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Extragenital Chlamydia and Gonorrhea Among Community Venue–Attending Men Who Have Sex with Men — Five Cities, United States, 2017

Michelle L. Johnson Jones, MPH[1]; Johanna Chapin-Bardales, PhD[2]; Destani Bizune, MPH[3]; John R. Papp, PhD[1]; Christi Phillips[1]; Robert D. Kirkcaldy, MD[1]; Cyprian Wejnert, PhD[2]; Kyle T. Bernstein, PhD[1]; National HIV Behavioral Surveillance Sexually Transmitted Infection Study Group

Sexually transmitted diseases (STDs) disproportionately affect gay, bisexual, and other men who have sex with men (MSM) in the United States (*1*). Because chlamydia and gonorrhea at extragenital (rectal and pharyngeal) anatomic sites are often asymptomatic, these anatomic sites serve as a reservoir of infection, which might contribute to gonococcal antimicrobial resistance (*2*) and increased risk for human immunodeficiency virus (HIV) transmission and acquisition (*3*). To ascertain prevalence of extragenital STDs, MSM attending community venues were recruited in five U.S. cities to provide self-collected swabs for chlamydia and gonorrhea screening as part of National HIV Behavioral Surveillance (NHBS). Overall, 2,075 MSM provided specimens with valid results, and 13.3% of participants were infected with at least one of the two pathogens in at least one of these two extragenital anatomic sites. Approximately one third of participating MSM had not been screened for STDs in the previous 12 months. MSM attending community venues had a high prevalence of asymptomatic extragenital STDs. The findings underscore the importance of sexually active MSM following current recommendations for STD screening at all exposed anatomic sites at least annually (*4*).

According to a systematic review of studies from 2000 to 2016, the estimated prevalences of rectal chlamydia and gonorrhea among MSM were 9.0% and 6.1%, respectively (*5*). Fewer data are available on pharyngeal chlamydia and gonorrhea; prevalence estimates were 0%–3.6% for pharyngeal chlamydia and 0%–16.5% for pharyngeal gonorrhea among MSM (*6*). Nearly all reported prevalences of extragenital infections among MSM have been estimated from clinic-based samples of patients. Because men in these samples sought clinical care (and could be at elevated risk for STDs, especially if seen at an STD clinic), reported estimates might not reflect prevalences among a broader population of MSM. To inform the epidemiology of bacterial STDs among MSM, extragenital chlamydia and gonorrhea screening was offered to MSM recruited to participate in NHBS at MSM-frequented venues in five U.S. cities (Houston, Texas; Miami, Florida; New York City, New York; San Francisco, California; and Washington, DC). NHBS assessed adherence to current screening recommendations using the question "In the past 12 months, were you tested by a doctor or other health care provider for a sexually transmitted disease like gonorrhea, chlamydia, or syphilis? Do not include tests for HIV or hepatitis."

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NHBS conducts anonymous behavioral surveys on a rotating basis among populations with elevated HIV risk in the United States (*7*). In 2017, MSM participants were recruited from MSM-frequented community venues (e.g., bars, clubs, fitness centers, and other locations patronized by MSM) and were eligible if they were male at birth, identified as male, were aged ≥18 years, reported ever having sex with a male, were residing in the city of administration, had not previously completed the NHBS survey in the current cycle, and could complete the survey in English or Spanish. This analysis was restricted to participants who had sex with a male in the previous 12 months. Participants completed an interviewer-administered standardized computer-assisted personal interview survey that collected sociodemographic and epidemiologic characteristics. All participants were offered an anonymous HIV test. Monetary tokens of appreciation for participating were provided to participants; amounts were determined locally. NHBS activities were reviewed at CDC as nonengaged research and approved by local institutional review boards for each participating location.

NHBS participants were offered additional tokens of appreciation for providing anonymous self-collected rectal and pharyngeal swabs for chlamydia and gonorrhea testing. CDC tested specimens from four of the cities using the Aptima Combo 2 Panther system (Hologic), and the San Francisco Department of Public Health Laboratory tested specimens from San Francisco using the same assay. Test results were communicated back to local NHBS teams for notification and treatment referrals when indicated, using numeric identifiers to maintain participants' anonymity. Test results were linked with completed survey data and HIV test results. STD prevalence was calculated as the number of persons with positive test results divided by the total number of persons tested with a valid result, stratified by anatomic site (rectum and oropharynx) and STD (chlamydia and gonorrhea) with 95% Wald confidence intervals (CIs) and bivariate analyses for comparing characteristics. Analyses were performed using SAS software (version 9.4; SAS Institute).

Among 2,371 eligible MSM who participated in NHBS in the five cities, 2,077 (87.6%) provided specimens for STD testing, 2,044 (98.4%) of whom provided both rectal and pharyngeal swabs. Analysis included 2,075 participants, after excluding two who lacked valid results. Overall, 13.3% (95% CI = 11.8%–14.8%) of participants were infected with at least one of the two STDs at one or two anatomic sites. Prevalence of rectal chlamydia (7.3%) was higher than that of rectal gonorrhea (4.5%; p<0.001), whereas prevalence of pharyngeal gonorrhea (4.6%) was higher than that of pharyngeal chlamydia (1.4%; p<0.001) (Figure). Rectal gonorrhea prevalence was higher among MSM who reported being HIV-positive than among those who were HIV-negative (8.2% versus 3.3%; p<0.001) (Table). Prevalences of both pharyngeal infections were similar among those testing HIV-positive and HIV-negative. Prevalence of infection was higher in younger men (aged 18–29 years), compared with older men for each type and anatomic site of infection except pharyngeal

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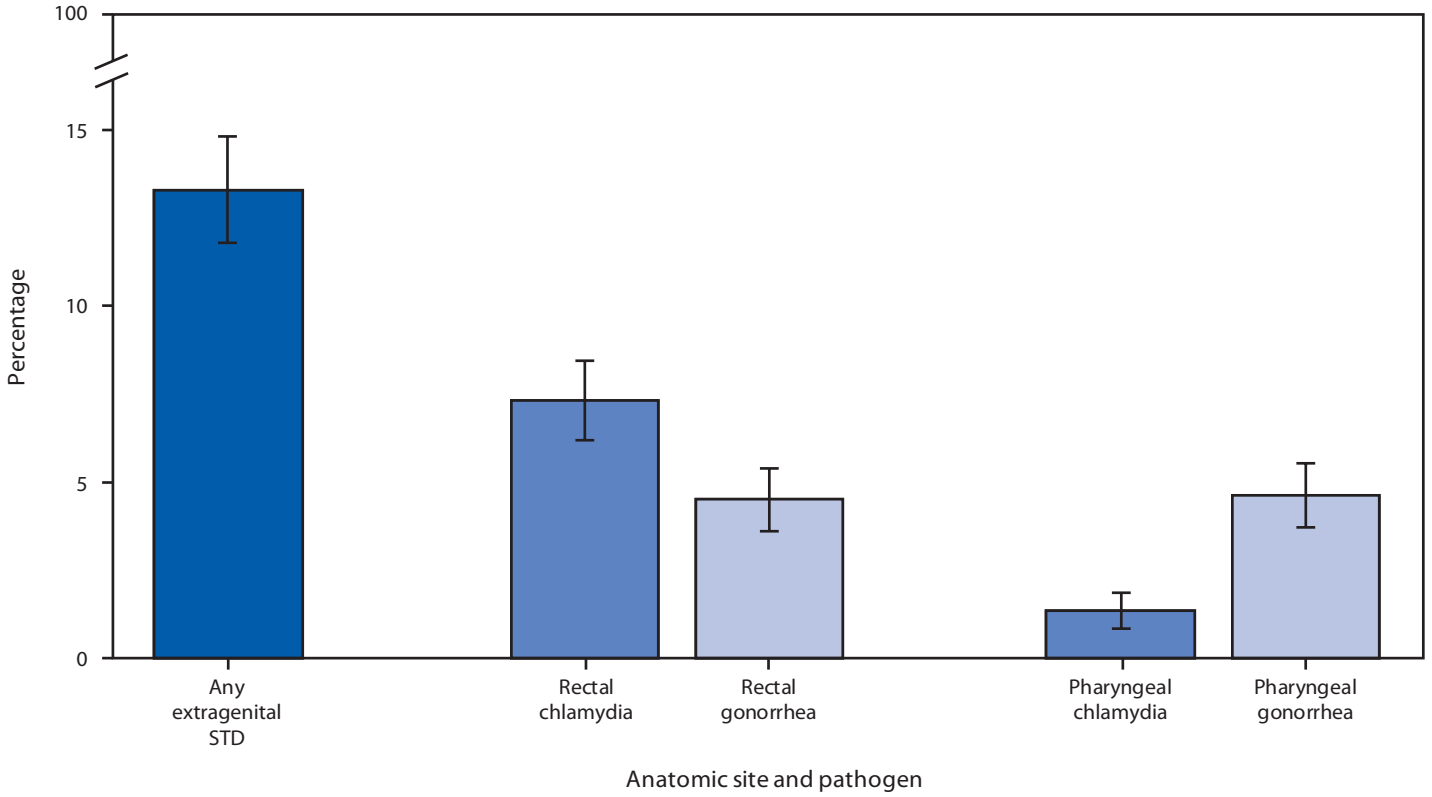
FIGURE. Prevalence of extragenital chlamydia and gonorrhea among community venue–attending* men who have sex with men, by anatomic site — National HIV Behavioral Surveillance, five U.S. cities,† 2017



Abbreviations: HIV = human immunodeficiency virus; STD = sexually transmitted disease.
* Community venues include bars, clubs, fitness centers, and other locations frequented by men who have sex with men.
† Houston, Texas; Miami, Florida; New York City, New York; San Francisco, California; Washington, DC.

chlamydia. Black and Hispanic MSM had higher prevalences of pharyngeal gonorrhea than did white MSM, otherwise, no differences were observed by racial/ethnic categories. San Francisco had the lowest prevalences for each pathogen and anatomic site; prevalences for each infection varied by city of residence (Table).

Overall, 698 (33.6%) MSM participants reported that they had not been tested for an STD in the previous 12 months (Table). Prevalence was similar for MSM who did and did not report recent STD testing, irrespective of anatomic site or pathogen.

Discussion

In a community venue–based sample of sexually active MSM, approximately one in eight participants was positive for either rectal or pharyngeal chlamydia or gonorrhea. Compared with chlamydia and gonorrhea prevalence estimates among MSM derived from largely clinic-based samples (*5*,*6*), these estimates are lower. Persons screened for STDs in clinical settings (often STD clinics) might represent a population at higher risk (e.g., previous STD, larger number of sexual partners, and known or suspected STD exposure) (*8*). This analysis demonstrates that risk for chlamydia and gonorrhea also might be high among MSM when sampled from nonclinical MSM community venues. This finding suggests that the general population of sexually active MSM might be at elevated risk for STDs and that bacterial STD prevalence estimates from STD clinic-based samples of MSM might not be substantially biased.

The current recommendation for sexually active MSM is to screen for STDs at all exposed anatomic sites at least annually (*4*), and MSM living with HIV infection likely have more opportunities for STD screening when in care. This study found a high prevalence of extragenital chlamydia and gonorrhea among MSM living with HIV, and the findings reinforce current HIV care guidance, which recommends that MSM who report receptive anal and oral sex should be screened for rectal and pharyngeal gonorrhea and chlamydia, respectively, at their initial visit and at least annually thereafter (*9*).

Among this sample of MSM recruited at community venues, approximately one third reported that they had not been tested for an STD in the previous 12 months, suggesting that a substantial number of MSM at high risk for STDs are

TABLE. Characteristics of participants and prevalence of extragenital chlamydia and gonorrhea among community venue–attending* men who have sex with men, by anatomic site — National HIV Behavioral Surveillance, five U.S. cities, 2017

Characteristic	No. (%) of all participants	Prevalence (95% CI)			
		Rectal chlamydia (no. tested = 2,024)	Rectal gonorrhea (no. tested = 2,023)	Pharyngeal chlamydia (no. tested = 2,072)	Pharyngeal gonorrhea (no. tested = 2,072)
Overall	**2,075 (100)**	**7.3 (6.2–8.5)**	**4.5 (3.6–5.4)**	**1.4 (0.9–1.9)**	**4.6 (3.7–5.5)**
Age group (yrs)					
18–29	737 (35.5)	9.2 (7.1–11.4)	6.2 (4.5–8.0)	1.8 (0.8–2.7)	6.0 (4.3–7.7)
30–39	676 (32.6)	7.4 (5.4–9.4)	4.2 (2.7–5.8)	1.3 (0.5–2.2)	4.9 (3.3–6.5)
40–49	330 (15.9)	6.2 (3.6–8.8)	3.4 (1.4–5.4)	0.9 (0.0–1.9)	3.3 (1.4–5.3)
≥50	332 (16.0)	3.8 (1.7–5.9)	2.2 (0.6–3.9)	0.9 (0.0–1.9)	2.4 (0.8–4.1)
Race/Ethnicity					
Hispanic	733 (35.3)	7.5 (5.6–9.5)	4.9 (3.3–6.5)	2.0 (1.0–3.1)	5.3 (3.7–7.0)
White, non-Hispanic	688 (33.2)	7.3 (5.3–9.3)	3.9 (2.4–5.3)	0.9 (0.2–1.6)	3.2 (1.9–4.5)
Black, non-Hispanic	455 (21.9)	7.2 (4.8–9.6)	5.6 (3.5–7.7)	1.3 (0.3–2.4)	6.6 (4.3–8.9)
Other	187 (9.0)	7.3 (3.5–11.1)	2.2 (0.1–4.4)	0.5 (0.0–1.6)	2.7 (0.4–5.0)
Unknown	12 (0.6)	N/A	N/A	N/A	N/A
HIV test results†					
HIV-negative	1,577 (76.0)	6.6 (5.3–7.8)	3.3 (2.4–4.1)	1.3 (0.7–1.8)	4.3 (3.3–5.3)
HIV-positive					
Self-reported HIV-positive	386 (18.6)	9.0 (6.1–11.9)	8.2 (5.5–11.0)	1.6 (0.3–2.8)	5.2 (3.0–7.4)
Did not self-report HIV-positive	73 (3.5)	9.9 (2.9–16.8)	5.6 (0.3–11.0)	2.7 (0.0–6.5)	5.5 (0.3–10.7)
No valid test results available	39 (1.9)	N/A	N/A	N/A	N/A
STD testing in previous 12 months§					
Tested	1,371 (66.1)	7.1 (5.7–8.5)	4.2 (3.1–5.3)	1.2 (0.6–1.7)	4.5 (3.4–5.6)
Not tested	698 (33.6)	7.8 (5.8–9.8)	5.0 (3.4–6.6)	1.7 (0.8–2.7)	4.7 (3.2–6.3)
Don't know/Skipped	6 (0.3)	N/A	N/A	N/A	N/A
City of residence					
Houston, Texas	468 (22.6)	8.0 (5.5–10.4)	6.7 (4.4–9.0)	2.8 (1.3–4.3)	6.2 (4.0–8.4)
Miami, Florida	345 (16.6)	5.6 (3.1–8.0)	5.6 (3.1–8.0)	1.4 (0.2–2.7)	4.6 (2.4–6.9)
New York City, New York	425 (20.5)	7.2(4.7–9.7)	4.3 (2.4–6.3)	0.9 (0.0–1.9)	3.8 (2.0–5.6)
San Francisco, California	418 (20.1)	5.2 (3.0–7.4)	1.8 (0.5–3.1)	0.7 (0.0–1.5)	3.6 (1.8–5.4)
Washington, DC	419 (20.2)	10.1 (7.2–13.1)	3.9 (2.0–5.7)	0.7 (0.0–1.5)	4.8 (2.7–6.8)

Abbreviations: CI = confidence interval; HIV = human immunodeficiency virus; N/A = not applicable; STD = sexually transmitted disease.
* Community venues include bars, clubs, fitness centers, and other locations frequented by men who have sex with men.
† Based on results of rapid HIV laboratory testing conducted during National HIV Behavior Surveillance encounter.
§ Self-reported.

not being screened per current recommendations. Although the extragenital STD prevalence among these men was high, prevalence was similarly high among MSM who did report having been tested within the past 12 months. Among those tested in the previous 12 months, this survey did not record which testing was performed or how frequently these men were tested. More frequent (e.g., every 3–6 months) screening of MSM with elevated risk might be needed to reduce prevalence among those who are already being screened for STDs.

The findings in this report are subject to at least four limitations. First, NHBS STD screening only included five U.S. cities. Although the cities were geographically and sociodemographically diverse, extrapolation to all U.S. cities is not appropriate. Second, MSM were recruited through community venue–based sampling, not probability sampling; therefore, further extrapolation to the MSM population within the five cities is not possible. Third, this survey was limited to pharyngeal and rectal chlamydia and gonorrhea screening; urogenital or urine specimens were not collected. Most MSM with asymptomatic urogenital infection also are infected at extragenital sites (*10*); therefore, it is unlikely that a large number of infected persons were missed who would have been detected had NHBS conducted urogenital screening. Finally, self-reported data on STD testing in the previous 12 months might overestimate the adherence to current screening recommendations because they included any STD test, not specifically chlamydia and gonorrhea extragenital testing at anatomic sites of exposure.

Among a sample of MSM attending community venues in five U.S. cities, approximately one in eight had an infection with chlamydia or gonorrhea at an extragenital site. According to CDC guidelines, sexually active MSM should be screened at least annually for STDs at exposed anatomic sites, including more frequent screening (e.g., every 3–6 months) in MSM at elevated risk for STDs (*4*,*9*). Despite the screening recommendation, one in three MSM in this study did not report STD testing in the previous 12 months. The asymptomatic nature of extragenital STDs and high prevalences found in this

Summary

What is already known about this topic?

Men who have sex with men (MSM) are disproportionately affected by sexually transmitted diseases (STDs) and human immunodeficiency virus (HIV) infection. Most MSM STD prevalence data are from STD and HIV clinic attendees.

What is added by this report?

Among community venue–attending MSM in five cities in 2017, approximately one in eight had an extragenital chlamydial or gonococcal infection. Rectal gonorrhea prevalence was higher in MSM infected with HIV than in those not infected with HIV.

What are the implications for public health practice?

Sexually active MSM should be screened at least annually for chlamydia and gonorrhea at all exposed anatomic sites; some MSM might benefit from more frequent screening.

population further support the need for regular screening of all sexually active MSM at all anatomic sites of exposure. Improved access to culturally competent care and clinician adherence to screening guidelines for MSM are critical components in reducing the STD disparities that affect this population.

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Salma Khuwaja, MD, DrPH, Houston Health Department; Zaida Lopez, DrPH, Houston Health Department; Paige Padgett, PhD, University of Texas Health Science Center; David Forrest, PhD, University of Miami; Willie Nixon, Florida Department of Health; Emma Spencer, PhD, Florida Department of Health; Sarah Braunstein, PhD, New York City Department of Health and Mental Hygiene; Sidney Carrillo, MPH, New York City Department of Health and Mental Hygiene; Alexis Rivera, MPH, New York City Department of Health and Mental Hygiene; Theresa Ick, San Francisco Department of Public Health; H. Fisher Raymond, PhD, San Francisco Department of Public Health; Jenevieve Opoku, MPH, District of Columbia Department of Health; Irene Kuo, PhD, George Washington University.

Corresponding author: Michelle Johnson Jones, huk3@cdc.gov, 404-639-6425.

[1]Division of STD Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB, CDC; [2]Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB, CDC; [3]Oak Ridge Institute for Science and Education, Oak Ridge, Tennessee.

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Notes from the Field

Unintentional Drug Overdose Deaths with Kratom Detected — 27 States, July 2016–December 2017

Emily O'Malley Olsen, PhD[1]; Julie O'Donnell, PhD[1]; Christine L. Mattson, PhD[1]; Joshua G. Schier, MD[1]; Nana Wilson, PhD[1]

Kratom (*Mitragyna speciosa*), a plant native to Southeast Asia, contains the alkaloid mitragynine, which can produce stimulant effects in low doses and some opioid-like effects at higher doses when consumed (*1*). Use of kratom has recently increased in popularity in the United States, where it is usually marketed as a dietary or herbal supplement (*1*). Some studies suggest kratom has potential for dependence and abuse (*1*,*2*). As of April 2019, kratom was not scheduled as a controlled substance. However, since 2012, the Food and Drug Administration has taken a number of actions related to kratom, and in November 2017 issued a public health advisory*; in addition, the Drug Enforcement Administration has identified kratom as a drug of concern. During 2011–2017, the national poison center reporting database documented 1,807 calls concerning reported exposure to kratom (*3*). To assess the impact of kratom, CDC analyzed data from the State Unintentional Drug Overdose Reporting System (SUDORS).

CDC funds 32 states and the District of Columbia to abstract into SUDORS detailed data on unintentional and undetermined intent opioid overdose deaths from death certificates and medical examiner and coroner reports, including postmortem toxicology results.† Although kratom is not an opioid, overdose deaths involving kratom (including nonopioid overdose deaths) are included in SUDORS.§ Although postmortem toxicology testing varies in scope among medical examiners and coroners, SUDORS records all substances detected on postmortem toxicology testing, along with overdose-specific circumstances. CDC analyzed overdose deaths in which kratom was detected on postmortem toxicology testing and deaths in which kratom was determined by a medical examiner or coroner to be a cause of death in 11 states during July 2016–June 2017 and in 27 states during July–December 2017.¶

Data on 27,338 overdose deaths that occurred during July 2016–December 2017 were entered into SUDORS, and 152 (0.56%) of these decedents tested positive for kratom on postmortem toxicology (kratom-positive). Postmortem toxicology testing protocols were not documented and varied among and within states. Kratom was determined to be a cause of death (i.e., kratom-involved) by a medical examiner or coroner for 91 (59.9%) of the 152 kratom-positive decedents, including seven for whom kratom was the only substance to test positive on postmortem toxicology, although the presence of additional substances cannot be ruled out (*4*).

In approximately 80% of kratom-positive and kratom-involved deaths in this analysis, the decedents had a history of substance misuse, and approximately 90% had no evidence that they were currently receiving medically supervised treatment for pain. Postmortem toxicology testing detected multiple substances for almost all decedents (Table). Fentanyl and fentanyl analogs were the most frequently identified co-occurring substances; any fentanyl was listed as a cause of death for 65.1% of kratom-positive decedents and 56.0% of kratom-involved decedents. Heroin was the second most frequent substance listed as a cause of death (32.9% of kratom-positive decedents), followed by benzodiazepines (22.4%), prescription opioids (19.7%),** and cocaine (18.4%).

* https://www.fda.gov/NewsEvents/PublicHealthFocus/ucm584952.htm.

† Whereas most states in SUDORS submit data on 100% of their unintentional and undetermined intent opioid-involved overdose deaths, Florida, Illinois, Missouri, Pennsylvania, and Washington submit data on a subset of counties that reflect at least 75% of drug overdose deaths in the state.

§ SUDORS records data on fatal unintentional and undetermined intent overdoses in which at least one opioid contributed to death, as well as fatal overdoses with no contributing opioid, if substances that have opioid-like properties (currently, kratom is the only such substance) contributed to death. For all included deaths, SUDORS records all substances testing positive on postmortem toxicology testing (including those that did and did not contribute to death).

¶ Twenty-seven states reported data for the period July 2016–December 2017. Eleven states reported deaths that occurred during the entire period: Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Mexico, Ohio, Oklahoma, Rhode Island, West Virginia, and Wisconsin. Sixteen additional states only reported deaths that occurred during July–December 2017: Alaska, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Minnesota, New Jersey, North Carolina, Pennsylvania, Tennessee, Utah, Vermont, Virginia, and Washington. Data were current as of January 22, 2019.

** Substances coded as prescription opioids were oxycodone, oxymorphone, hydrocodone, hydromorphone, tramadol, buprenorphine, methadone, meperidine, tapentadol, dextrorphan, levorphanol, propoxyphene, pentazocine, and phenacetin. Also coded as prescription opioids were brand names (e.g., Opana), metabolites (e.g., nortramadol) of these substances, and these substances in combination with nonopioids (e.g., acetaminophen-oxycodone). Morphine and codeine were coded as prescription opioids if the scene or other evidence indicated their presence as a result of consumption of prescription morphine or codeine, rather than as a result of metabolism of or impurities of heroin, respectively. Fentanyl was coded as a prescription opioid if the scene or other evidence indicated likely consumption of prescription fentanyl rather than illicitly manufactured fentanyl. Decedents might have tested positive for other nonopioid substances. This analysis does not distinguish between prescription drugs prescribed to the decedent and those that were diverted.

TABLE. Co-occurrence of substances and circumstances among overdose decedents with kratom detected on postmortem toxicology — State Unintentional Drug Overdose Reporting System, 27 states,* July 2016–December 2017

Characteristic/Circumstance	Kratom detected on toxicology (n = 152) No. (%)	Kratom determined to be a cause of death (n = 91) No. (%)
Sex		
Male	116 (76.3)	69 (75.8)
Female	36 (23.7)	22 (24.2)
Race		
White†	119 (91.5)	81 (93.1)
Nonwhite	11 (8.5)	—§
Medically supervised pain treatment		
No evidence	138 (90.8)	80 (87.9)
Evidence	14 (9.2)	11 (12.1)
Previous overdose reported		
None	139 (91.5)	81 (89.0)
One or more	13 (8.5)	10 (11.0)
History of substance misuse reported (opioid and/or nonopioid)		
No evidence	29 (19.1)	20 (22.0)
Evidence	123 (80.9)	71 (78.0)
Co-occurring substances listed as a cause of death¶,**		
Any fentanyl (including analogs)	99 (65.1)	51 (56.0)
Heroin††	50 (32.9)	23 (25.3)
Benzodiazepines	34 (22.4)	24 (26.4)
Prescription opioids§§	30 (19.7)	22 (24.2)
Cocaine	28 (18.4)	15 (16.5)
Alcohol	19 (12.5)	11 (12.1)
Methamphetamine	13 (8.6)	—

* Twenty-seven states reported data for the period July 2016–December 2017. Eleven states reported deaths that occurred during the entire period: Kentucky, Maine, Massachusetts, Missouri, New Hampshire, New Mexico, Ohio, Oklahoma, Rhode Island, West Virginia, and Wisconsin. Sixteen additional states only reported deaths that occurred during July–December 2017: Alaska, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Minnesota, New Jersey, North Carolina, Pennsylvania, Tennessee, Utah, Vermont, Virginia, and Washington. Data were current as of January 22, 2019.

† Non-Hispanic. Race/ethnicity data were missing for 22 decedents.

§ Number of deaths was <10.

¶ Identified as a cause of death by a medical examiner or coroner.

** Multiple substances could be listed as a cause of death; therefore, the substances are not mutually exclusive.

†† Substances coded as heroin were heroin and 6-monoacetylmorphine. In addition, morphine and codeine were coded as heroin if the scene or other evidence indicated their presence as a result of consumption in conjunction with evidence of heroin use, injection, or illicit drug use, and no evidence of prescribed morphine or codeine.

§§ Substances coded as prescription opioids were oxycodone, oxymorphone, hydrocodone, hydromorphone, tramadol, buprenorphine, methadone, meperidine, tapentadol, dextrorphan, levorphanol, propoxyphene, pentazocine, and phenacetin. Also coded as prescription opioids were brand names (e.g., Opana), metabolites (e.g., nortramadol) for these substances, and these substances in combination with nonopioids (e.g., acetaminophen-oxycodone). Morphine and codeine were coded as prescription opioids if the scene or other evidence indicated their presence as a result of consumption of prescription morphine or codeine, rather than as a result of metabolism of or impurities of heroin, respectively. Fentanyl was coded as a prescription opioid if the scene or other evidence indicated likely consumption of prescription fentanyl rather than illicitly manufactured fentanyl. Decedents might have tested positive for other nonopioid substances. This analysis does not distinguish between prescription drugs prescribed to the decedent and those that were diverted.

Kratom-positive deaths accounted for <1% of all SUDORS overdose deaths during July 2016–December 2017. Identification of kratom is method-dependent (*5*); therefore, these data might underestimate the number of kratom-positive deaths, although the extent cannot be determined. However, because SUDORS records results of jurisdiction-specific postmortem toxicology testing, as well as overdose-specific circumstances, it is possible to ascertain that kratom was present primarily in deaths that occurred as a result of overdoses related to substance misuse and that kratom was most often detected in combination with multiple other substances.

The type and number of substances detected in kratom-involved deaths can inform overdose prevention strategies (*6*). Documentation of postmortem toxicology testing protocols is needed to further clarify the extent to which kratom contributes to fatal overdoses.

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Corresponding author: Emily O'Malley Olsen, eolsen@cdc.gov, 404-498-0716.

[1]Division of Unintentional Injury Prevention, National Center for Injury Prevention and Control, CDC.

All authors have completed and submitted the ICMJE form for disclosure of potential conflicts of interest. No potential conflicts of interest were disclosed.

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Notes from the Field

Acute Hepatitis A Virus Infection Among Previously Vaccinated Persons with HIV Infection — Tennessee, 2018

Julia Brennan, MS, MPH[1,2]; Kelly Moore, MD[2]; Lindsey Sizemore, MPH[2]; Samantha A. Mathieson, MPH[2]; Carolyn Wester, MD[2]; John R. Dunn, DVM, PhD[2]; William Schaffner, MD[3]; Timothy F. Jones, MD[2]

Complete immunization against hepatitis A requires 2 doses of a monovalent vaccine or 3 doses of a combined hepatitis A and hepatitis B vaccine; approximately 90% of vaccinated persons achieve protective antibody levels after a single dose of either product (*1*). However, persons living with human immunodeficiency virus (HIV) infection might not develop the same level of immunity after hepatitis A virus (HAV) vaccination as do immunocompetent persons (*2*,*3*). Compared with immunocompetent persons, seroconversion rates among persons with HIV infection are lower and are further affected by CD4 count and HIV viral load at the time of the first dose of vaccine (*3*). In addition, time to seroconversion is longer (*3*), and duration of protection wanes earlier (*4*) among persons with HIV infection. During an outbreak, evaluating predictors of a better vaccine response (CD4 count and HIV viral load at the time of first vaccination) is generally not feasible. Routine assessment of immune response after vaccination is not recommended for persons in general, nor for those with HIV infection (*1*); therefore, providers use a documented history of HAV vaccination to guide decisions regarding administration of HAV postexposure prophylaxis (PEP). However, compared with vaccination among the general population, a previous hepatitis A vaccination in persons with HIV infection after a high-risk exposure (e.g., household member or sexual contact) might not reliably protect against illness. The Tennessee Department of Health (TDH) sought to determine the frequency at which persons with HIV infection who were previously vaccinated for hepatitis A developed HAV infection during an HAV outbreak.

Confirmed HAV cases reported to TDH during an ongoing HAV outbreak during December 1, 2017–September 20, 2018, were reviewed to identify patients with HIV coinfection. Data gathered from case report forms, surveillance databases, and medical records were used to evaluate HIV status and HAV vaccination history.

Among 249 confirmed cases of HAV infection, 11 (4%) occurred among persons with HIV infection, six of whom had received a partial or complete vaccination series before acute HAV infection (Table). All six patients were men. Among three patients who had received a monovalent vaccine, one (patient A) completed a 2-dose series 3 years before HIV diagnosis and 7 years before acute HAV infection. A second patient (patient B) received both doses 5 years before the onset of acute HAV infection. A third patient (patient C), who had received 1 dose 44 days before being identified as a sexual contact of a person with acute HAV infection, received PEP consisting of 1 dose of monovalent vaccine at 7 days and immune globulin (IG) at 14 days after the latest possible exposure but developed illness 6 days after PEP was completed. All three patients who received combined hepatitis A and hepatitis B vaccine (patients D, E, and F) had received only 1 or 2 doses of the 3-dose series. Five of six patients initiated vaccination after HIV diagnosis, although all six patients had an indication for routine HAV vaccination that predated HIV diagnoses, including identifying as a man who had sex with men or use of recreational drugs (*1*).

Previous vaccination for hepatitis did not reliably provide protection among some persons with HIV infection. Approximately half of the patients with HAV and HIV infections were previously vaccinated. The Advisory Committee on Immunization Practices does not currently address specific PEP considerations for persons with HIV infection who have been fully vaccinated against hepatitis A (*1*). CDC guidelines recommend IG and a dose of vaccine as PEP for hepatitis A for previously unvaccinated persons who are immunocompromised, including persons with HIV infection (*2*). These findings support the consideration by providers to administer IG as PEP for all persons with HIV infection who experience high-risk exposure to a person with HAV infection, regardless of the exposed persons prior vaccination history or immune status.

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Jennifer Black, Meredith Brantley, Stacey Bosch, Monique Foster, Bev Fulbright, Cassie Jones, Marion Kainer, Julie Shaffner, Tarah Amling, Jana Tolleson.

Corresponding author: Julia Brennan, jbrennan@cdc.gov, 615-253-9971.

[1]Epidemic Intelligence Service, CDC; [2]Communicable and Environmental Diseases and Emergency Preparedness, Tennessee Department of Health; [3]Department of Health Policy, Vanderbilt University Medical Center, Nashville, Tennessee.

All authors have completed and submitted the ICMJE form for disclosure of potential conflicts of interest. William Schaffner reports personal fees from Pfizer, Merck, Dynavax, Seqirus, SutroVax, and Shionogi, outside the submitted work. No other potential conflicts of interest were disclosed.

TABLE. Characteristics of six persons living with human immunodeficiency virus (HIV) infection and acute hepatitis A virus (HAV) infection who had received partial or complete hepatitis A vaccination — Tennessee, December 1, 2017–September 20, 2018

	Patient					
Characteristic	**A**	**B**	**C**	**D**	**E**	**F**
Age (yrs)	29	31	30	38	36	55
Interval from HIV diagnosis to HAV infection	5 yrs	9 yrs	3 mos	4 mos	3 mos	5 yrs
No. of doses monovalent HAV vaccine received	2/2	2/2	1/2	—	—	—
No. of doses combined HAV and hepatitis B vaccine received	—	—	—	2/3	1/3	2/3
HAV vaccination status	Full	Full	Partial	Partial	Partial	Partial
Received postexposure prophylaxis	No	No	Yes	No	No	No
Interval from first HAV vaccine dose to HAV infection	8 yrs	8 yrs	2 mos	2 mos	1 mo	5 mos
Interval from most recent HAV vaccine dose to HAV infection	7 yrs	5 yrs	13 days	6 days	1 mo	3 mos
CD4 count before first HAV vaccine dose*	Vaccinated 3 yrs before HIV diagnosis	358	887	532	862	342
HIV viral load before first HAV vaccine dose†	Vaccinated before HIV diagnosis	1,886	154	136	2,554	20
CD4 before HAV infection	N/A	243	779	403	N/A	225
HIV viral load before HAV infection	N/A	28,474	20	26	N/A	20

Abbreviation: N/A = not available.
* CD4 count >500 cell/mm^3 indicates healthy immune function.
† HIV viral load <50 copies/mL indicates viral suppression.

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Notes from the Field

Hepatitis A Outbreak Associated with Drug Use and Homelessness — West Virginia, 2018

Erica Wilson, MD[1,2]; Megan G. Hofmeister, MD[3]; Shannon McBee, MPH[4]; Janet Briscoe, MBA[5]; Erica Thomasson, PhD[4]; R. Henry Olaisen, PhD[1,6]; Ryan Augustine, MPH[3]; Eliana Duncan, MSc[3]; Sapna Bamrah Morris, MD[7]; Loretta Haddy, PhD[4]

In March 2018, the Kanawha-Charleston Health Department (KCHD) in West Virginia began investigating a cluster of reported hepatitis A virus (HAV) infections. Twelve specimens tested by CDC's Division of Viral Hepatitis laboratory confirmed that patients were infected with an HAV strain (genotype 1B) reported in ongoing hepatitis A outbreaks in multiple states, primarily among persons who use drugs and persons experiencing homelessness (*1*). In August 2018, because of ongoing reporting of cases, the West Virginia Bureau of Public Health requested epidemiologic assistance from CDC in responding to the outbreak.

Upon retrospective review, KCHD identified a total of 664 outbreak-associated hepatitis A cases that occurred from January 1, 2018 to August 28, 2018. Outbreak cases met the 2012 Council of State and Territorial Epidemiologists' case definition for an acute hepatitis A infection* and had either an epidemiologic link to an identified outbreak case, a laboratory specimen matching the outbreak strain, or occurred in a person at high risk for infection (e.g., reported injection or noninjection drug use, experienced homelessness or unstable housing, or was recently incarcerated) or who resided in a county where the outbreak genotype had been previously identified through laboratory testing. Median age of the patients was 37 years (range = 14–77 years); 398 of the patients (60%) were male, 380 (57%) were hospitalized, and one (0.1%) died. Current or past illicit drug use was reported by 540 (81%) patients, and being homeless or having a transient living situation was reported by 100 (15%). Evidence of past or current hepatitis C virus infection was identified in 314 (47%) outbreak-associated cases, and 65 (10%) patients had evidence of past or current hepatitis B virus infection.

HAV is typically shed in the stool of infected persons and primarily spread by the fecal-oral route, either through direct person-to-person contact or consumption of contaminated food or water. In this outbreak, transmission was primarily person-to-person among persons with a current or past history of injection or noninjection drug use.

Hepatitis A is a vaccine-preventable disease; vaccination is the primary method for stopping an outbreak (*2*). Vaccination measures were undertaken at both the state and county level in an effort to control the outbreak. Statewide hepatitis A vaccination initiatives in August 2018 included vaccination at four regional jails, through harm reduction programs, and at a large comprehensive drug treatment center, as well as provision of vaccination toolkits to 40 federally qualified health centers. Vaccination campaigns by KCHD targeted populations at high risk for HAV infection and included opt-out vaccination upon entry into homeless shelters; vaccinations at meal centers, drop-in centers, and other locations where services are provided to persons experiencing homelessness; and, through local emergency medical services, vaccination of persons who used drugs or were close contacts of patients with confirmed HAV infection. Mapping of outbreak-associated cases and administration of hepatitis A vaccine to adults in KCHD's catchment area were used to guide vaccination strategies. As of February 2019, the statewide outbreak was ongoing, with 74 new outbreak-associated cases reported during January; however, fewer than five of those were in Kanawha County.

In other states experiencing similar person-to-person hepatitis A outbreaks, hepatitis A vaccination campaigns have successfully targeted populations at risk by vaccinating in emergency departments and at syringe exchange programs, jails, and drug treatment facilities (*3*). Increasing vaccination coverage among groups at high risk for HAV infection as recommended by the Advisory Committee on Immunization Practices (*2*,*4*,*5*) can slow ongoing outbreaks and prevent future outbreaks. Engaging partners to provide hepatitis A vaccine to persons at highest risk at all possible points of contact with the health care system and service providers might help improve vaccination coverage among groups at high risk.

Corresponding author: Megan G. Hofmeister, mhofmeister@cdc.gov, 404-718-5458.

[1]Epidemic Intelligence Service, CDC; [2]Wisconsin Division of Public Health; [3]Division of Viral Hepatitis, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, CDC; [4]West Virginia Bureau of Public Health; [5]Kanawha-Charleston Health Department, West Virginia; [6]Division of Vital Statistics, National Center for Health Statistics, CDC; [7]Division of Tuberculosis Elimination, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, CDC.

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Notes from the Field

Multistate Coccidioidomycosis Outbreak in U.S. Residents Returning from Community Service Trips to Baja California, Mexico — July–August 2018

Mitsuru Toda, PhD[1,2]; Francisco J. Gonzalez, MD[3]; Maureen Fonseca-Ford, MPH[4]; Patrick Franklin[5]; Melinda Huntington-Frazier, MSN[6]; Bruce Gutelius, MD[7]; Vance Kawakami, DVM[6]; Kristy Lunquest, ScM[8]; Stephanie McCracken, MPH[9]; Kathleen Moser, MD[4]; Hanna Oltean, MPH[10]; Adam J. Ratner, MD[3]; Chelsea Raybern, MPH[11]; Kimberly Signs, DVM[9]; Allison Zaldivar, MPH[11]; Tom M. Chiller, MD[2]; Brendan R. Jackson, MD[2]; Orion McCotter, MPH[2]

On August 8, 2018, the New York City Department of Health and Mental Hygiene notified CDC about two high school students hospitalized for pneumonia of unknown etiology who had recently returned from community service trips constructing houses near Tijuana in Baja California, Mexico. Patients had developed fever 9 and 11 days after travel, followed by rash and lower respiratory symptoms. Symptoms did not improve with multiple courses of antibacterial medications, and the patients subsequently received diagnoses of coccidioidomycosis, a fungal disease commonly known as valley fever.

Given the occurrence of severe illness in two young and previously healthy persons, additional case finding was conducted through outreach to the school group and an organization that coordinates service trips, as well as through Epi-X* notices. By October 15, 2018, eight cases of clinically diagnosed valley fever had been reported in four states (Kansas, Maryland, Michigan, and New York) in persons who traveled on multiple service trips during June–July 2018 (Figure). Four patients were hospitalized, including one who required intensive care, one who required chest tube placement for pleural effusion, and one who was hospitalized for >10 days. All patients were male, five were high school students, and three were adults. Patients were part of seven separate trips organized by churches, high schools, or community groups. These trips were coordinated by two separate organizations and involved an estimated 225 travelers from six states (including, in addition to the four states with identified cases, Missouri and Washington). Seven patients had performed excavation or construction on a single house south of Tijuana, suggesting this site was the likely source of exposure for most patients. State and local health departments notified all travelers about their risk for valley fever. In addition, through binational communication mechanisms, local, state, and federal authorities in Mexico were also alerted to the outbreak. No additional cases associated with this outbreak were detected in Mexico.

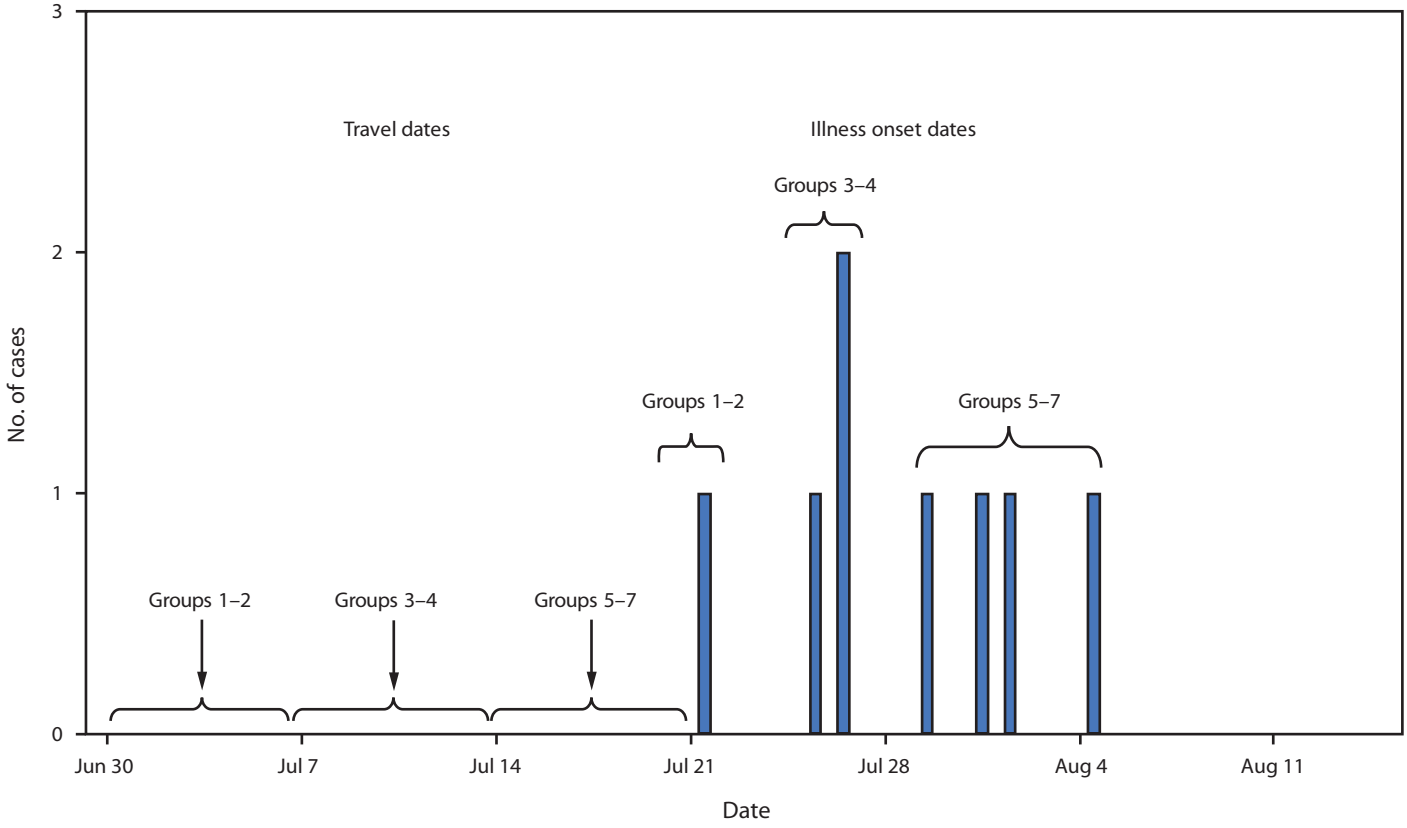
Valley fever is primarily acquired through inhalation of airborne dust or soil containing the spores. Approximately 40% of persons develop influenza-like symptoms 1–3 weeks after exposure. Approximately 5%−10% of persons develop serious pulmonary problems, and an even smaller percent (1%) of persons develop disseminated disease. The disease is endemic in the southwestern United States, northern Mexico, and parts of Central and South America (*1*). In recent years, incidence has increased in California, which borders Baja California (*2*). Valley fever is not a mandatorily reportable disease in Mexico, and standard serological diagnostic testing is generally unavailable, limiting understanding of its epidemiology. Valley fever has been considered endemic in Tijuana but to a lesser extent than in other areas of Mexico (*3*). However, valley fever outbreaks have been reported previously among travelers involved in construction projects, including service trips to the Mexican cities of Tecate (*4*) and Hermosillo (*5*).

The severity of illness and delays in accurate diagnosis observed in this outbreak underscore the importance of obtaining a travel history and considering coccidioidomycosis in persons with respiratory symptoms, with or without rash, who have returned from northern Mexico or areas of the United States where the disease is endemic.† Organizers of service or mission trips involving soil-disturbing activities in these areas should educate participants about the risk for valley fever. Potential mitigation efforts could include soil wetting, employing professionals with appropriate occupational safety training for excavation, staying upwind of digging when possible, and using at minimum CDC's National Institute for Occupational Safety and Health–approved or Food and Drug Administration–cleared N-95 respirators when performing dust-generating activities. Finally, improved early diagnosis, treatment, and surveillance capacities for valley fever could reduce misdiagnosis, improve patient outcomes, and allow for more targeted public education.

* https://www.cdc.gov/mmwr/epix/epix.html.

† https://www.cdc.gov/fungal/diseases/coccidioidomycosis/maps.html.

FIGURE. Cases of coccidioidomycosis among U.S. residents returning from community service trips to Baja California, Mexico (N = 8), by date of travel and date of illness onset — Kansas, Maryland, Michigan, and New York, July–August, 2018



Acknowledgments

Office of Binational Border Health, California Department of Public Health; CDC Mexico Office; Kansas City Health Department, Missouri; National Institute for Occupational Safety and Health, CDC; Prince George's County Health Department, Largo, Maryland.

Corresponding author: Mitsuru Toda, MToda@cdc.gov, 404-718-6784.

[1]Epidemic Intelligence Service, CDC; [2]Mycotic Diseases Branch, Division of Foodborne, Waterborne, and Environmental Disease, National Center for Emerging and Zoonotic Infectious Diseases, CDC; [3]Departments of Pediatrics and Microbiology, New York University School of Medicine, New York, New York; [4]United States-Mexico Unit, Division of Global Migration and Quarantine, National Center for Emerging and Zoonotic Infectious Diseases, CDC; [5]Missouri Department of Health and Senior Services; [6]Public Health – Seattle & King County, Seattle, Washington; [7]New York City Department of Health and Mental Hygiene, New York, New York; [8]Maryland Department of Health; [9]Michigan Department of Health and Human Services; [10]Washington State Department of Health; [11]Kansas Department of Health and Environment.

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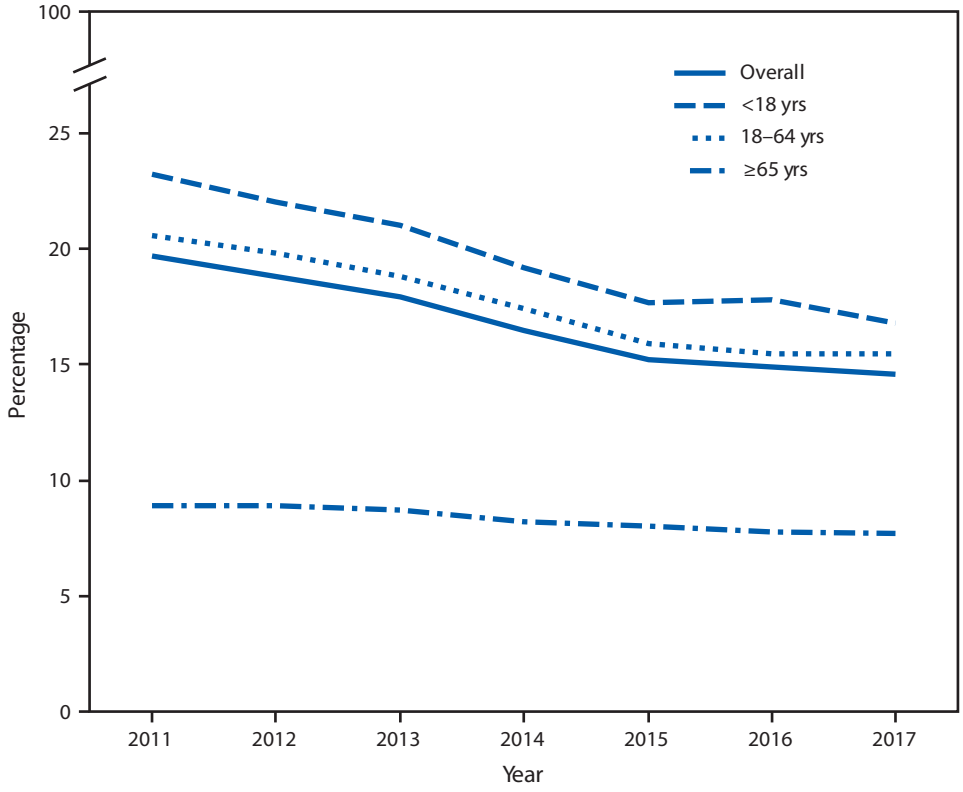
QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Persons in Families Having Problems Paying Medical Bills in the Past 12 Months,* by Age Group — National Health Interview Survey, 2011–2017†



* For the 2011–2017 National Health Interview Survey Family core component, a family respondent (i.e., an adult who was knowledgeable about the family) answered the question "In the past 12 months did [you/anyone in the family] have problems paying or were unable to pay any medical bills? Include bills for doctors, dentists, hospitals, therapists, medication, equipment, nursing home, or home care." If the respondent answered "yes," then all persons in that family were counted as being in a family having problems paying medical bills.
† Estimates are based on interviews of a sample of the civilian, noninstitutionalized U.S. population and are derived from the National Health Interview Survey Family core component.

From 2011 to 2017, the overall percentage of persons who were in U.S. families having problems paying medical bills in the past 12 months decreased from 19.7% to 14.6%. Similar trends were observed for all age groups, with a decrease from 23.2% to 16.8% for children aged <18 years, from 20.6% to 15.5% for adults aged 18–64 years, and from 8.9% to 7.7% for those aged ≥65 years.

Source: National Health Interview Survey, 2011–2017 data. https://www.cdc.gov/nchs/nhis.htm.

Reported by: Emily P. Terlizzi, MPH, ljx9@cdc.gov, 301-458-4991; Amy E. Cha, PhD; Robin A. Cohen, PhD.

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