistant (Table 2). Follow-up specimens were collected in 10 laboratory-confirmed cases. Seven tests were negative for *M. pneumoniae*, two remained positive, and one had an indeterminate result. Among the persistently positive patients, one had never taken antibiotics; the second had a resistant strain according to the first swab, collected more than 2 months after receipt of azithromycin. Six of the seven follow-up negative results were for patients who had taken antibiotics, one of whom had an initially resistant strain; in addition to a macrolide, this patient received doxycycline before the follow-up swab. The follow-up indeterminate case occurred in a patient who had taken azithromycin.

To contain the outbreak, hand sanitizer was made widely available in schools. Letters about hand hygiene, respiratory hygiene (e.g., cough etiquette, social distancing, and staying home when ill), and *M. pneumoniae* were sent to parents in both counties in November. The Gilmer County Health Department also issued press releases regarding hand and respiratory hygiene on November 3 and 16. Prompt treatment of suspected cases was encouraged, and doxycycline was recommended for patients with persistent symptoms, given circulating resistant strains. Widespread antibiotic prophylaxis was not implemented because convincing evidence of antibiotic effectiveness during outbreaks has not been shown; schools in the two counties were closed November 19–27 for the usual Thanksgiving break. The number of new cases decreased in early December, and active surveillance was discontinued

FIGURE. Confirmed, probable, and possible cases* of *Mycoplasma pneumoniae* respiratory illness, by date of symptom onset — Gilmer and Calhoun counties, West Virginia, 2011



* Possible cases were defined as *Mycoplasma*-like illness with cough lasting ≥3 days and fever of ≥100.0°F (37.8°C), with symptom onset on or after August 26, 2011. Probable cases were *Mycoplasma*-like illness with radiologically confirmed pneumonia. Confirmed cases were *Mycoplasma*-like illness with *M. pneumoniae* detected by real-time polymerase chain reaction, with or without radiologically confirmed pneumonia.

by health-care providers on December 8 and at schools on December 22, before the winter break.

Reported by

Leann Newell, Minnie Hamilton Health System. Patrick Burke, MPH, Jessica Woods, Mid-Ohio Valley Health Dept. Robert Posey, Lewis County Health Dept. Brenda Smith, Gilmer County Health Dept. Sherif M. Ibrahim, MD, Danae Bixler, MD, Loretta Haddy, PhD, Thein Shwe, MPH, Rachel Radcliffe, DVM, West Virginia Bur for Public Health. Al Benitez, Kathy Thurman, MS, Maureen H. Diaz, PhD, Bernard J. Wolff, Agnes Warner, Jonas M. Winchell, PhD, Laura Conklin, MD, Div of Bacterial Diseases, National Center For Immunization and Respiratory Diseases; Kamil Barbour, PhD, Katherine E. Fleming-Dutra, MD, Laura C. Steinhardt, PhD, EIS officers, CDC. ***Corresponding contributor:*** *Laura C. Steinhardt, lsteinhardt@cdc.gov, 404-718-4794.*

Editorial Note

Because *M. pneumoniae* is not part of normal human pharyngeal flora, its detection in nasopharyngeal or oropharyngeal specimens in persons with compatible clinical illness indicates that *M. pneumoniae* is the etiologic agent (*1*). Estimates indicate that up to 40% of community-acquired pneumonia is caused by *M. pneumoniae* (*1*). In this investigation, the high percentage of *M. pneumoniae*–positive specimens among all cases (53%) and among pneumonia cases (70%), and the lack

TABLE 2. Results of resistance testing* among 11 persons with laboratory-confirmed *Mycoplasma pneumoniae* respiratory illness, by county and date of symptom onset, initial specimen collection, and first antibiotic — Gilmer and Calhoun counties, West Virginia, 2011

County	Date of symptom onset	Date of initial specimen collection	Date of first antibiotic	First class of antibiotics administered†	Test result
Calhoun	September 3, 2011	November 21	September 6	Macrolide	Resistant
Gilmer	November 5, 2011	November 17	November 17	Macrolide, tetracycline	Resistant
Gilmer	October 25, 2011	October 25	November 3	Macrolide	Sensitive
Gilmer	October 28, 2011	October 28	November 1	Macrolide§	Sensitive
Gilmer	November 8, 2011	November 16	November 16	Macrolide¶	Sensitive
Gilmer	November 10, 2011	November 16	November 16	Macrolide	Sensitive
Gilmer	November 11, 2011	November 14	November 14	Macrolide	Sensitive
Gilmer	November 17, 2011	November 21	November 21	Macrolide	Sensitive
Gilmer	November 19, 2011	November 22	November 22	Macrolide	Sensitive
Gilmer	November 25, 2011	November 29	November 29	Macrolide	Sensitive
Gilmer	November 27, 2011	November 30	November 30	Macrolide	Sensitive

* Resistance testing by MacR assay of primary specimen and/or isolate.
† Antibiotic class defined as antibiotic class with activity against *Mycoplasma pneumoniae*: macrolide (i.e., azithromycin, erythromycin, or clarithyromycin), tetracycline (i.e., tetracycline or doxycycline), or respiratory fluoroquinolone (i.e., levofloxacin or moxifloxacin).
§ Also administered amoxicillin.
¶ Also administered ceftriaxone.

of other causative pathogens detected by qPCR strongly suggest that *M. pneumoniae* caused the outbreak of acute respiratory illness in Gilmer and Calhoun counties.

Transmission of *M. pneumoniae* in this outbreak likely occurred in schools, homes, and within the general community. Similar school-based outbreaks of *M. pneumoniae* have been described previously (*3,6*), with attack rates of pneumonia ranging from 1.8% to 6.4% (*3*). Transmission of *M. pneumoniae* outside schools also has been documented in previous outbreaks (*2,3*). In this outbreak, although 70% of patients were students or school employees, cases were not centered in one school and occurred among persons both with and without contact with students or school employees.

Two (18%) of 11 specimens tested were resistant to macrolides. Previous outbreaks in Missouri and Rhode Island have reported macrolide resistance in 8% and 27% of isolates, respectively (*3,7*). More widespread macrolide resistance has been reported in Europe and Asia. Because *M. pneumoniae* is not routinely isolated in the United States, the prevalence of macrolide resistance and its implications for clinical outcome remain unknown (*4,7*). Although *M. pneumoniae* can cause severe disease and extrapulmonary manifestations, the illnesses in this outbreak were relatively mild despite macrolide resistance.

M. pneumoniae outbreaks present challenges because data on effective control measures are lacking. Given transmission via respiratory droplets, control depends on hand and respiratory hygiene and appropriate identification and treatment of cases. Antibiotic prophylaxis has been used as an outbreak control measure in closed settings (*8,9*) and in settings with severe disease (*3*). Nonetheless, the role of prophylaxis in *M. pneumoniae* community outbreaks is not clear because of a lack of data on its effectiveness. The potential benefits of prophylaxis must be balanced with the potential for adverse health effects and induction of macrolide resistance (*3,8*).

Although this *M. pneumoniae* outbreak had a relatively mild spectrum of illness, its size and multiple transmission settings warranted aggressive public health interventions

What is already known on this topic?

Mycoplasma pneumoniae is a common cause of acute respiratory infections in children and young adults and might cause up to 40% of community-acquired pneumonia. Macrolide antibiotics are the first-line treatment for *M. pneumoniae* infections, although resistance to macrolides has been documented.

What is added by this report?

During August 29–December 14, 2011, a total of 125 cases of *Mycoplasma* respiratory illness were identified in two rural counties of West Virginia. No severe manifestations or deaths occurred. Two (18%) of 11 laboratory-confirmed cases that were tested were resistant to macrolides. Most patients (70%) attended or worked at schools. The outbreak subsided after implementation of standard public health measures, including communicating respiratory hygiene guidance to the public, providing hand sanitizers in schools, and informing health-care providers about macrolide resistance; antibiotic prophylaxis was not implemented.

What are the implications for public health practice?

Although this *M. pneumoniae* outbreak had a relatively mild spectrum of illness, its size and multiple transmission settings warranted aggressive public health interventions targeting homes, schools, and clinics. This outbreak also highlights the importance of considering macrolide resistance (for which testing is not performed routinely) during *M. pneumoniae* outbreaks to direct treatment protocols. Despite the presence of resistant strains, *Mycoplasma* transmission declined with prompt implementation of public health measures.

targeting homes, schools, and clinics. Awareness of circulating macrolide-sensitive and resistant *M. pneumoniae* strains made these measures even more crucial because macrolide prophylaxis might not have been effective. Because *M. pneumoniae* is difficult to culture and resistance testing is not available routinely, antibiotic sensitivity of the circulating strain is usually unknown. This outbreak highlights the importance of considering macrolide resistance in directing treatment protocols during *M. pneumoniae* outbreaks and demonstrates that prompt implementation of public health measures can mitigate transmission regardless of strain resistance.

References

1. Waites KB, Talkington DF. *Mycoplasma pneumoniae* and its role as a human pathogen. Clin Microbiol Rev 2004;17:697–728.
2. Foy HM. Grayston JT, Kenny GE, Alexander ER, McMahan R. Epidemiology of *Mycoplasma pneumoniae* infection in families. JAMA 1966;197:859–66.
3. Walter ND, Grant GB, Bandy U, et al, Community outbreak of *Mycoplasma pneumoniae* infection: school-based cluster of neurologic disease associated with household transmission of respiratory illness. J Infect Dis 2008;198:1365–74.
4. Wolff BJ, Thacker WL, Schwartz SB, Winchell JM. Detection of macrolide resistance in *Mycoplasma pneumoniae* by real-time PCR and high-resolution melt analysis. Antimicrob Agents Chemother 2008;52:3542–9.
5. Kodani M, Yang G, Conklin LM, et al. Application of TaqMan low-density arrays for simultaneous detection of multiple respiratory pathogens. J Clin Microbiol 2011;49:2175–82.
6. Dominguez A, Minguell S, Torres J, Serrano A, Vidal J, Salleras L. Community outbreak of acute respiratory infection by *Mycoplasma pneumoniae*. Eur J Epidemiol 1996;12:131–4.
7. Yamada M, Buller R, Bledsoe S, Storch GA. Rising rates of macrolide-resistant *Mycoplasma pneumoniae* in the central United States. Pediatr Infect Dis J 2012;31:409–11.
8. Hyde TB, Gilbert M, Schwartz SB, et al. Azithromycin prophylaxis during a hospital outbreak of *Mycoplasma pneumoniae* pneumonia. J Infect Dis 2001;183:907–12.
9. Klausner JD, Passaro D, Rosenberg J, et al. Enhanced control of an outbreak of *Mycoplasma pneumoniae* pneumonia with azithromycin prophylaxis. J Infect Dis 1998;177:161–6.

Multistate Outbreak of Fungal Infection Associated with Injection of Methylprednisolone Acetate Solution from a Single Compounding Pharmacy — United States, 2012

On October 12, 2012, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

On September 18, 2012, the Tennessee Department of Health was alerted by a clinician regarding a patient with culture-confirmed *Aspergillus fumigatus* meningitis diagnosed 46 days after epidural steroid injection at a Tennessee ambulatory surgical center. By September 27, the initial investigation, carried out by the Tennessee Department of Health in collaboration with CDC and the North Carolina Department of Health and Human Services, had identified an additional eight patients with clinically diagnosed, culture-negative meningitis: seven in Tennessee and one in North Carolina. All nine patients had received epidural steroid injection with preservative-free methylprednisolone acetate solution (MPA), compounded at New England Compounding Center (NECC) in Framingham, Massachusetts. All nine patients had received one or more injections from three lots of MPA (lot numbers 05212012@68; 06292012@26; and 08102012@51). As of October 10, a multistate investigation led by CDC in collaboration with state and local health departments and the Food and Drug Administration (FDA) had identified 137 cases and 12 deaths associated with this outbreak in 10 states. Active case-finding efforts and extensive investigation into medications and medication lot numbers received by patients have confirmed that, as of October 10, no cases were associated with other lots of MPA, nor were any associated with other NECC products. This report describes the ongoing investigation by CDC and state and local health departments, and includes important recommendations for physicians and patients.

NECC was informed of the ongoing investigation on September 25 and provided invoice information indicating that approximately 17,500 vials of MPA (80 mg/ml) from these lots were packaged in 1ml, 2ml, and 5ml vials and distributed to 75 facilities in 23 states. These lots of MPA were used to treat both peripheral joint and back pain. On September 26, NECC voluntarily recalled the three lots of MPA, followed by an expanded voluntary recall of all lots of MPA and all lots of sterile products intended for intrathecal injection on October 3. This was followed by a voluntary recall of all remaining products on October 6.

Some patients received multiple injections with the three lots of MPA, and some vials were unused. As of October 10, state and local health departments had identified almost 14,000 persons potentially exposed to medications from at least one of these lots. Active notification of exposed persons was initiated by state health departments and CDC on September 25. Passive case finding was conducted by widely disseminated notices of the potential contamination of the three MPA lots via Epi-X (a CDC electronic public health notification system), through professional societies and listservs, and the news media. As of October 10, state health departments had reported that approximately 90% of patients exposed to medication from one of the three lots of MPA recalled on September 26 had been contacted at least once, by telephone, voicemail, home visit, or registered mail.

As of October 10, four categories of cases in patients who received an injection with MPA produced by NECC had been identified: 1) fungal meningitis or nonbacterial and nonviral meningitis of subacute onset following epidural injection on or after May 21; 2) basilar stroke following epidural injection on or after May 21, in a person from whom no cerebrospinal fluid (CSF) specimen was obtained; 3) spinal osteomyelitis or epidural abscess at the site of injection following epidural or sacroiliac injection on or after May 21; 4) septic arthritis or osteomyelitis of a peripheral joint (e.g., knee) diagnosed following injection of that joint on or after May 21. Clinical meningitis was defined as having one or more symptoms (e.g., headache, fever, stiff neck, or photophobia) and CSF pleocytosis (more than five white blood cells per μL, adjusting for presence of red blood cells), regardless of CSF protein and glucose levels. Clinically diagnosed septic arthritis was defined as new or worsening pain with presence of effusion or new or worsening effusion.

As of October 10, 137 patients in 10 states had been identified who met one or more of the four definitions, all of whom underwent injection with one or more of the three lots of MPA from NECC. No cases associated with other lots of MPA, or other NECC products, had been identified. Twelve (9%) of the 137 patients died. Preliminary data are available on 70 (51%) patients. Of these, 64 (91%) have meningitis (case definition 1).

Of the six remaining patients, two (3%) have stroke without lumbar puncture (definition 2), and two (3%) have an epidural abscess or osteomyelitis (definition 3). Two (3%) patients met more than one case definition (definitions 1 and 3).

Median age of the 70 patients is 68 years (range: 23–91 years); 48 (69%) are female. At presentation, 57 (81%) had headache, 24 (34%) had fever, 21 (30%) had nausea, and seven (10%) had photophobia (Table). Atypical neurologic symptoms were observed in a minority of patients; subtle gait disturbances were seen in three (4%), and a history of falls was described in eight (11%). Meningeal signs, including nuchal rigidity, Kernig's sign, or Brudzinski's sign, were uncommon, occurring in 10 (14%) patients (Table). Stroke, either as a presenting sign, or as a complication of infection, occurred in 12 (17%) (Table).

Median CSF white blood cell count was 1,299/μL (range: 13–15,400) with a neutrophilic predominance; median CSF glucose was 42 mg/dL (range: 11–121), and median protein was 129 mg/dL (range: 45–588). As of October 10, evidence of a fungal infection had been found in 26 (37%) patients by culture, histopathology, or polymerase chain reaction. The fungal species had been identified in 14 patients; *Exserohilum* spp was identified in 13, and *Aspergillus fumigatus* was identified in one patient (Table). Further specimen evaluation is ongoing at CDC and state public health and local laboratories.

For the 61 patients with symptom onset date available, the earliest date was August 18 (Figure). For the 48 patients with both injection date and symptom onset date available for analysis, the median time from last steroid injection to onset of symptoms was 15 days (range: 1–42). A total of 25 of the 48 patients received a single steroid injection; the median time from injection to onset of symptoms for these patients was 16 days (range: 4–42).

TABLE. Characteristics of patients (N = 70) with fungal infections following epidural steroid injection of methylprednisolone acetate from New England Compounding Center — United States, 2012

Characteristic	No.	(%)
Median age (yrs) (range)	**68**	**(23–91)**
Sex		
Male	22	(31)
Female	48	(69)
Case definition met		
Meningitis	64	(91)
Stroke without lumbar puncture	2	(3)
Epidural abscess	2	(3)
Multiple	2	(4)
Median incubation period (days*) (range)	**15**	**(1–42)**
Signs/Symptoms		
Headache	57	(81)
Fever	24	(34)
Nausea	21	(30)
Photophobia	7	(10)
Meningeal signs†	10	(14)
Gait disturbance	3	(4)
Falls	8	(11)
Stroke	12	(17)
Fungi identified by culture, PCR or histopathology§		
Exserohilum spp	13	(50)
Aspergillus spp	1	(6)

Abbreviation: PCR = polymerase chain reaction.
* From date of last injection before symptom onset (n = 48).
† Includes nuchal rigidity, Kernig's sign, and Brudzinski's sign.
§ (n = 26).

Reported by

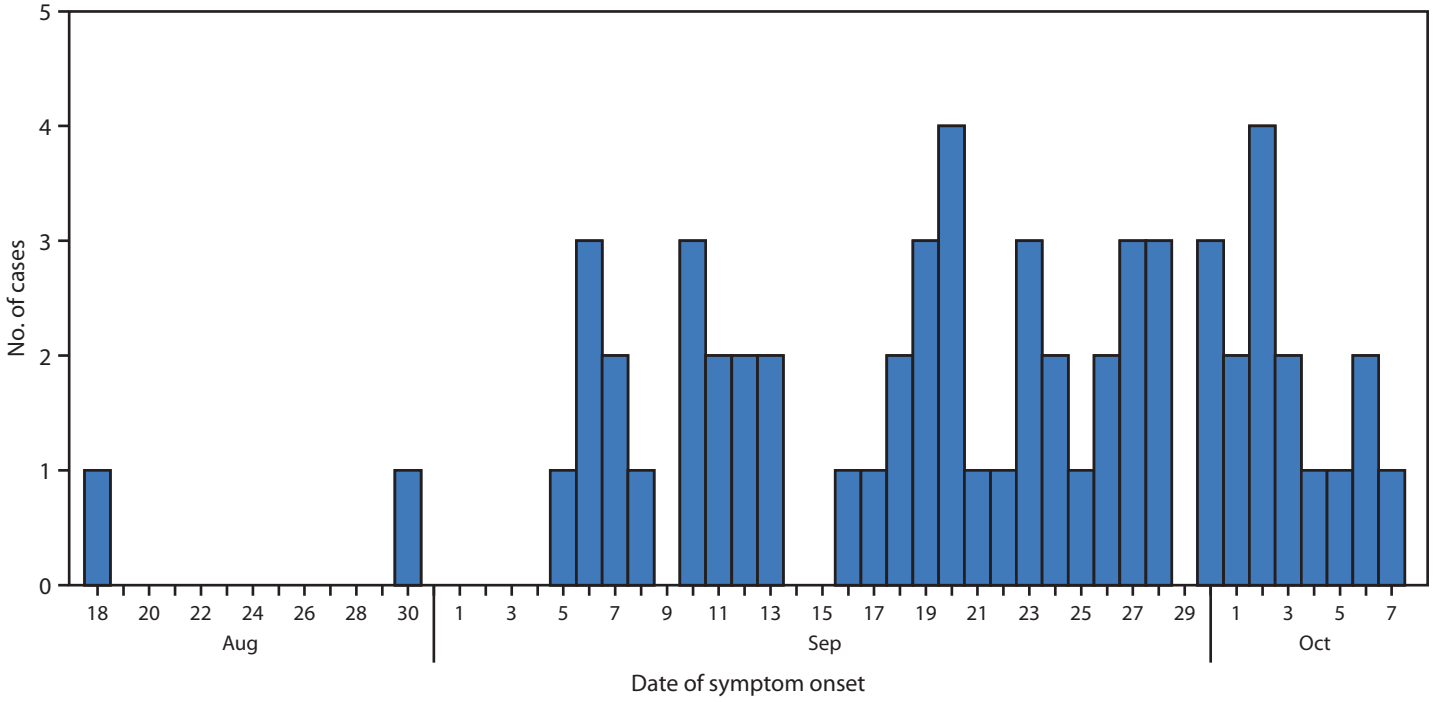
Marion Kainer, MD, Andrew D. Wiese, MPH, Tennessee Dept of Health. Kaitlin Benedict, MPH, Chris Braden, MD, Mary Brandt, PhD, Julie Harris, PhD, Benjamin J. Park, MD, Div of Foodborne, Waterborne, and Environmental Diseases; Alice Guh, MD, John Jernigan, MD, Melissa Schaefer, MD, J. Todd Weber, MD, Matt Wise, PhD, Div of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Diseases; Rachel M. Smith, MD, Duc Nguyen, MD, EIS officers, CDC. ***Corresponding contributor:*** *Rachel M. Smith MD, vih9@cdc.gov, 404-639-7738.*

Editorial Note

Meningitis and parameningeal infections are extremely rare complications of epidural injection, with few cases reported (*1–3*). Most often these infections are bacterial; rarely is a postepidural injection meningitis case caused by fungi, and when present, fungal infection is often diagnosed only after a patient fails to improve on antibiotic therapy. Diagnosis of fungal meningitis, particularly in cases caused by molds, is difficult because traditional diagnostic methods such as culture have a low yield (*4–6*). Molecular methods such as polymerase chain reaction have been useful for detection in some cases, but currently remain in use only as research tools.

The clinical presentation of fungal meningitis is often indolent, with few patients displaying the classic meningeal signs of bacterial meningitis. Early in this outbreak, many patients with meningitis had only a few mild symptoms, but had CSF pleocytosis. Additionally, some of these patients either presented with, or later developed, a stroke in the posterior circulation (which supplies the cerebellum, midbrain, and brainstem), a finding described in one prior case series of fungal meningitis (*6*). Clinicians should be aware of the atypical presentation of meningitis in this outbreak, and should consider performing lumbar puncture if patients have mild symptoms and have received a steroid injection originating from one of the three implicated lots of MPA. Early identification and treatment of patients with fungal infections might reduce the risk for serious complications, such as stroke or death. It is possible that the lower case-fatality rate reported here compared with other case series might have resulted from intensive patient

FIGURE. Number of cases (n = 61) of fungal infection with known date of symptom onset following epidural steroid injection of methylprednisolone acetate from New England Compounding Center, by date of symptom onset — United States, 2012



notification and earlier diagnosis and therapy; further investigation is needed.

Close follow-up of these patients is needed to understand important clinical questions, such as the optimal medications, dosage, and duration of treatment. To provide guidance on these important clinical issues, CDC, in consultation with experts in the diagnosis and treatment of fungal infections, has drafted interim treatment guidelines for infections associated with this outbreak. Current recommendations for treatment of central nervous system and parameningeal infections include consultation with an infectious disease physician and initiation of empiric antifungal therapy with high dose voriconazole and liposomal amphotericin B. Treatment duration is likely to be prolonged, on the order of months, and will need to be tailored to individual patients. Routine use of adjuvant steroids or intrathecal amphotericin B in treatment and postexposure prophylaxis or screening of asymptomatic persons by lumbar puncture currently are not recommended. These recommendations are subject to change as more information becomes available.

As of October 6, all products manufactured since January 1, 2012, have been recalled by NECC and should not be used. The FDA and Massachusetts Board of Registration in Pharmacy investigation into the NECC facility is ongoing and includes microbiologic testing of unopened vials of the three lots of MPA as well as additional NECC products. If not already completed, providers should contact all patients exposed to any of the three lots of MPA recalled on September 26 to inquire about symptoms. Patients who received epidural injection with medication from any of the three lots of MPA and who have symptoms of meningitis or posterior circulation stroke should be referred for diagnostic lumbar puncture, if not contraindicated. Patients with signs or symptoms of parameningeal infection or peripheral joint infection (e.g., increasing pain, redness, or swelling at the injection site) should be referred for diagnostic evaluation, which might include aspiration of fluid collections or joint aspiration. Although available preliminary data demonstrate incubation periods ranging from 4 to 42 days, the maximum incubation period for this infection is not known; therefore, asymptomatic but exposed patients should remain vigilant for symptoms and seek medical attention should symptoms develop. More guidance for patients and clinicians, including interim treatment guidelines, is available at http://www.cdc.gov/hai/outbreaks/meningitis.html.

Acknowledgments

Multistate Meningitis Outbreak Response Team: Doug Kernodle, MD, April C. Pettit, MD, Kathy Wilkerson, and the Fungal Infection Team, Vanderbilt Univ Medical Center. Carol A. Rauch, MD, Jonathan E. Schmitz, MD, Vanderbilt Univ School of Medicine. Megan Casey, MPH, Allegheny County Health Dept. Srihari Seshadri, MBBS, Barren River District Health Dept. Jon Rosenberg, MD, California Dept of Public Health. Stephanie R. Black, MD, Alicia Siston, PhD, Chicago Dept of Public Health. Michael O.

Vernon, DrPh, Cook County Dept of Public Health. Wendy Chung MD, Dallas County Health and Human Svcs. Carina Blackmore, DVM, Tricia Foster, MPH, Florida Dept of Health. Christine Hahn, MD, Kathy Turner, PhD, Idaho Div of Public Health. Judith Conway, Kate Kelly-Shannon, Matthew Roberts, MPH, Kenneth Soyemi, MD, Illinois Dept of Public Health. Pamela Pontones, MA, Joan Duwve, MD, Indiana State Dept of Health. Kraig Humbaugh, MD, Kentucky Dept for Public Health. Clara Tyson, MSN, Los Angeles County Dept of Public Health. Amy Reilly, Meghan Gumke, Nathan Grossman, MD, Marion County Health Dept. Madeleine Biondolillo, MD, James D. Coffey, Jim Collins, MPH, Joseph Coyle, MPH, Kevin Cranston, Alfred DeMaria, MD, Jean Pontikas, Iyah Romm, Massachusetts Dept of Public Health. David Blythe, MD, Ruth Thompson, Lucy Wilson, Maryland Dept of Health and Mental Hygiene. Craig McMilllan, MD, Mendocino County Dept of Public Health. Jay Fiedler, MS, Jennie Finks, DVM, Shannon Johnson, MPH, Michigan Dept of Community Health. Kathryn Como-Sabetti, MPH, Richard Danila, PhD, Aaron DeVries, MD, Jane Harper, Ruth Lynfield, MD, Minnesota Dept of Health. Ihsan Azzam, MD, PhD, Patricia Rowley, MPH, Nevada Dept of Health and Human Svcs. Sharon Alroy-Preis, MD, New Hampshire Dept of Health and Human Svcs. Barbara Carothers, Barbara Montana, MD, Christina Tan, MD, Laura Taylor, PhD, New Jersey Dept of Health. Jean-Marie Maillard, MD, Zack Moore, MD, North Carolina Dept of Health and Human Svcs. Mary DiOrio, MD, Ohio Dept of Health. Mary Powell, MPH, Pennyrile District Health Dept. Virginia Dato, MD, Elizabeth Hunt, MPH, Erica E. Smith, MD, Lauren Torso, MPH, Pennsylvania Dept of Health. Caroline Banis, Dan Drociuk, MD, South Carolina Dept of Health and Environmental Control. Brynn E. Berger, MPH, Meredith L. Kanago, MSPH, Jea Young Min, PharmD, David Reagan, MD, PhD, Brenda Rue, Jennifer Ward, MS, Anita Kurian, DrPh, Tarrant County Public Health. Neil Pascoe, Texas Dept of State Health Svcs. Karen Haught, MD, Tulare County Dept of Public Health. Katie Kurkjian, DVM, Margaret Tipple, MD, David Trump, MD, Virginia Dept of Health. Danae Bixler, MD, Carrie A. Thomas, PhD, West Virginia Bur for Public Health. Susann E. Ahrabi-Fard, MS, Richard T. Heffernan, MPH, James J. Kazmierczak, DVM, Wisconsin Div of Public Health. Aaron Fleischauer, PhD, James Lando, MD, Jevon McFadden, MD, Doug Thoroughman, PhD, Tom Torok, MD, Career Epidemiology Field Officers, Office of Public Health Preparedness and Response; Tom Chiller, MD, Angela Cleveland, MPH, Martha Iwamoto, MD, Ana Litvenseva, PhD, Shawn Lockhart, PhD, Agam Rao, MD, Monika Roy, MD, Jonathan Yoder, MPH, Div of Foodborne, Waterborne, and Environmental Diseases, Shelley Magill, MD, PhD, Div of Healthcare Quality Promotion, National Center for Emerging and Zoonotic Diseases; Anne Purfield, PhD, Jane Baumblatt, MD, Amanda Beaudoin, PhD, Jennifer Espiritu, MD, Stephanie Griese, MD, Michael Gronostaj, MD, Christina Mikosz, MD, Maria Said, MD, Alice Shumate, MD, EIS officers, CDC.

References

1. Cooper AB, Sharpe MD. Bacterial meningitis and *cauda equina* syndrome after epidural steroid injections. Can J Anaesth 1996;43(5 pt 1):471–4.
2. Snarr J. Risk, benefits and complications of epidural steroid injections: a case report. AANA J 2007;75:183–8.
3. Kolbe AB, McKinney AM, Kendi AT, Misselt D. *Aspergillus* meningitis and discitis from low-back procedures in an immunocompetent patient. Acta Radiol 2007;48:687–9.
4. Verweij PE, Brinkman K, Kremer HP, Kullberg BJ, Meis JF. *Aspergillus* meningitis: diagnosis by non-culture-based microbiological methods and management. J Clin Microbiol 1999;37:1186–9.
5. Viscoli C, Machetti M, Gazzola P, et al. *Aspergillus* galactomannan antigen in the cerebrospinal fluid of bone marrow transplant recipients with probable cerebral aspergillosis. J Clin Microbiol 2002;40:1496–9.
6. Rodrigo N, Perera KN, Ranwala R, Jayasinghe S, Warnakulasuriya A, Hapuarachchi S. *Aspergillus* meningitis following spinal anaesthesia for caesarean section in Colombo, Sri Lanka. Int J Obstet Anesth 2007;16:256–60.

Multistate Fungal Meningitis Outbreak — Interim Guidance for Treatment

CDC and the Food and Drug Administration (FDA) continue to work closely with state and local public health departments on the multistate meningitis outbreak investigation of fungal infections among patients who received a steroid injection of a potentially contaminated product into the spinal area. The investigation also includes possible fungal infections associated with injections in a peripheral joint space. These cases are associated with a potentially contaminated steroid medication prepared by New England Compounding Center (NECC) in Framingham, Massachusetts.

Fungal meningitis pathogens that have been found in the investigation include *Exserohilum* and *Aspergillus*. *Exserohilum rostratum* (a brown-black mold) is the predominant pathogen in this outbreak, and expert opinion and published literature indicate that voriconazole might be effective in treating infections caused by brown-black molds and infections caused by *Aspergillus* species. CDC interim guidance for treatment of adult patients with central nervous system and/or parameningeal infections associated with injections of potentially contaminated steroid products from NECC and CDC interim guidance for treatment of adult patients with septic arthritis associated with intra-articular injections with potentially contaminated steroid products from NECC recommend empiric antifungal therapy.

Additional information is available at http://www.cdc.gov/hai/outbreaks/clinicians/guidance_cns.html and http://www.cdc.gov/hai/outbreaks/clinicians/interim_treatment_options_septic_arthritis.html.

Announcement

World Polio Day — October 24, 2012

World Polio Day (October 24) was established by Rotary International over a decade ago to commemorate the birth of Jonas Salk, who led the first team to develop a vaccine against poliomyelitis. Use of this inactivated poliovirus vaccine and subsequent widespread use of the oral poliovirus vaccine developed by Albert Sabin led to establishment of the Global Polio Eradication Initiative (GPEI) in 1988. Since then, GPEI has reduced polio worldwide by 99%; however, in 2012, transmission of indigenous wild poliovirus has continued uninterrupted in three countries (Nigeria, Afghanistan, and Pakistan) (*1*). In April 2012, the World Health Assembly declared the completion of polio eradication a programmatic emergency for global public health (*2*).

As of October 9, 2012, a total of 162 polio cases had been reported during the year, with 97% reported from three countries (Nigeria, Afghanistan and Pakistan). The number of polio cases reported is the lowest number ever recorded worldwide during a 9-month period.

Eradication of polio is an important public health priority for CDC. On December 2, 2011, the CDC Emergency Operations Center was activated to strengthen the agency's partnership engagement through GPEI. Additional information regarding CDC's polio eradication activities is available at http://www.cdc.gov/polio/updates, and additional information about GPEI and the global partnership is available at http://www.polioeradication.org.

References

1. CDC. Progress toward poliomyelitis eradication—Afghanistan and Pakistan, January 2011–August 2012. MMWR 2012;61:790–5.
2. World Health Assembly. Poliomyelitis: intensification of the global eradication initiative. Agenda item A65/20. Geneva, Switzerland: World Health Organization; 2012. Available at http://apps.who.int/gb/ebwha/pdf_files/wha65/A65_20-en.pdf. Accessed October 15, 2012.

Errata

Vol. 61 / No. 34

In the report, "National and State Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2011," an error occurred in the fourth footnote under Table 3 on page 676. That footnote should read, "¶ **Tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine on or after age 10 years.**"

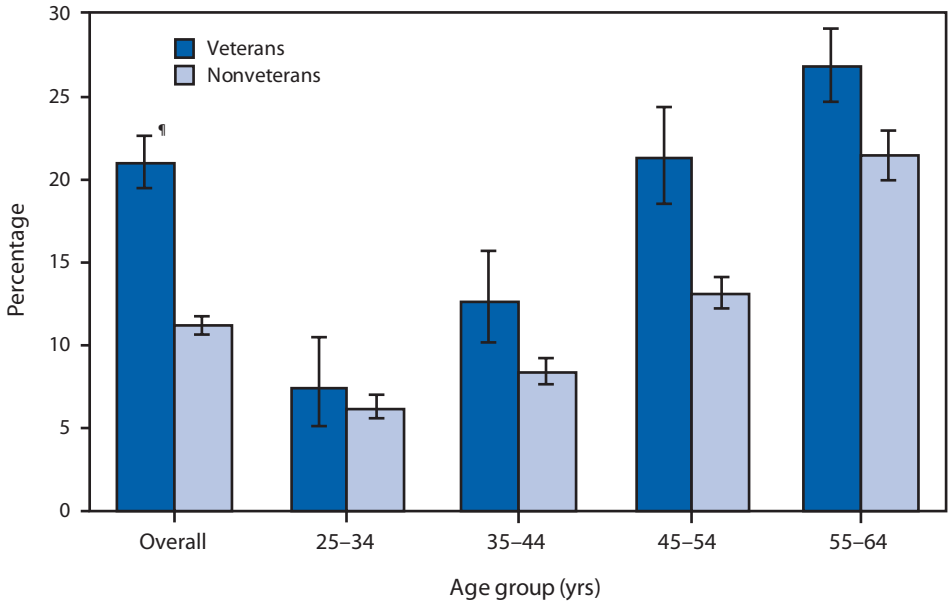
Vol. 61, No. 37

In the report, "Chikungunya Outbreak — Cambodia, February–March 2012," the first limitation in the first full paragraph on p. 739 was incorrectly stated. The sentence should read as follows: "**First, clinical cases of acute febrile illness might have been caused by other infectious etiologies, including other mosquito-borne viruses such as dengue and JEV, the incidence of which also would have risen after the rains.**"

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Men Aged 25–64 Years with Activity Limitation,* by Age Group and Veteran Status† — United States, National Health Interview Survey (NHIS), 2007–2010§



* Activity limitation is assessed by asking respondents a series of questions about limitations in their ability to perform activities usual for their age group because of a physical, mental, or emotional problem(s).
† In NHIS, veterans identify themselves by responding "yes" to the question "Have you ever been honorably discharged from active duty in the U.S. Army, Navy, Air Force, Marine Corps, or Coast Guard?"
§ Estimates are based on household interviews of a sample of the civilian, noninstitutionalized U.S. population and are derived from the NHIS sample adult component.
¶ 95% confidence interval.

During 2007–2010, male veterans aged 25–64 years reported higher levels of activity limitation than nonveterans (21% among veterans, compared with 11% among nonveterans). Significant differences were observed in activity limitation between veterans and nonveterans in males aged 35–44, 45–54, and 55–64 years. Activity limitation increased with age for veterans and nonveterans.

Source: National Health Interview Survey data, 2007–2010. Available at http://www.cdc.gov/nchs/nhis.htm.

Reported by: Ellen A. Kramarow, PhD, ekramarow@cdc.gov, 301-458-4325; Patricia N. Pastor, PhD.

The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy each week, visit *MMWR*'s free subscription page at *http://www.cdc.gov/mmwr/mmwrsubscribe.html*. Paper copy subscriptions are available through the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone 202-512-1800.

Data presented by the Notifiable Disease Data Team and 122 Cities Mortality Data Team in the weekly *MMWR* are provisional, based on weekly reports to CDC by state health departments. Address all inquiries about the *MMWR* Series, including material to be considered for publication, to Editor, *MMWR* Series, Mailstop E-90, CDC, 1600 Clifton Rd., N.E., Atlanta, GA 30333 or to *mmwrq@cdc.gov.*

U.S. Government Printing Office: 2012-523-043/02034 Region IV ISSN: 0149-2195