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Patterns and Trends in Age-Specific Black-White Differences in Breast Cancer Incidence and Mortality – United States, 1999–2014

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Breast cancer continues to be the most commonly diagnosed cancer and the second leading cause of cancer deaths among U.S. women (*1*). Compared with white women, black women historically have had lower rates of breast cancer incidence and, beginning in the 1980s, higher death rates (*1*). This report examines age-specific black-white disparities in breast cancer incidence during 1999–2013 and mortality during 2000–2014 in the United States using data from United States Cancer Statistics (USCS) (*2*). Overall rates of breast cancer incidence were similar, but death rates remained higher for black women compared with white women. During 1999–2013, breast cancer incidence decreased among white women but increased slightly among black women resulting in a similar average incidence at the end of the period. Breast cancer incidence trends differed by race and age, particularly from 1999 to 2004–2005, when rates decreased only among white women aged ≥50 years. Breast cancer death rates decreased significantly during 2000–2014, regardless of age with patterns varying by race. For women aged ≥50 years, death rates declined significantly faster among white women compared with black women; among women aged <50 years, breast cancer death rates decreased at the same rate among black and white women. Although some of molecular factors that lead to more aggressive breast cancer are known, a fuller understanding of the exact mechanisms might lead to more tailored interventions that could decrease mortality disparities. When combined with population-based approaches to increase knowledge of family history of cancer, increase physical activity, promote a healthy diet to maintain a healthy bodyweight, and increase screening for breast cancer, targeted treatment interventions could reduce racial disparities in breast cancer.

USCS includes incidence data from CDC's National Program of Cancer Registries (NPCR) and the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program and mortality data from the National Vital Statistics System (*2*). Data on new cases of invasive (malignant) breast cancer* diagnosed during 1999–2013 were obtained from population-based cancer registries affiliated with NPCR or SEER programs in each state and the District of Columbia

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* Cases were classified by anatomic site using the I*nternational Classification of Diseases for Oncology* (*ICD-O*), *Third Edition* (http://codes.iarc.fr/).

INSIDE

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(DC). Incidence data in this report met USCS publication criteria, covering 99% of the U.S. population during 2009–2013 and 92% during 1999–2013.[†] SEER Summary Stage 2000[§] was used to characterize cancers as localized, regional, distant, or unknown stage using clinical and pathologic tumor characteristics, such as tumor size, depth of invasion and extension to regional or distant tissues, involvement of regional lymph nodes, and distant metastases. Breast cancer death data during 2000–2014 were based on death certificate information reported to state vital statistics offices and compiled into a national file through the National Vital Statistics System; mortality data in this report cover 100% of the U.S. population. Race and ethnicity were abstracted from medical records for cases and from death certificates for deaths; this report includes all races, white, and black, regardless of ethnicity. Population estimates for the denominators of incidence and death rates were from the U.S. Census, as modified by the National Cancer Institute. Five-year average annual incidence rates for 2009–2013 and death rates for 2010–2014 per 100,000 women were age-adjusted by the direct method to the 2000 U.S. standard population (19 age groups).[¶] Average annual percentage change was used to quantify changes in incidence rates during 1999–2013 and death rates during 2000–2014 and was calculated using joinpoint regression, which allowed different slopes for three periods; the year at which slopes changed could vary by race and age.

During 2009–2013, approximately 221,000 breast cancers were diagnosed each year (Table). Overall incidence of breast cancer was similar among black women (121.5 cases per 100,000 population) and white women (123.6 cases per 100,000 population), but differences by age and stage were found. Compared with white women, breast cancer incidence was higher among black women aged <60 years, but lower among black women aged ≥60 years. Black women had a lower percentage of breast cancers diagnosed at a localized stage (54%) than did white women (64%) (Table). Among white women, breast cancer incidence decreased from 1999 to 2004, and then stabilized, decreasing 0.8% per year on average; however, breast cancer incidence was stable from 1999 to 2005 among black women and then nonsignificantly

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[†] Cancer registries demonstrated that cancer incidence data were of high quality by meeting the six USCS publication criteria: 1) case ascertainment ≥90% complete; 2) ≤5% of cases ascertained solely on the basis of death certificate; 3) ≤3% of cases missing information on sex; 4) ≤3% of cases missing information on age; 5) ≤5% of cases missing information on race; and 6) ≥97% of registry's records passed a set of single-field and inter-field computerized edits that test the validity and logic of data components. Additional information available at https://nccd.cdc.gov/uscs/.

[§] http://seer.cancer.gov/tools/ssm.

[¶] Population estimates incorporate bridged single-race estimates derived from the original multiple race categories in the 2010 U.S. Census. http://seer.cancer.gov/popdata/ and https://www.cdc.gov/nchs/nvss/bridged_race.htm.

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TABLE. Average annual number and rate[*] of female breast cancer deaths (2010–2014) and invasive cases (2009–2013) among women, by cancer stage, black or white race, and age group — United States,[†] 2009–2014

Race/ age group (yrs)	Mortality		Incidence		Cancer stage[§]					
					Localized		Regional		Distant	
	No.	Rate (95% CI)	No	Rate (95% CI)	%	Rate (95% CI)	%	Rate (95% CI)	%	Rate (95% CI)
All races	41,030	21.2 (21.1–21.3)	221,258	122.6 (122.4–122.9)	63	76.8 (76.7–77.0)	29	35.8 (35.7–35.9)	6	7.0 (6.9–7.0)
<40	1,003	1.3 (1.3–1.4)	9,923	13.3 (13.2–13.4)	47	6.2 (6.1–6.3)	43	5.8 (5.7–5.8)	7	0.9 (0.9–1.0)
40–49	3,516	16.1 (15.8–16.3)	33,404	151.9 (151.2–152.7)	57	86.6 (86.0–87.1)	36	54.8 (54.4–55.2)	5	7.5 (7.4–7.7)
50–59	7,664	34.1 (33.8–34.5)	51,698	236.6 (235.7–237.5)	61	143.7 (143.0–144.4)	31	74.3 (73.7–74.8)	6	13.9 (13.6–14.1)
60–69	9,516	57.6 (57.1–58.1)	58,712	372.3 (371.0–373.7)	66	247.5 (246.4–248.6)	26	96.1 (95.4–96.8)	6	21.1 (20.8–21.4)
70–79	8,303	85.9 (85.0–86.7)	41,238	439.5 (437.6–441.4)	69	304.6 (303.0–306.2)	23	100.7 (99.8–101.7)	5	23.8 (23.3–24.2)
≥80	11,028	146.7 (145.5–148)	26,283	369.7 (367.7–371.7)	64	239.8 (238.2–241.4)	24	86.7 (85.7–87.6)	7	24.4 (23.9–24.9)
White	33,679	20.6 (20.5–20.7)	184,776	123.6 (123.4–123.9)	64	78.8 (78.6–79.0)	28	35.4 (35.2–35.5)	5	6.6 (6.6–6.7)
<40	677	1.2c(1.2–1.2)	7,287	12.9 (12.7–13.0)	47	6.1 (6.0–6.2)	44	5.6 (5.5–5.7)	7	0.8 (0.8–0.9)
40–49	2,506	14.6 (14.4–14.9)	26,240	152.0 (151.2–152.8)	58	88.3 (87.7–88.9)	35	54.0 (53.5–54.5)	5	6.9 (6.8–7.1)
50–59	5,824	32.1 (31.8–32.5)	41,906	237.0 (235.9–238.0)	62	146.8 (146.0–147.6)	31	72.9 (72.4–73.5)	5	12.8 (12.6–13.1)
60–69	7,778	56.6 (56.0–57.1)	49,889	378.3 (376.8–379.8)	67	255.6 (254.4–256.8)	25	95.1 (94.4–95.9)	5	20.5 (20.1–20.8)
70–79	7,087	86.2 (85.3–87.1)	35,948	449.5 (447.4–451.6)	70	315.7 (314.0–317.5)	22	100.6 (99.6–101.6)	5	23.3 (22.8–23.7)
≥80	9,807	148.0 (146.7–149.3)	23,506	375.0 (372.8–377.1)	65	246.2 (244.4–248.0)	23	86.6 (85.5–87.6)	6	24.0 (23.4–24.5)
Black[¶]	6,144	29.2 (28.8–29.5)	25,297	121.5 (120.8–122.2)	54	66.4 (65.9–66.9)	34	41.4 (41–41.8)	9	10.3 (10.1–10.5)
<40	271	2.4 (2.3–2.6)	1,742	15.5 (15.2–15.9)	42	6.6 (6.4–6.8)	45	7.0 (6.7–7.2)	11	1.6 (1.5–1.7)
40–49	839	27.3 (26.5–28.2)	4,701	153.1 (151.2–155.1)	50	76.1 (74.7–77.5)	40	61.9 (60.6–63.1)	8	11.7 (11.2–12.2)
50–59	1,541	53.4 (52.2–54.6)	6,809	243.1 (240.6–245.7)	53	129.4 (127.5–131.3)	36	86.9 (85.3–88.4)	9	21.5 (20.8–22.3)
60–69	1,438	79.0 (77.1–80.8)	6,176	359.1 (355.1–363.2)	58	208.7 (205.7–211.8)	32	113.0 (110.8–115.3)	8	29.3 (28.2–30.5)
70–79	1,017	105.5 (102.6–108.5)	3,819	408.8 (403.0–414.6)	61	249.7 (245.2–254.3)	28	114.9 (111.9–118.0)	8	32.7 (31.1–34.4)
≥80	1,039	169.8 (165.2–174.5)	2,050	352.4 (345.6–359.3)	57	199.8 (194.7–205.0)	28	98.3 (94.7–102.0)	9	32.9 (30.9–35.1)

Source: CDC's National Center for Health Statistics National Vital Statistics System, National Program of Cancer Registries and the National Cancer Surveillance, Epidemiology, and End Results Program.

Abbreviation: CI = confidence interval.

[*] Rates are per 100,000 persons and age-adjusted to the 2000 U.S. Standard population (19 age groups-Census P25–1130); 95% CIs were calculated as modified gamma intervals.

[†] Incidence data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined for all years 2009–2013 (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at https://www.cdc.gov/cancer/npcr/uscs/data/00_data_quality.htm. Mortality data cover 100% of the U.S. population.

[§] A localized cancer is one that is confined to the primary site, a regional cancer is one that has spread directly beyond the primary site or to regional lymph nodes, and a distant cancer is one that has spread to other organs. Percentages of stages do not sum to 100% because data for cases with unknown stage are not presented. To use the most accurate staging information, this report excludes cases that were identified by autopsy or death certificate only.

[¶] Rates among black women were significantly (p<0.05) different than among white women in all comparisons except overall incidence among women aged 40–49 years.

increased (Figure 1). Breast cancer incidence trends differed by race and age, particularly during 1999–2004 when rates decreased only among white women aged ≥50 years. During 1999–2013, among women aged 60–79 years, rates of breast cancer incidence decreased significantly among white women, but increased significantly among black women (https://www.cdc.gov/cancer/breast/statistics/trends_invasive.htm).

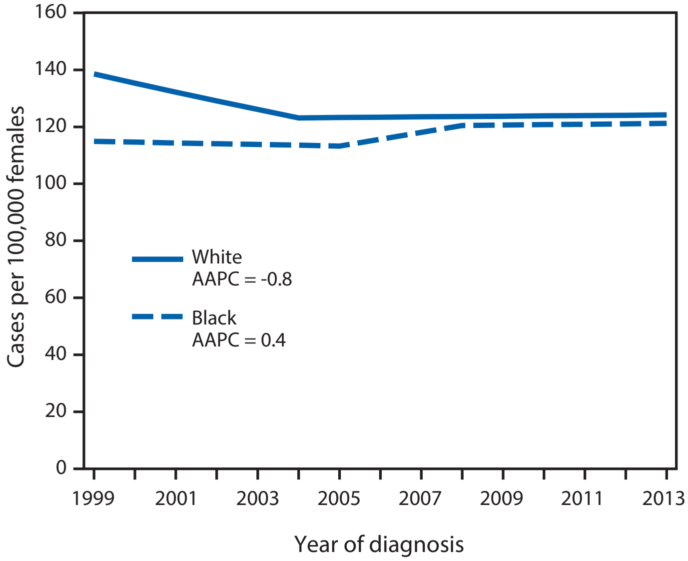
During 2010–2014, approximately 41,000 deaths from breast cancer occurred each year (Table). Breast cancer mortality was 41% higher among black women (29.2 deaths per 100,000 population) than white women (20.6 deaths per 100,000 population). Breast cancer death rates decreased during 2010–2014 among both blacks and whites, although differences in trends by race and age were found (Figure 2). Overall, breast cancer death rates decreased faster among white women (-1.9% per year) compared with black women (-1.5% per year). Among women aged <50 years, breast cancer death rates decreased at the same pace among black and white women, whereas white women aged ≥50 years had significantly larger decreases. The largest difference by race was observed among women aged 60–69 years: breast cancer death rates decreased 2.0% per year among white women compared with 1.0% among black women.

Discussion

Recent trends in breast cancer incidence suggest that the convergence and now equal incidence for black and white women has been primarily because of incidence increasing among black women, particularly among those aged 60–79 years, and concomitant decreasing or stable rates in white women. Breast cancer mortality is approximately 40% higher among black women compared with white women, with faster decreases in mortality among white women. This report confirms previous findings by race overall (*1*), and presents age-specific changes for incidence and mortality by race.

A previous CDC report suggested that improvements in follow-up of abnormal screening tests and treatment for breast cancer for black women could address racial disparities (*3*).

FIGURE 1. Trends* in invasive female breast cancer incidence, by race† and year of diagnosis — United States,§ 1999–2013



Source: CDC's National Program of Cancer Registries and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program.

Abbreviation: AAPC = Average annual percentage change.

* Trends were measured with AAPC in rates, calculated using joinpoint regression, which allowed different slopes for three periods; the year at which slopes changed could vary by age and sex.

† AAPC for white females was significantly different ($p<0.05$) than zero. Trend among black women was significantly different ($p<0.05$) than among white women.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined for all years during 1999–2013 (covering approximately 92% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/data/00_data_quality.htm.

Summary

What is already known about this topic?

Despite improvements in early detection and treatment for breast cancer, black women continue to have the highest breast cancer mortality rate. Since 1975, black women have had lower breast cancer incidence compared to white women, but rates have recently converged, in part because of increasing breast cancer incidence in black women.

What is added by this report?

In-depth analyses of population-based data indicated that breast cancer incidence is equal for black and white women in part because of incidence increasing among black women, particularly among those aged 60–79 years. Breast cancer mortality continues to be higher among black women compared with white women, with death rates decreasing faster among white women. However, among women aged <50 years, breast cancer death rates are decreasing at the same rate among black and white women.

What are the implications for public health practice?

Measures to ensure access to quality care and the best-available treatments for all women diagnosed with breast cancer can help address these racial disparities. Increasing trends in obesity prevalence among black women could be contributing to increasing incidence of breast cancer. Thus, increasing and sustaining public health interventions to increase physical activity and promote a healthy diet to reach and maintain a healthy weight throughout a woman's life need to be considered. As tailored interventions and therapies are developed and implemented, public health professionals can use population-based incidence and mortality data to monitor their impact on health disparities.

Several recent large-scale federal initiatives have provided a novel opportunity to address racial disparities in breast cancer subtypes and beyond at the molecular level. Advances in understanding breast cancer subtypes have improved awareness that black women are more likely to be diagnosed with triple negative breast cancer (negative estrogen receptor, progesterone receptor, and HER2 status), which might have improved the likelihood that they receive the appropriate treatment based on their cancer type (*4*). The Precision Medicine Initiative** promotes advances in research, technology, and policies to enable researchers, providers and patients to work together to develop individualized care by understanding how the molecular characteristics of cancers lead to phenotypic characteristics noted in the clinical setting. The Cancer Moonshot†† is focused on addressing the most pressing needs for cancer control, including accelerating the understanding of cancer and its prevention, early detection, treatment, and cure. Both initiatives are focused on determining the genetic variations that increase risk for aggressive breast cancer so that tailored interventions and treatment plans can be developed.

Long-term breast cancer incidence trends for black women indicate steady increases over the past 40 years, resulting in incidence rates equivalent to those among white women in 2013 (*5*). In-depth analyses by age, race, and period of diagnosis indicate that the largest increases are seen among black women aged 60–79 years. The reason for this temporal trend in black women is not well understood. The increasing breast cancer incidence suggests there might be a screening effect from increased use of mammography (*6*). Previous increasing trends in obesity prevalence among black women might also play a role (*7*). The exact biologic mechanisms for the association between obesity and increased risk for breast cancer are still unknown (*7*). These increasing trends might stabilize and

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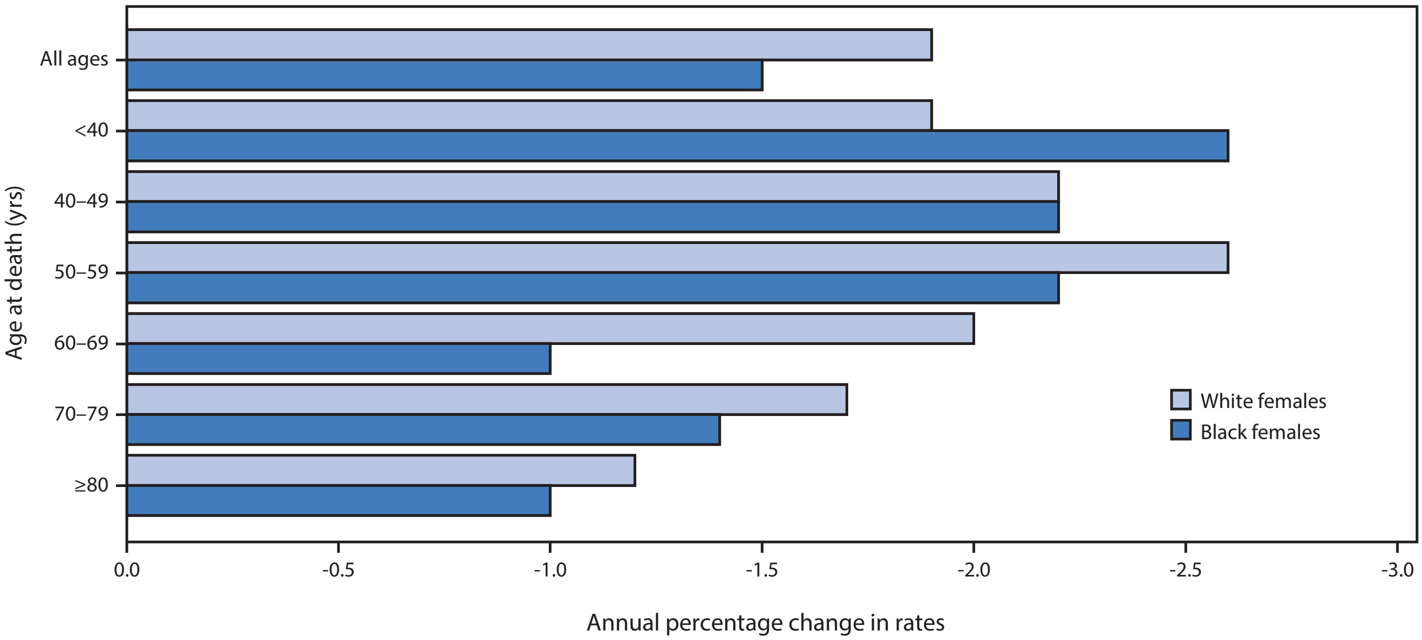
** https://www.nih.gov/precision-medicine-initiative-cohort-program.

†† https://www.whitehouse.gov/CancerMoonshot.

FIGURE 2. Average annual percentage change* in female breast cancer death rates, by age group and race† — United States, 2000–2014



Source: CDC's National Center for Health Statistics National Vital Statistics System.

Abbreviation: AAPC = average annual percentage change.

* AAPC was calculated using joinpoint regression, which allowed different slopes for three periods; the year at which slopes changed could vary by age and race. All AAPCs were significantly different ($p<0.05$) than zero.

† Trends among black women were significantly different ($p<0.05$) than among white women for the following age groups: all ages, 50–59 years, 60–69 years, and 79–79 years.

decline by sustaining and increasing public health interventions to increase physical activity and promote a healthy diet to reach and maintain a healthy weight throughout a woman's life (*7*). Much of the decrease in breast cancer incidence among white women is believed to be because of decreased use of postmenopausal hormone replacement therapy based on findings from the Women's Health Initiative (*1*).

This report illustrates that the disparity in breast cancer mortality is stable, with comparable declines in death rates among younger black and white women. Previous studies have indicated that similar use of mammography screening among black and white women has led to more cancers being diagnosed at an early stage, and more appropriate treatment of aggressive cancers in young black women (*4*,*8*). At the population level, some communities have demonstrated success in achieving equity for black women dying from breast cancer; these successes provide opportunities to learn about pathways for improved outcomes (*9*).

The findings in this report are subject to at least three limitations. First, race and ethnicity data were ascertained from medical records and death certificates and might be subject to misclassification; however, misclassification is minimal for black and white race (*10*). Second, the most recent data are several years old, because current requirements for reporting cancer registry data are rigorous and require multiple steps. Finally, cancer registries do not routinely collect risk factor information that could inform the trends noted here.

Breast cancer mortality is decreasing for both black and white women, with equal pace of decrease for younger black and white women. Continued decreases involve accelerating current progress and understanding breast cancer genomics for predicting risk and promoting effective treatment through new initiatives like the Precision Medicine Initiative and Cancer Moonshot. Public health professionals need to work in tandem with scientists and clinical researchers to monitor the successes of these newly developed therapies by assessing disparities at a population level using trends in incidence and death rates.

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HIV Testing and Outcomes Among Hispanics/Latinos — United States, Puerto Rico, and U.S. Virgin Islands, 2014

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The 2015 National HIV/AIDS Strategy provides an updated plan to address health disparities in communities at high risk for human immunodeficiency virus (HIV) infection (*1*,*2*). Hispanics/Latinos* are disproportionately affected by HIV in the United States. In 2014, 23% of HIV diagnoses were among Hispanics/Latinos, who represented 16% of the U.S. population (*3*). To examine HIV testing services, CDC analyzed 2014 data from the National HIV Prevention Program Monitoring and Evaluation (NHM&E) system submitted by 60 CDC-funded health departments† and 151 community-based organizations. Among Hispanics/Latinos tested, gay, bisexual, and other men who have sex with men (MSM) had the highest percentage of HIV diagnoses (2%). MSM accounted for 19.8% of HIV test events conducted among Hispanics/Latinos and 63.8% of Hispanics/Latinos who received an HIV diagnosis in non–health care settings.§ Approximately 60% of Hispanics/Latinos who received an HIV diagnosis were linked to HIV medical care within 90 days; this percentage was lower in the South than in other U.S. Census regions. HIV prevention programs that are focused on expanding routine HIV screening and targeting and improving linkage to medical care and other services (e.g., partner services) for Hispanics/Latinos can help identify undiagnosed HIV cases and reduce HIV transmission.

CDC analyzed NHM&E HIV test event-level data submitted by 60 CDC-funded testing programs at health departments¶ and 151 community-based organizations. Data were stratified by age, gender, U.S. Census region, HIV prevalence,** and certain target populations (i.e., MSM, persons who inject drugs, heterosexual males, and heterosexual females).†† Data to identify target populations are required for all test events conducted in non–health care settings and are only required for HIV-positive persons from health care settings. Target population data included in the analysis were only from non–health care settings. Valid HIV test events were tests for which the results (i.e., positive or negative) were known. Analyses included persons who tested positive for HIV during the most current test event in 2014 and were not previously reported in the health department's HIV surveillance system. Clients' self-reported data regarding previous HIV status were used for grantees who were not able to verify earlier test results within the grantee's surveillance system. The outcomes among Hispanics/Latinos with HIV infection diagnosed in 2014 included linkage to HIV medical care within any timeframe (e.g., attendance at first medical care appointment); linkage to HIV medical care within 90 days; interview for partner services (i.e., soliciting information from HIV-positive persons about their sex partners and drug-injecting partners, who can then be notified of their potential exposures and offered services to protect their health) (*4*); and referral to HIV risk-reduction services (i.e., services aimed at reducing the risk for HIV transmission, such as behavioral interventions and risk-reduction counseling. HIV risk-reduction services exclude HIV posttest counseling, mental health services, and housing needs) (*5*).

During 2014, a total of 3,049,845 CDC-funded HIV test events were conducted in the United States, Puerto Rico, and the U.S. Virgin Islands. Hispanics/Latinos accounted for 22.6% (687,777) of all test events conducted, and for 25.3% and 25.8% of HIV test events among persons aged 30–39 years and 40–49 years, respectively, as well as 31.4%

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[*] Persons who are Hispanic/Latino can be of any race.

[†] 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and eight Metropolitan Statistical Areas or specified Metropolitan Divisions: Baltimore, Chicago, Fulton County (Atlanta), Houston, Los Angeles County, New York City, Philadelphia, and San Francisco. In 2014, one health department submitted aggregate-level data, and therefore, was excluded from the analysis.

[§] Data to identify target populations are required for all test events conducted in non–health care settings and are only required for HIV-positive persons from health care settings. Therefore, data for target populations were only from tests conducted in non–health care settings (N = 879,063 for all CDC-funded test events and N = 197,802 for Hispanics/Latinos). Health care settings include inpatient facilities, outpatient facilities, and emergency departments. Non–health care settings include HIV counseling and testing sites and community settings.

[¶] An HIV test event is a sequence of one or more HIV tests conducted to determine a person's HIV status. During one testing event, a person might be tested once (e.g., one rapid test or one conventional test) or multiple times (e.g., one rapid test followed by one conventional test to confirm a preliminary HIV-positive test result).

[**] HIV prevalence is defined based on the number of persons living with diagnosed HIV infection (PLWH) in 2013. The jurisdictions are classified based on HIV prevalence as follows: high, ≥20,000 PLWH; medium, 4,000–19,999 PLWH; medium-low, 1,000–3,999 PLWH; and low, <1,000 PLWH.

[††] MSM include males who reported male-to-male sexual contact as well as males who reported both male-to-male sexual contact and injection drug use in the past 12 months. Persons who inject drugs include persons who reported injection drug use in the past 12 months. Heterosexual males include males who only reported heterosexual contact with a female in the past 12 months. Heterosexual females include females who only reported heterosexual contact with a male in the past 12 months.

of HIV test events among transgender persons. By census region, Hispanics/Latinos accounted for >90% of all test events conducted in the U.S. dependent areas of Puerto Rico and the U.S. Virgin Islands (98% were conducted in Puerto Rico) and 40.1% of test events in the West census region. Among all HIV test events that occurred in medium-low HIV prevalence and high HIV prevalence areas, Hispanics/Latinos accounted for 22.8% and 27.0%, respectively. Hispanic/Latino MSM accounted for 24.4% of all HIV test events conducted among MSM in non–health care settings (Table 1).

Hispanics/Latinos accounted for 23.3% (2,906) of all persons who received a diagnosis of HIV in 2014. Hispanics/Latinos accounted for 27.4% and 26.8% of diagnoses among persons aged 30–39 years and 40–49 years, respectively; 24.7% of diagnoses among males; and 23.6% of diagnoses among transgender persons. Almost all diagnoses in the U.S. dependent areas and 36.0% of diagnoses in the West were among Hispanics/Latinos. Among persons in medium-low and high prevalence areas, Hispanics/Latinos accounted for 25.7% and 24.7% of diagnoses, respectively. Hispanics/Latinos accounted for 25.3% of all

TABLE 1. Number and percentage of HIV test events and diagnoses among Hispanics/Latinos, by demographic characteristics and target populations, compared with all CDC-funded HIV test events — United States, Puerto Rico, and U.S. Virgin Islands, 2014

	HIV test events*			HIV diagnoses†		
	All CDC-funded valid HIV test events	Among Hispanics/ Latinos		Total HIV diagnoses	Among Hispanics/ Latinos	
Characteristic	**No.**	**No.**	**(%)**	**No.**	**No.**	**(%)**
Age group (yrs)						
13–19	237,873	49,095	(20.6)	420	86	(20.5)
20–29	1,213,767	250,200	(20.6)	5,505	1,175	(21.3)
30–39	702,686	177,843	(25.3)	2,999	821	(27.4)
40–49	420,579	108,611	(25.8)	1,917	514	(26.8)
≥50	448,512	97,065	(21.6)	1,601	309	(19.3)
Gender						
Male	1,541,082	334,932	(21.7)	10,208	2,521	(24.7)
Female	1,484,902	348,593	(23.5)	2,038	342	(16.8)
Transgender	11,469	3,601	(31.4)	174	41	(23.6)
U.S census region						
Northeast	508,162	129,343	(25.5)	2,035	555	(27.3)
Midwest	373,576	37,292	(10.0)	1,558	139	(8.9)
South	1,654,904	290,223	(17.5)	6,893	1,303	(18.9)
West	464,481	186,147	(40.1)	1,673	602	(36.0)
U.S. dependent areas	48,722	44,772	(91.9)	313	307	(98.1)
HIV prevalence§						
High	1,843,344	496,795	(27.0)	8,362	2,067	(24.7)
Medium	1,108,376	170,803	(15.4)	3,792	762	(20.1)
Medium-low	79,027	18,031	(22.8)	284	73	(25.7)
Low	19,098	2,148	(11.2)	34	4	(11.8)
Target populations (non–health care settings only)¶,**						
Men who have sex with men	160,499	39,122	(24.4)	3,083	780	(25.3)
Persons who inject drugs	35,453	6,021	(17.0)	126	28	(22.2)
Heterosexual males	184,915	37,112	(20.1)	557	116	(20.8)
Heterosexual females	201,786	40,077	(19.9)	483	66	(13.7)
Total	**3,049,845**	**687,777**	**(22.6)**	**12,472**	**2,906**	**(23.3)**

Abbreviation: HIV = human immunodeficiency virus.

* Valid HIV test events were defined as tests for which a test result (i.e., positive or negative) was known. Analyses exclude discordant and indeterminate results.

† Included are persons who tested HIV-positive and did not report a previous positive test result, calculated using HIV surveillance verification (if available) or a person's self-reported previous HIV status.

§ The jurisdictions are grouped according to HIV prevalence and based on the number of persons living with diagnosed HIV infection in 2013: high = ≥20,000; medium = 4,000–19,999; medium-low = 1,000–3,999; and low = <1,000.

¶ Data to identify target populations are required for all test events conducted in non–health care settings and only required for persons with HIV infection from health care settings. Therefore, for target populations, data are only from non–health care settings (N = 879,063 for all test events, N = 197,802 for test events among Hispanics/Latinos, and N = 1,222 for Hispanics/Latinos newly diagnosed with HIV infection). Other target populations and missing data among Hispanics/Latinos include the following: transgender = 1.1%, women who have sex with women = 0.9%, persons not reporting sex with male or female or injection drug use = 17.4%, and missing/invalid = 18.8%.

** MSM include males who reported male-to-male sexual contact as well as males who reported both male-to-male sexual contact and injection drug use in the past 12 months. Persons who inject drugs include persons who reported injection drug use in the past 12 months. Heterosexual males include males who only reported heterosexual contact with a female in the past 12 months. Heterosexual females include females who only reported heterosexual contact with a male in the past 12 months.

MSM and 22.2% of all persons who inject drugs receiving an HIV diagnosis in non–health care settings (Table 1).

Overall, 36.4% of 687,777 test events among Hispanics/Latinos were among persons aged 20–29 years; 50.7% were among females; 42.2% were among persons residing in the South census region; and 72.2% were among persons residing in high HIV prevalence areas. In non–health care settings, MSM accounted for 19.8% of all HIV test events conducted among Hispanics/Latinos (Table 2).

HIV-positivity among Hispanics/Latinos tested in 2014 was 0.4%. Among Hispanics/Latinos tested in non–health care settings, HIV-positivity was highest among MSM (2.0%), followed by persons who inject drugs (0.5%). MSM accounted for 19.8% (39,122 of 197,802) of HIV test events conducted among Hispanics/Latinos in non–health care settings, and 63.8% (780 of 1,222) of Hispanics/Latinos who received an HIV diagnosis in non–health care settings. Among Hispanics/Latinos who received a diagnosis, 71.0% were linked to HIV medical care within any timeframe; 61.1% were linked to medical care within 90 days, 60.0% were interviewed for HIV partner services, and 64.0% were referred to risk-reduction services. The percentage of Hispanics/Latinos linked to HIV medical care within 90 days or referred to partner services or risk-reduction services was lower in the South than in other census regions. More than 60.0% of Hispanic/Latino MSM tested in non–health care settings were linked to HIV medical care or referred to partner services or risk-reduction services (Table 2).

Discussion

Hispanics/Latinos in the United States are disproportionately affected by HIV. In 2014, the rate of HIV diagnosis among Hispanics/Latinos (18.4 per 100,000 population) was approximately three times that of non-Hispanic whites (6.1 per 100,000 population), but less than that of non-Hispanic blacks/African Americans (49.4 per 100,000 population) (*3*). The findings in this analysis indicate that Hispanics/Latinos accounted for 22.6% of all HIV test events and 23.3% of HIV diagnoses. MSM accounted for 19.8% of HIV test events conducted among Hispanics/Latinos, and MSM represented 63.8% of Hispanics/Latinos who received an HIV diagnosis in non-health care settings.

Although 61.1% of Hispanics/Latinos were linked to HIV medical care within 90 days of diagnosis, that is below the goal established by the 2010 National HIV/AIDS Strategy to link 85.0% of persons within 90 days of diagnosis (*1*). Compared with whites, Hispanics/Latinos are less likely to be linked to care (83.9% versus 87.1%) and achieve viral suppression (54.2% versus 62.0%) (*6*), which suggests that improved strategies are needed to increase linkage among Hispanics/Latinos as a critical step in achieving viral suppression. Effective public health strategies also are needed to strengthen partner services and increase referrals for risk-reduction services among Hispanics/Latinos, especially among Hispanics/Latinos in the South. Given these data, prevention efforts that include targeted specific geographic regions might increase early diagnosis and improve HIV-related health outcomes among Hispanics/Latinos (*7*).

The findings in this report are subject to at least three limitations. First, the findings describe HIV tests conducted at CDC-funded health departments and community-based organizations only and are not representative of all HIV testing in the United States. Second, data on referral and linkage to HIV medical care, partner services, and risk-reduction services represent the minimum percentage (i.e., include records without valid data on the outcome in the denominator) achieved and likely underestimate the percentage referred and linked. Finally, collection of data on target populations is required in all non–health care settings but only for HIV-positive test events in all health care settings; therefore, underreporting the number of test events conducted among target populations.

Broader implementation of routine HIV screening and targeting testing among Hispanics/Latinos, most notably MSM and transgender persons, as recommended by CDC guidelines (*8*) and the U.S. Preventive Services Task Force (*9*) is critical to identify persons who are unaware of their HIV status. Programmatic strategies (e.g., HIV preexposure prophylaxis)

Summary

What is already known about this topic?

In 2014, 23% of HIV diagnoses were among Hispanics/Latinos, who made up 16% of the U.S. population. In 2014, the rate of HIV diagnoses among Hispanics/Latinos was approximately three times that for non-Hispanic whites (18.4 compared with. 6.1 per 100,000 population).

What is added by this report?

The analysis showed that Hispanics/Latinos accounted for 22.6% of CDC-funded HIV testing events and 23.3% of persons with newly diagnosed HIV infection. The percentages of Hispanics/Latinos linked to HIV medical care, interviewed for partner services, and referred to prevention services were lower in the South compared with other U.S. census regions. Approximately 60% of Hispanics/Latinos were linked to medical care within 90 days of diagnosis, which is below the 85% goal of the National HIV/AIDS Strategy.

What are the implications for public health practice?

The findings emphasize the need for culturally and linguistically sensitive prevention strategies to promote diagnosis of HIV infection and linkage to medical care among Hispanics/Latinos to improve health outcomes. Stakeholders and partners should focus on prevention and care strategies for Hispanic/Latino subpopulations (e.g., men who have sex with men and persons who inject drugs) to reduce HIV-related disparities.

TABLE 2. Linkage to HIV medical care, referral and interview for HIV partner services, and referral to HIV risk-reduction services among Hispanics/Latinos, by demographic characteristics and target populations — United States, Puerto Rico, and U.S. Virgin Islands, 2014

	Valid HIV test events among Hispanics/Latinos*	Diagnoses among Hispanics/Latinos[†]	Linked to HIV medical care within any timeframe	Linked to HIV medical care within 90 days of diagnosis	Referred to HIV partner services	Interviewed for HIV partner services	Referred to HIV risk-reduction services
Characteristic	**No.**	**No. (%)**	**No. (%)**	**No. (%)**	**No. (%)**	**No. (%)**	**No. (%)**
Age group (yrs)							
13–19	49,095	86 (0.2)	61 (70.9)	49 (57.0)	61 (70.9)	46 (53.5)	54 (62.8)
20–29	250,200	1,175 (0.5)	852 (72.5)	736 (62.6)	916 (78.0)	719 (61.2)	776 (66.0)
30–39	177,843	821 (0.5)	573 (69.8)	494 (60.2)	624 (76.0)	486 (59.2)	518 (63.1)
40–49	108,611	514 (0.5)	366 (71.2)	310 (60.3)	390 (75.9)	309 (60.1)	329 (64.0)
≥50	97,065	309 (0.3)	210 (68.0)	187 (60.5)	234 (75.7)	183 (59.2)	183 (59.2)
Gender							
Male	334,932	2,521 (0.8)	1,813 (71.9)	1,552 (61.6)	1,948 (77.3)	1,524 (60.5)	1,625 (64.5)
Female	348,593	342 (0.1)	216 (63.2)	193 (56.4)	241 (70.5)	196 (57.3)	205 (59.9)
Transgender	3,601	41 (1.1)	32 (78.0)	29 (70.7)	34 (82.9)	21 (51.2)	28 (68.3)
U.S. census region							
Northeast	129,343	555 (0.4)	453 (81.6)	433 (78.0)	486 (87.6)	371 (66.8)	489 (88.1)
Midwest	37,292	139 (0.4)	85 (61.2)	78 (56.1)	112 (80.6)	85 (61.2)	102 (73.4)
South	290,223	1,303 (0.4)	900 (69.1)	683 (52.4)	849 (65.2)	725 (55.6)	569 (43.7)
West	186,147	602 (0.3)	377 (62.6)	335 (55.6)	498 (82.7)	339 (56.3)	432 (71.8)
U.S. dependent areas	44,772	307 (0.7)	248 (80.8)	247 (80.5)	280 (91.2)	223 (72.6)	268 (87.3)
HIV prevalence[§]							
High	496,795	2,067 (0.4)	1,438 (69.6)	1,186 (57.4)	1,492 (72.2)	1,145 (55.4)	1,189 (57.5)
Medium	170,803	762 (0.4)	555 (72.8)	523 (68.6)	662 (86.9)	529 (69.4)	605 (79.4)
Medium-low	18,031	73 (0.4)	68 (93.2)	65 (89.0)	69 (94.5)	67 (91.8)	64 (87.7)
Low	2,148	4 (0.2)	2 (50.0)	2 (50.0)	2 (50.0)	2 (50.0)	2 (50.0)
Target populations (non–health care settings only)[¶,]**							
MSM	39,122	780 (2.0)	545 (69.9)	519 (66.5)	675 (86.5)	512 (65.6)	520 (66.7)
Persons who inject drugs	6,021	28 (0.5)	15 (53.6)	11 (39.3)	22 (78.6)	12 (42.9)	21 (75.0)
Heterosexual males	37,112	116 (0.3)	75 (64.7)	72 (62.1)	91 (78.4)	70 (60.3)	70 (60.3)
Heterosexual females	40,077	66 (0.2)	44 (66.7)	44 (66.7)	58 (87.9)	47 (71.2)	39 (59.1)
Total	**687,777**	**2,906 (0.4)**	**2,063 (71.0)**	**1,776 (61.1)**	**2,225 (76.6)**	**1,743 (60.0)**	**1,860 (64.0)**

Abbreviations: HIV = human immunodeficiency virus, MSM = men who have sex with men.

* Valid HIV test events were defined as tests for which a test result (i.e., positive or negative) was known. Analyses exclude discordant and indeterminate results.

[†] Included are persons who tested HIV-positive and did not report a previous positive test result, calculated using HIV surveillance verification (if available) or a person's self-reported previous HIV status. The denominator for diagnosed persons is the number of HIV test events. The denominator for linkage, HIV partner services, and HIV risk reduction services is the number of diagnosed persons.

[§] The jurisdictions are grouped according to HIV prevalence and based on the number of persons living with diagnosed HIV infection in 2013: high = ≥20,000; medium = 4,000–19,999; medium-low = 1,000–3,999; and low = <1,000.

[¶] Data to identify target populations are required for all test events conducted in non–health care settings and only required for persons with HIV infection from health care settings. Therefore, for target populations, data are only from non–health care settings (N = 879,063 for all test events, N = 197,802 for test events among Hispanics/Latinos, and N = 1,222 for Hispanics/Latinos newly diagnosed with HIV infection). Other target populations and missing data among Hispanics/Latinos include the following: transgender = 1.1%, women who have sex with women = 0.9%, persons not reporting sex with male or female or injection drug use = 17.4%, and missing/invalid = 18.8%.

** MSM include males who reported male-to-male sexual contact as well as males who reported both male-to-male sexual contact and injection drug use in the past 12 months. Persons who inject drugs include persons who reported injection drug use in the past 12 months. Heterosexual males include males who only reported heterosexual contact with a female in the past 12 months. Heterosexual females include females who only reported heterosexual contact with a male in the past 12 months.

for HIV-negative persons at high risk (especially racial/ethnic minorities and MSM) that complement existing prevention efforts are important to reduce the risk for HIV infection (*10*). CDC offers bilingual resources to raise awareness about HIV and testing among Hispanics/Latinos, including its newest campaign, Doing It, which is intended to motivate adults to get tested.[§§] Barriers to accessing and receiving HIV testing among Hispanics/Latinos include lack of health insurance, lower educational status, stigma or fear of discrimination, and fear of disclosing immigration status.[¶¶] HIV prevention

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[§§] http://www.cdc.gov/actagainstaids/campaigns/doingit/.

[¶¶] http://www.cdc.gov/hiv/group/racialethnic/hispaniclatinos/index.html.

programs that focus on culturally and linguistically sensitive prevention strategies to increase testing, enhance linkage to HIV care and partner services, and promote community-level risk-reduction services for Hispanics/Latinos might reduce health disparities and HIV transmission.

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Unmet Needs for Ancillary Services Among Hispanics/Latinos Receiving HIV Medical Care — United States, 2013–2014

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The prevalence of diagnosed human immunodeficiency virus (HIV) infection in Hispanics/Latinos in the United States is more than twice as high as the prevalence among non-Hispanic whites (*1*). Services that support retention in HIV medical care and assist with day-to-day living, referred to here as ancillary services, help persons living with HIV access HIV medical care, adhere to HIV treatment, and attain HIV viral suppression. The needs for these ancillary services among Hispanics/Latinos are not well described (*2*). To obtain nationally representative estimates of and reasons for unmet needs for such services among Hispanic/Latino adults receiving outpatient HIV medical care during 2013–2014, CDC analyzed data from the Medical Monitoring Project (MMP). The analysis found that Hispanics/Latinos in all age and sexual orientation/behavior subgroups reported substantial unmet needs, including 24% needing dental care, 21% needing eye or vision care, 15% needing food and nutrition services, and 9% needing transportation assistance. Addressing unmet needs for ancillary services among Hispanics/Latinos living with HIV might help increase access to HIV care, improve health outcomes, and reduce health disparities.

MMP used a three-stage sample (states and territories, facilities, patients); response rates at each stage were 100%, 85%, and 55%, respectively. Data were collected using face-to-face or telephone interviews conducted during June 2013–May 2015. Data were weighted for unequal selection probabilities and nonresponse (*3*).

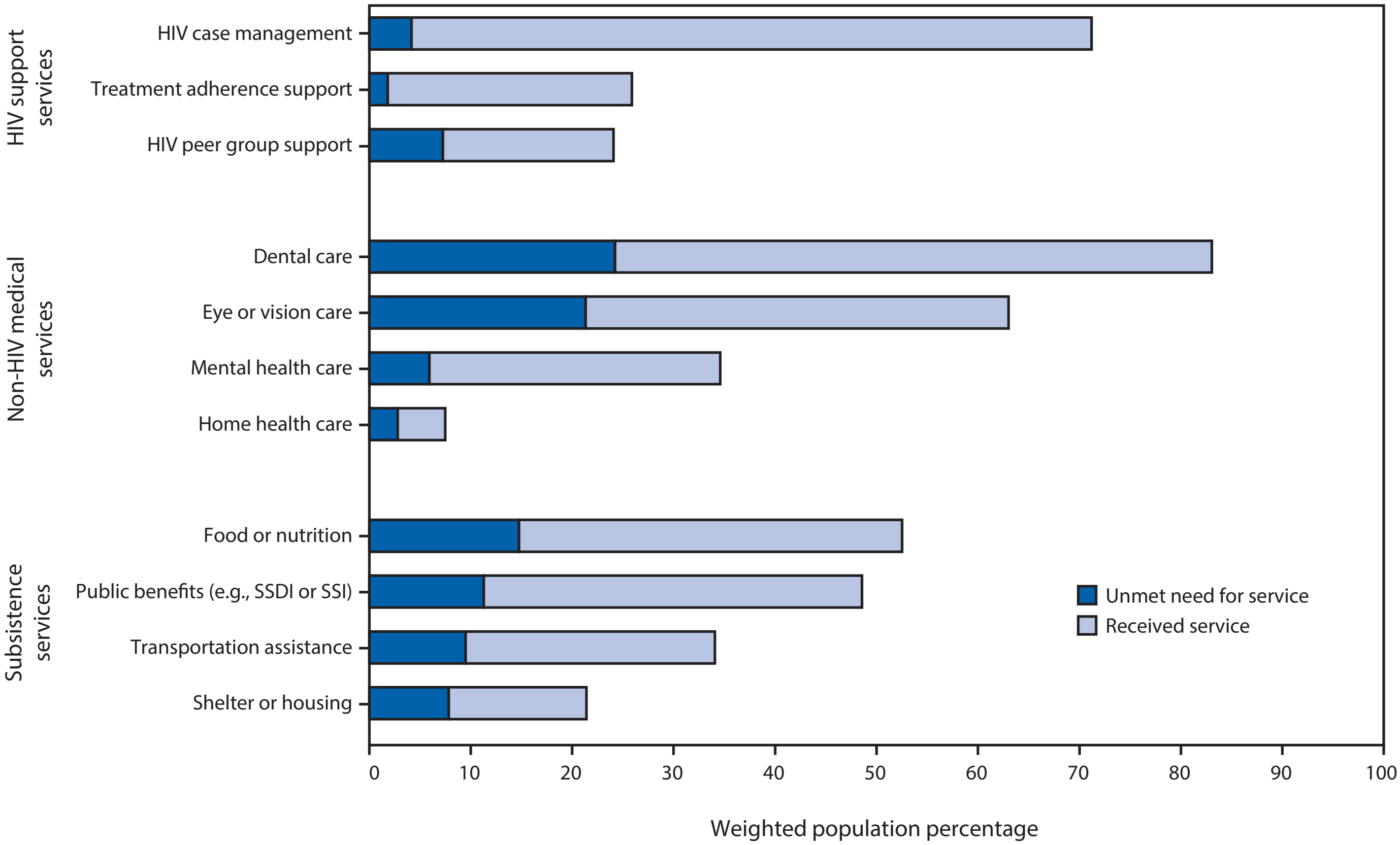
Ethnicity was self-reported; Hispanic/Latino participants could be of any race. Sexual orientation/behavior was defined by gender of participants and their sex partners or, if no sexual activity was reported, by participants' sexual orientation. Unmet needs for ancillary services were defined as services that participants reported needing, but not receiving during the 12 months before the interview. The prevalence of unmet needs for Hispanics/Latinos receiving outpatient medical care was estimated overall and, for select services, stratified by age and sexual orientation/behavior using chi-square tests to make statistical comparisons between strata. Services were selected for further analysis based on how often they were reported as unmet needs here and in previous studies. For each of these services, participants' primary reasons for unmet needs were described.

The most prevalent unmet needs for ancillary services among Hispanics/Latinos receiving outpatient HIV medical care were for non-HIV medical care services. An estimated 24% had an unmet need for dental care and 21% had an unmet need for eye or vision care (Figure). Among HIV support services examined, the most prevalent unmet need was for HIV peer group support (7%). Among subsistence services (services that help persons meet their basic needs), the most prevalent unmet need was for food or nutrition services (15%); 9% had an unmet need for transportation assistance, and 8% had an unmet need for shelter or housing services.

Hispanics/Latinos aged 18–29 years and 30–39 years had a higher prevalence of unmet needs for both shelter or housing services and HIV peer group support than those aged ≥50 years (Table 1). Hispanics/Latinos aged 30–39 and 40–49 years had a higher prevalence of unmet needs for food or nutrition services than those aged ≥50 years. Hispanics/Latinos aged 30–39 years had a higher prevalence of unmet need for dental care (31%) than those aged ≥50 years (21%). Unmet needs for eye or vision care, transportation assistance, and mental health care did not differ significantly by age. Hispanic/Latino men who have sex with only women had a higher prevalence of unmet needs for transportation assistance services, and a lower prevalence of unmet needs for HIV peer group support and mental health care, compared with Hispanic/Latino men who have sex with men. Unmet needs for other services did not differ significantly by sexual orientation/behavior category.

Over 40% of Hispanics/Latinos with an unmet need for transportation assistance, food or nutrition services, or HIV peer group support did not know how to get these services (Table 2). Approximately one quarter of Hispanics/Latinos with an unmet need for shelter or housing services, mental health care, or eye or vision care did not know how to get these services (25%, 25%, and 22%, respectively). Twenty-eight percent of Hispanics/Latinos with an unmet need for shelter or housing services, 21% with an unmet need for transportation assistance, and 15% with an unmet need for food or nutrition services were ineligible for, perceived themselves to be ineligible for, or were denied these services. Less than 20% of Hispanics/Latinos with an unmet need for dental care or eye or vision care reported money/insurance issues as the reason for not receiving the service (16% and 14%, respectively).

FIGURE. Unmet and met needs for ancillary services* among Hispanics/Latinos receiving outpatient human immunodeficiency virus (HIV) medical care — Medical Monitoring Project, United States, 2013–2014



Abbreviations: SSDI = Social Security Disability Income; SSI = Supplemental Security Income.
* Ancillary services are defined as services that support retention in primary HIV medical care and assist with day-to-day living.

Discussion

During 2013–2014, Hispanics/Latinos receiving HIV medical care in the United States had many unmet needs for ancillary services. The most prevalent unmet needs were for dental care and eye or vision care; these services are essential because many persons living with HIV have oral or eye conditions that require specialized care. Hispanics/Latinos with unmet needs for services often did not know how to get them, were ineligible for, perceived themselves to be ineligible for, or were denied these services.

For many persons living with HIV, ancillary services are critical for adhering to HIV treatment and achieving viral suppression (*2*). Hispanic/Latino men and women in HIV medical care have higher levels of homelessness and lower levels of health insurance coverage than their non-Hispanic/Latino counterparts, and nearly three quarters of Hispanic/Latino women in HIV medical care and half of Hispanic/Latino men are living at or below the federal poverty level (*4*). This analysis indicates that Hispanic/Latino persons of all ages and sexual orientations have substantial unmet needs for subsistence services (e.g., food or nutrition, shelter or housing, and transportation assistance). These needs might lead to poorer HIV treatment outcomes; Hispanics/Latinos in HIV medical care are less likely than non-Hispanic whites to be virally suppressed (*4*). Previous research suggests Hispanics/Latinos are more likely to delay entry into HIV medical care because of unmet transportation, shelter, or food service needs, and to enter into care with more advanced HIV disease than non-Hispanics/Latinos (*5*)

The National HIV/AIDS Strategy specifies goals for improving health outcomes among persons living with HIV by increasing access to basic needs, and reducing racial and ethnic HIV-related disparities (*6*). Addressing unmet needs for ancillary services among Hispanics/Latinos living with HIV can help reach the National HIV/AIDS Strategy goals of reducing health disparities, increasing access to care, and improving health outcomes for persons living with HIV.

TABLE 1. Percentage of Hispanics/Latinos receiving outpatient HIV medical care with unmet needs for ancillary services,[*] by demographic characteristic — Medical Monitoring Project, United States, 2013–2014

		Dental care	Eye or vision care	Food or nutrition	Transportation assistance	Shelter or housing	HIV peer group support	Mental health care
Demographic characteristic	**Total**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**
Age (yrs)								
18-29	**197**	25 (16–33)	16 (9–23)	17 (11–22)	10 (5–14)	14[¶] (9–18)	10[¶] (6–14)	—[††]
30-39	**435**	31[¶] (26–36)	21 (17–26)	19[¶] (14–23)	9 (5–12)	11[¶] (8–14)	11[¶] (8–14)	8 (5–11)
40-49	**746**	24 (19–28)	24 (21–28)	16[¶] (13–18)	10 (8–13)	7 (5–10)	7 (5–8)	5 (3–7)
≥50	**1,019**	21 (17–26)	20 (17–23)	12 (10–14)	9 (7–11)	5 (3–7)	6 (4–7)	6 (4–7)
Sexual orientation/behavior[§§]								
Men who have sex with men	**1,072**	25 (21–28)	22 (19–24)	14 (12–17)	8 (6–9)	8 (6–11)	9 (7–11)	7 (5–9)
Men who have sex with women only	**686**	25 (19–30)	22 (18–25)	15 (12–17)	12[**] (9–15)	8 (6–10)	5[**] (4–7)	4[**] (3–6)
Women who have sex with men	**559**	22 (16–27)	21 (16–26)	15 (12–19)	10 (7–13)	7 (4–9)	7 (5–8)	6 (4–8)
Other	**80**	28 (17–40)	19 (11–27)	—[††]	12 (5–20)	—[††]	9 (4–14)	—[††]
Total		**24 (20–28)**	**21 (19–24)**	**15 (13–17)**	**9 (8–11)**	**8 (6–9)**	**7 (6–8)**	**6 (5–7)**

Abbreviations: CI = confidence interval. HIV = human immunodeficiency virus.

[*] Ancillary services are defined as services that support retention in primary HIV medical care and assist with day-to-day living.

[†] Percentages are weighted percentages.

[§] CIs incorporate weighted percentages.

[¶] P-value <0.05 in comparison to reference group (>50 year olds).

[**] P-value <0.05 in comparison to reference group (men who have sex with men).

[††] Estimates suppressed because coefficient of variation for the estimate was ≥30%.

[§§] Sexual orientation/behavior was defined by gender of participants' sex partners or, if no sexual activity was reported, by participants' sexual orientation. Categories are mutually exclusive.

TABLE 2. Reasons for unmet needs for ancillary services[*] among Hispanics/Latinos receiving outpatient HIV medical care — Medical Monitoring Project, United States, 2013–2014

		Didn't know how to get service	In process of getting service	Not eligible or denied services	Money or insurance issues	Psychological barriers	Service Is unavailable
Service	**Total**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**	**%[†] (95% CI[§])**
Dental care	**556**	13 (10–16)	31 (26–36)	9 (6–12)	16 (10–21)	11 (8–14)	4 (2–5)
Eye or vision care	**529**	22 (18–26)	36 (30–42)	5 (3–7)	14 (10–18)	8 (6–10)	5 (2–8)
Food or nutrition	**367**	42 (34–49)	15 (10–19)	15 (10–19)	—[¶]	—[¶]	8 (5–11)
Transportation assistance	**231**	44 (36–52)	8 (4–13)	21 (14–28)	—[¶]	—[¶]	14 (8–21)
Shelter or housing	**181**	25 (19–32)	22 (16–29)	28 (21–36)	—[¶]	—[¶]	—[¶]
HIV peer group support	**185**	43 (35–51)	9 (4–13)	—[¶]	—[¶]	9 (4–14)	18 (11–24)
Mental health care	**147**	25 (18–32)	25 (16–34)	—[¶]	—[¶]	19 (12–26)	—[¶]

Abbreviations: CI = confidence interval. HIV = human immunodeficiency virus.

[*] Ancillary services are defined as services that support retention in primary HIV medical care and assist with day-to-day living.

[†] Percentages are weighted percentages.

[§] CIs incorporate weighted percentages.

[¶] Estimates suppressed because coefficient of variation for the estimate was ≥30%.

In this analysis, approximately half of Hispanics/Latinos in HIV care and with unmet needs for subsistence services did not receive these services because of real or perceived ineligibility or because they did not know how to get services. In some cases, this might be related to immigration status, because just under 40% of Hispanics/Latinos in HIV care in the United States are foreign born (*7*). In previous research, Hispanic/Latino immigrants living with HIV cited inadequate knowledge about available services as obstacles to receiving HIV care and often held erroneous beliefs about service eligibility for undocumented persons (*8*). Case managers might consider providing targeted support to Hispanic/Latino clients who are navigating service availability and eligibility, especially in complicated immigration situations.

For persons living with HIV in the United States, the Ryan White HIV/AIDS Program is the primary funder of ancillary services, through grants to states, territories, and community-based organizations that serve approximately half a million persons each year. The program provides services for all persons living with HIV infection in the United States regardless of immigration status, including nearly 113,000 Hispanics/Latinos in 2014 (*9*). Co-locating ancillary services with routine HIV medical care using a medical home model is a hallmark

Summary

What is already known about this topic?

Ancillary services can help persons living with HIV access HIV medical care, adhere to HIV treatment, and achieve HIV viral suppression.

What is added by this report?

During 2013–2014, Hispanics/Latinos receiving HIV medical care in the United States reported many unmet needs for ancillary services, including dental care (an estimated 24%), eye or vision care (21%), and subsistence services such as assistance with food and nutrition (15%) and transportation (9%). Most of those with unmet needs for ancillary services did not know how to access or were ineligible for, perceived themselves to be ineligible for, or were denied these services.

What are the implications for public health practice?

Increasing awareness of the availability of ancillary services might help improve the health of Hispanics/Latinos living with HIV and reduce HIV-related health disparities.

of the program, and might increase access to these services for persons in HIV medical care (*10*).

The findings in this report are subject to at least four limitations. First, the analysis was limited to Hispanics/Latinos in HIV care, and results might not be generalizable to Hispanics/Latinos living with HIV who are not in HIV medical care, among whom unmet needs for services might be more prevalent. Second, needs and eligibility for ancillary services are self-reported and were not objectively verified. Third, prevalence of unmet needs likely varies geographically. Local analyses might provide targeted information for resource allocation and policy decisions. Finally, MMP's response rate was 55% at the patient level. Although the data were adjusted to minimize nonresponse bias based on known characteristics of sampled facilities and patients, the possibility of residual nonresponse bias exists.

Hispanics/Latinos receiving HIV medical care in the United States have considerable unmet needs for ancillary services among all age and sexual orientation/behavior categories. The majority of those with unmet needs for ancillary services did not know how to access or were ineligible for, perceived themselves to be ineligible for, or were denied these services. Increasing awareness of available ancillary services might help improve the health of Hispanics/Latinos living with HIV and reduce HIV-related health disparities.

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Increase in Adverse Reactions Associated with Use of Synthetic Cannabinoids — Anchorage, Alaska, 2015–2016

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In July 2015, personnel in the Alaska Division of Public Health's Section of Epidemiology became aware of an increase in the number of patients being treated in Anchorage hospital emergency departments for adverse reactions associated with use of synthetic cannabinoids (SCs). SCs are a chemically diverse class of designer drugs that bind to the same cannabinoid receptors as tetrahydrocannabinol, the main psychoactive component of cannabis. A public health investigation was initiated to describe clinical outcomes, characterize the outbreak, and identify SC chemicals circulating in Anchorage. During July 15, 2015–March 15, 2016, a total of 1,351 ambulance transports to Anchorage emergency departments for adverse SC reactions were identified. A review of charts obtained from two Anchorage hospitals determined that among 167 emergency department visits for adverse SC reactions during July 15–September 30, 2015, 11 (6.6%) involved a patient who required endotracheal intubation, 17 (10.2%) involved a patient who was admitted to the intensive care unit, and 66 (39.5%) involved a patient classified as being homeless. Testing of 25 product and paraphernalia samples collected from patients at one hospital identified 11 different SC chemicals. Educational outreach campaigns focused on the considerable health risks of using SCs need to complement judicial and law enforcement actions to reduce SC use.

The outbreak was recognized in July 2015, based on reports in local news media and after a report of a 330% increase in calls to U.S. Poison Control Centers regarding SC poisonings nationwide during January–April 2015 (*1*). Investigations of outbreaks of adverse reactions associated with use of SCs in other U.S. cities have documented health effects, including altered mental status, seizures, acute impairment of organ function, and death (*2*–*6*). Because of the potential for severe health outcomes associated with SC use, a public health investigation was initiated, focused on characterizing clinical outcomes and patient demographics, enumerating cases to estimate the associated burden on Anchorage emergency health care systems, and identifying SC chemicals circulating in Anchorage.

To characterize patient demographics and clinical outcomes, personnel in the Alaska Division of Public Health's Section of Epidemiology performed authorized electronic medical record (EMR) reviews and chart abstractions at two of the three nonmilitary hospitals in Anchorage with available records. The one military hospital in Anchorage was not included in the investigation. EMR data were searched using a standardized query that flagged emergency department visits associated with one or more of 11 discharge diagnoses* related to acute drug toxicity, altered mental status, and drug ingestion or abuse. An SC emergency department visit was defined as an emergency department visit during July 15–September 30, 2015, to either of the two designated hospitals by a patient with an adverse reaction attributed to self-reported or suspected SC use immediately preceding onset of the adverse reaction. Self-reported or suspected SC use was determined through review of charts of patients associated with flagged emergency department visits. Suspicion of use was based on clinical signs and symptoms deemed consistent with SC use by health care personnel caring for the patient and was often reinforced by the patient's possession of SCs or related paraphernalia or witness-reported observed SC use immediately before onset of adverse reactions.

Because EMR data were only available from two of three nonmilitary hospitals in Anchorage, ambulance transport data collected by the Anchorage Fire Department, which is responsible for all ambulance transports within Anchorage, were used to enumerate cases. An SC transport was defined as an ambulance transport during July 15, 2015–March 15, 2016 (the outbreak investigation period), to any of the three nonmilitary hospitals in Anchorage of a patient with an adverse reaction attributed to self-reported or suspected SC use immediately preceding onset of the adverse reaction. Evidence of self-reported or suspected SC use was obtained from ambulance transport data. Suspicion of use was based on clinical signs and symptoms deemed consistent with SC use by emergency medical services (EMS) personnel transporting the patient. On November 10, 2015, the Anchorage municipality assembly passed ordinance AO 2015–123(S) that raised the criminal penalties associated with possession, sale, and use of SCs in Anchorage. Potential effects of this ordinance on the outbreak were evaluated by comparing total ambulance transports, total and mean number of SC transports, and mean percentage of ambulance transports that were SC transports before and after the outbreak began and before and after passage of the ordinance.

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* Keywords used in EMR search = acute drug intoxication, altered mental status (including with qualifiers "unspecified" and "unspecified altered mental status"), drug abuse, drug ingestion, drug psychosis, drug use, illicit drug use, polysubstance abuse, and substance abuse.

To identify SC chemicals circulating in Anchorage during the outbreak, emergency department personnel at one of the hospitals that participated in the EMR reviews (hospital A) collected 25 samples of products (e.g., plastic bags containing loose herbaceous material) and paraphernalia (e.g., pipes, storage containers, or plastic bags) from 14 patients treated for suspected SC use. These samples were analyzed by liquid chromatography quadrupole time-of-flight mass spectrometry at the University of California, San Francisco. In addition, biologic specimens (blood or urine) collected from three patients treated at hospital A for suspected SC use during the outbreak (one sample per patient) and postmortem serum specimens from 10 persons who died in Anchorage during the outbreak, were tested for secondary metabolites of SC chemicals.

Among 488 emergency department visits during July 15–September 30, 2015 flagged by EMR query, a total of 167 (34.2%) were classified as SC emergency department visits, including 74 (44.3%) that involved self-reported SC use and 93 (55.7%) that involved suspected SC use. These 167 SC emergency department visits involved 128 unique patients for whom full name and date of birth information was available; 104 (81.3%) were male, and the median age was 34 years (range = 12–62 years). Sixty-six (39.5%) of these SC emergency department visits involved a patient classified as homeless, on the basis of self-report, address information provided to EMS personnel or emergency department staff members by the patient, or location of ambulance pickup. More than two thirds of these SC emergency department visits involved a patient who was lethargic in the emergency department, and one third involved a patient who was agitated. Eleven (6.6%) SC emergency department visits involved a patient who required endotracheal intubation either en route to or while in the emergency department, and 17 (10.2%) involved a patient who was admitted to an intensive care unit (Table 1).

Review of Anchorage Fire Department ambulance transport data collected during July 15, 2015–March 15, 2016 (the outbreak investigation period) identified 13,403 ambulance transports in Anchorage, among which 1,351 (10.1%) were SC transports (Table 2). Most SC transports (956; 70.8%) originated within a 2-km^2 area of downtown Anchorage that is known to be a hub for the local homeless population and associated service providers. The 1,351 SC transports involved 535 unique patients for whom full name and date of birth information was available; 426 (79.6%) were male, and the median age was 34 years (range = 12–69 years). Among the 535 patients, 199 (37.2%) were transported more than once for adverse SC reactions during this period (mean = 4.6 transports/patient; range = 2–24), and 17 patients (3.2% of all patients) were transported 10 or more times, accounting for 267 (19.8%) of all SC transports.

TABLE 1. Selected health outcomes and medical interventions associated with 167 Emergency Department (ED) visits for adverse reactions associated with use of synthetic cannabinoids — Anchorage, Alaska, July 15, 2015–September 30, 2015

Health outcome or medical intervention of interest	ED visits No. (%)
Lethargy (confusion, somnolence, sleep, and unresponsiveness)	115 (68.9)
Agitation (distress, anxiety, aggressiveness, and violence)	55 (32.9)
Both lethargy and agitation	37 (22.2)
Tachypnea (respiratory rate >16 breaths/min)	76 (45.5)
Tachycardia (heart rate >100 beats/min)	52 (31.1)
Required physical restraint en route to or while in ED	26 (15.6)
Endotracheal intubation for respiratory insufficiency or airway protection en route to or while in ED	11 (6.6)
Intensive care unit admission	17 (10.2)

Before the investigation began, quantitative baseline data on rates of adverse SC reactions in Anchorage were not available. A retrospective review of Anchorage Fire Department ambulance transport data collected during January 1, 2014–July 14, 2015 (the preoutbreak period) identified 240 SC transports (mean = 0.4 per day) (Table 2). During the portion of the outbreak investigation period before issuance of the ordinance (July 15–November 10, 2015), there were 844 SC transports (mean = 7.1 per day) compared with 507 SC transports (mean = 4.0 per day) after the ordinance was issued (November 11, 2015–March 15, 2016) (Table 2). The mean daily number of SC transports during the preordinance outbreak period (7.1) was 17.8 times higher than that during the preoutbreak period (0.4). Analysis of daily SC transport counts from the postordinance outbreak period (N = 126 days) by linear regression identified a significant decline in counts over time ($r^2_{adj} = 0.1$; $p<0.001$).

Eleven different SC chemicals[†] were identified among product and paraphernalia samples collected at hospital A, the most common being AB-CHMINACA, MAB-CHMINACA, and 5F-AMB, all highly potent cannabinoid receptor agonists (*7*,*8*). Among the 17 (68.0%) samples that tested positive for SCs, all contained multiple SC chemicals. Four of the SC-positive samples were clear, viscous liquids labeled as car air fresheners that can easily be inhaled by using a refillable electronic cigarette, and anecdotal reports from health care providers indicated that a subset of patients treated for adverse SC reactions admitted vaping SCs in liquid form. Among blood or urine specimens collected from three patients treated at hospital A for suspected SC use (one specimen per patient), one tested positive for a metabolite of 5F-AMB and another for a metabolite of MAB-CHMINACA. Postmortem serum specimens collected from 10 patients who died during the

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[†] AB-CHMINACA, AB-FUBINACA, AB-PINACA, AKB48-N-5F-Pentyl analog, APP-CHMINACA, MAB-CHMINACA, NM2201, XLR-11, 5-Chloro-AB-PINACA, 5F-AB-PINACA, and 5F-AMB.

TABLE 2. Ambulance transports, including those associated with adverse reactions associated with use of synthetic cannabinoids during preoutbreak period and outbreak period (before and after passage of ordinance AO 2015–123(S))* — Anchorage, Alaska, January 1, 2014–March 15, 2016

	Investigation period			
		Outbreak period		
Epidemiologic parameter	Preoutbreak period	Overall	Preordinance	Postordinance
Dates	Jan 1, 2014–Jul 14, 2015	Jul 15, 2015–Mar 15, 2016	Jul 15, 2015–Nov 10, 2015	Nov 11, 2015–Mar 15, 2016
No. days	560	245	119	126
Total no. ambulance transports	25,642	13,403	6,548	6,855
Total no. (%) SC transports	240 (0.09)	1,351 (10.1)	844 (12.9)	507 (7.4)
Daily mean no. ambulance transports	45.8	54.7	55.0	54.4
Daily mean no. SC transports (range)	0.4 (0–4)	5.5 (0–25)	7.1 (0–25)	4.0 (0–11)
Daily mean percentage of all ambulance transports that were SC transports (range)	0.9 (0–8.0)	9.5 (0–36.9)	11.8 (0–36.9)	7.4 (0–22.4)

Data source: Anchorage Fire Department.
Abbreviation: SC = synthetic cannabinoid.
* https://www.municode.com/library/api/CD/Ordinances/12717/747882?forceDownload=true.

outbreak were tested; four were positive for metabolites of SC chemicals, and for these decedents, SC use was noted as either a main or a contributing cause of death on the death certificate.

Discussion

An outbreak of adverse reactions associated with use of SCs occurred in Anchorage, involving at least 535 persons during at least 1,351 emergency department visits throughout the 245-day outbreak investigation period (July 15, 2015–March 15, 2016). On average, daily SC transports increased nearly eighteenfold during the preoutbreak period and the period of the outbreak before passage of ordinance AO 2015–123(S), which raised criminal penalties associated with possession, use, and sale of SCs in Anchorage. Passage of the ordinance was associated with a significant decline in the number of SC transports.

Among all SC emergency department visits, 39.5% involved homeless persons, although this number likely represents an underestimate, because homelessness was not consistently recorded in medical charts and might be difficult to ascertain by interview. No previous investigations into outbreaks of adverse reactions associated with use of SCs that documented a similar disproportionate impact on homeless persons could be found. The absence of concurrent outbreaks of adverse reactions in other Anchorage populations at increased risk for drug use, including high school students, suggests that local SC dealers might have targeted the homeless population.

The investigation identified 11 different SC chemicals circulating in Anchorage during the outbreak. All 17 SC-positive samples contained multiple SC chemicals, and some samples included more than one potent SC (*7*–*9*), suggesting the potential for interactive chemical effects that might intensify the severity of adverse reactions experienced by users. Several of the detected SC chemicals have been found to potently induce a response in an associated binding receptor (CB1) that is 132%–152% higher than that elicited by the full agonist molecule CP 55,940, widely used in pharmacological studies of the endocannabinoid system (*7*,*9*). In addition, documentation of SCs in liquid form provides evidence for inhalation by means other than smoking of herbal materials, a finding not reported from investigations of similar outbreaks in other states.

The findings in this report are subject to at least two limitations. First, because not all nonmilitary hospitals participated in the initial chart review, findings related to clinical outcomes might not be representative. Second, because biologic specimens (blood or urine) were not systematically collected from all patients and tested, linkage of observed adverse reactions with use of SCs could only be inferred from patient history. Despite these limitations, this investigation revealed considerable adverse effects associated with SC use on the public's health and health care resources in Anchorage and underscores the need for continued measures to deter SC use nationally.

The primary interventions employed to control this outbreak were judicial and law enforcement actions to limit drug availability (i.e., passage of ordinance AO 2015–123(S) and increased efforts by police to identify and arrest local SC manufacturers and distributors) and educational outreach actions to reduce demand for the drug. During the outbreak, the Alaska Division of Public Health conducted educational outreach to stakeholders concerning the considerable health risks of SC use by posting fact sheets and other information on websites and social media platforms; participating in print, radio, and television media interviews; meeting directly with providers of services for the homeless population; participating in multiagency meetings with other critical partners including police and fire department personnel, behavioral health personnel, and health care providers; and distributing informational pocket cards to homeless persons that described the dangers of using SCs. Anecdotal reports from health care providers

Summary

What is already known about this topic?

Synthetic cannabinoids (SCs) are a chemically diverse class of designer drugs that bind to the same cannabinoid receptors as tetrahydrocannabinol (THC), the main psychoactive component of cannabis; some of these drugs are more potent and efficacious agonists than THC and have been associated with outbreaks of overdose-related illness in multiple states. The most commonly reported mode of use involves smoking herbaceous materials that have been sprayed with SCs in liquid form.

What is added by this report?

This investigation demonstrates that responding to outbreaks of adverse SC reactions can place considerable strain on emergency health care systems in affected localities, and highlights the potential for widespread use and associated illness among homeless persons who might be predisposed to adverse health outcomes. In addition, the simultaneous circulation of multiple SC chemicals during an outbreak might influence the variations and severity of illnesses among users. Collection of SCs in liquid form, and anecdotal reports of inhalation of such liquids using a refillable electronic cigarette, provide evidence of a mode of use distinct from smoking of SCs in herbal form.

What are the implications for public health practice?

Pre-established working relationships among public health practitioners, social service providers, EMS personnel, hospital emergency department personnel, law enforcement officials, and laboratory scientists will expedite establishment of the multiagency collaborations needed to respond quickly and comprehensively to outbreaks. Rapidly identifying and focusing prevention programs on vulnerable user groups (e.g., homeless populations) can improve the efficacy and public health outcomes of outbreak interventions.

indicated that information conveyed through educational outreach improved awareness and facilitated diagnosis of incident cases. Educational outreach campaigns focused on the considerable health risks of SC use need to complement judicial and law enforcement actions to reduce SC use, particularly among groups at high risk, such as homeless populations.

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Progress Toward Global Eradication of Dracunculiasis — January 2015–June 2016

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Dracunculiasis (Guinea worm disease) is caused by *Dracunculus medinensis*, a parasitic worm. Approximately 1 year after a person acquires infection from drinking contaminated water, the worm emerges through the skin, usually on the leg. Pain and secondary bacterial infection can cause temporary or permanent disability that disrupts work and schooling. The campaign to eradicate dracunculiasis worldwide began in 1980 at CDC. In 1986, the World Health Assembly called for dracunculiasis elimination (*1*), and the global Guinea Worm Eradication Program, led by the Carter Center and supported by the World Health Organization (WHO), United Nations Children's Fund (UNICEF), CDC, and other partners, began assisting ministries of health in countries where dracunculiasis was endemic. In 1986, an estimated 3.5 million cases were occurring each year in 20 countries in Africa and Asia (*1*,*2*). Since then, although the goal of eradicating dracunculiasis has not been achieved, substantial progress has been made. Compared with the 1986 estimate, the annual number of reported cases in 2015 has been reduced by >99%, and cases are confined to four countries with endemic disease. This report updates published (*3*–*5*) and unpublished surveillance data reported by ministries of health and describes progress toward dracunculiasis eradication during January 2015–June 2016. In 2015, a total of 22 cases were reported from four countries (Chad [nine cases], Mali [five], South Sudan [five], and Ethiopia [three]), compared with 126 cases reported in 2014 from the same four countries (Table 1). The overall 83% reduction in cases from 2014 to 2015 is the largest such annual overall reduction ever achieved during this global campaign. During the first 6 months of 2016, however, cases increased 25% compared with the same period in 2015. Continued active surveillance and aggressive detection and appropriate management of cases are essential eradication program components; however, epidemiologic challenges and civil unrest and insecurity pose potential barriers to eradication.

Because the life cycle of *D. medinensis* is complex, several strategies are used to interrupt its transmission (*4*). Dracunculiasis can be prevented with four main interventions: 1) educating residents in communities where the disease is endemic, particularly persons from whom worms are emerging, to avoid immersing affected body parts in sources of drinking water; 2) filtering potentially contaminated drinking water through a cloth filter or pipe filter to remove copepods (small crustaceans that host *D. medinensis* larvae); 3) treating potentially contaminated surface water with the organophosphate larvicide temephos (Abate) to kill the copepods; and 4) providing safe drinking water from bore-hole or protected hand-dug wells (*6*). Containment of transmission* is achieved through four complementary measures: 1) voluntary isolation and education of each patient to prevent contamination of drinking water sources, 2) provision of first aid to prevent secondary infections, 3) manual extraction of the worm, and 4) application of occlusive bandages. No vaccine or medicine to prevent or treat Guinea worm disease currently exists.

D. medinensis has an approximate 1-year incubation period (range = 10–14 months) following infection (*6*). A case of dracunculiasis is defined as an infection occurring in a person exhibiting a skin lesion or lesions with emergence of one or more Guinea worms. Each infected person is counted as a case only once during a calendar year. Countries enter the WHO precertification stage of eradication after 1 full year with no reported indigenous† cases. An imported case is an infection resulting from ingestion of contaminated water from a source identified through patient interviews and epidemiologic investigation in a place other than in the community where the patient is identified and the case reported (i.e., another country or another village within the same country). Since 2012, no international importations have been reported.

In each affected country, a national dracunculiasis eradication program receives monthly reports regarding cases from each village under active surveillance. Reporting rates are calculated as the proportion of all villages under active surveillance reporting monthly (Table 2). Active surveillance is conducted in all villages with endemic dracunculiasis or at high risk for importation, with daily searches of households for persons with signs or symptoms of dracunculiasis, to ensure case detection

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* Transmission from a patient with dracunculiasis is contained only if all of the following conditions are met for each emerged worm: 1) the infected patient is identified ≤24 hours after worm emergence; 2) the patient has not entered any water source since the worm emerged; 3) a village volunteer or other health care provider has managed the patient properly, by cleaning and bandaging the lesion until the worm has been fully removed manually and by providing health education to discourage the patient from contaminating any water source (if two or more emerging worms are present, transmission is not contained until the last worm is removed); 4) the containment process, including verification of dracunculiasis, is validated by a Guinea Worm Eradication Program supervisor within 7 days of emergence of the worm; and 5) temephos is used if any uncertainty about contamination of sources of drinking water exists, or if a source of drinking water is known to have been contaminated.

† An indigenous case of dracunculiasis is defined as an infection consisting of a skin lesion or lesions with emergence of one or more Guinea worms in a person who had no history of travel outside his or her residential locality during the preceding year.

TABLE 1. Number of reported indigenous dracunculiasis cases, by country –– worldwide, January 2014–June 2016

	Cases by year				Cases by 6-month period, January–June*			
	2014	2015		1-yr. change	2015	2016		6-mo. change
Country	No.	No.	Contained (%)	(%)	No.	No.	Contained (%)	(%)
Chad	13	9	(0)	(-31)	6	4	(75)	(-33)
Ethiopia	3	3	(100)	(0)	1	2	(100)	(+100)
Mali[†]	40	5	(60)	(-88)	0	0	—	—
South Sudan	70	5	(40)	(-93)	1	4	(75)	(+300)
Total	**126**	**22**	**(36)**	**(-83)**	**8**	**10**	**(80)**	**(+25)**

[*] No international importations were reported during the 18-month period January 2015–June 2016.

[†] Civil unrest and insecurity following a coup in April 2012 continued to constrain program operations in regions with endemic dracunculiasis (Gao, Kidal, Mopti, and Timbuktu) during 2015–2016.

TABLE 2. Reported dracunculiasis cases, surveillance, and status of local interventions in villages with endemic disease, by country — worldwide, 2015

	Country				
Cases/Surveillance/Status	Chad*	Ethiopia	Mali[†]	South Sudan	Total
Reported cases					
No. indigenous, 2015	9	3	5	5	**22**
No. imported,[§] 2015	0	0	0	0	**0**
Contained in 2015 (%)	(0)	(100)	(60)	(40)	**(36)**
Change in indigenous cases in villages/localities under surveillance, same period, 2014 and 2015 (%)	(-100)	(0)	(-88)	(-93)	**(-83)**
Villages under active surveillance, 2015					
No. of villages	1,015	173	574	2,610	**4,372**
Reporting monthly (%)	(100)	(99)	(100)	(99)	**(99)**
No. reporting ≥1 case	9	3	1	5	**18**
No. reporting only imported[¶] cases	1	0	0	0	**1**
No. reporting indigenous cases	8	3	3	5	**19**
Status of interventions in villages with endemic dracunculiasis, 2014–2015					
No. of villages with endemic dracunculiasis	20	3	1	15	**39**
Reporting monthly** (%)	(100)	(100)	(100)	(100)	**(100)**
Filters in all households** (%)	(100)	(100)	(100)	(100)	**(100)**
Using temephos** (%)	(30)	(100)	(100)	(100)	**(83)**
≥1 source of safe water** (%)	(88)	(100)	(66)	(33)	**(72)**
Providing health education** (%)	(100)	(100)	(100)	(100)	**(100)**

[*] Participants at the annual Chad Guinea Worm Eradication Program review meeting in November 2014 adopted "1+ case village" as a new description for villages in Chad affected by human cases of Guinea worm disease or dogs infected with Guinea worms and defined as "a village with one or more indigenous and/or imported cases of Guinea worm infections in humans, dogs, or cats in the current calendar year or previous year."

[†] Civil unrest and insecurity following a coup in 2012 continued to constrain Guinea Worm Eradication Program operations (supervision, surveillance, and interventions in Gao, Kidal, Mopti, and Timbuktu regions).

[§] Imported from another country.

[¶] Imported from another country or from another in-country village with endemic disease.

[**] The denominator is the number of villages/localities where the program applied interventions during 2014–2015.

within 24 hours of worm emergence and prompt patient management to prevent contamination of water sources. Villages in which endemic transmission of dracunculiasis is interrupted (i.e., zero cases reported for ≥12 consecutive months) are kept under active surveillance for 3 consecutive years. WHO certifies a country free from dracunculiasis after that country maintains adequate nationwide surveillance for ≥3 consecutive years and demonstrates that no cases of indigenous dracunculiasis occurred during that period. As of January 2016, WHO had certified 198 countries, areas, and territories as free from dracunculiasis (*3*). Eight countries remain to be certified: four where dracunculiasis is currently endemic (Chad, Ethiopia, Mali, and South Sudan), two in the precertification stage (Kenya and Sudan), and two never known to have had endemic dracunculiasis since the global eradication program began in 1980 (Angola and the Democratic Republic of the Congo, which are in the process of completing the requirements towards certification).

During January 2015–June 2016, CDC evaluated 209 specimens that emerged from humans, 207 from the four countries with endemic dracunculiasis and two from Kenya, a country where dracunculiasis was formerly endemic. Because some patients have multiple Guinea worms emerge, more laboratory-confirmed specimens than cases might be reported in any given period.

Country Reports

Chad. After a decade with no reported cases, Chad reported 10 indigenous cases in 2010. After indigenous cases were confirmed during 3 consecutive years, dracunculiasis was declared to be endemic in 2012 (*7*). In 2015, Chad reported nine cases (none contained) in nine villages, compared with 13 cases in 2014. During the first half of 2016, four cases (three contained) were reported in four villages. None of the 13 villages that reported a case in 2015 or during January–June 2016 had reported a case previously.

In 2012, Guinea worm infections were first reported in domestic dogs in Chad, and since then, more dogs than humans have been identified with emerging Guinea worms. This substantial number of nonhuman infections has not occurred in any other country during the eradication campaign. Worm specimens obtained from dogs were determined to be genetically indistinguishable from *D. medinensis* worms removed from humans in Chad (*7*). Most infections during the current outbreak have occurred in communities along the Chari River. The Carter Center has assisted the Ministry of Health in implementing active village-based surveillance for the disease in more than 1,300 villages in the at-risk zone. The working hypothesis, based on biologic, environmental, and epidemiologic investigations by CDC and the Carter Center, is that human cases and dog infections are associated with the domestic and commercial fishing industry along the Chari River and involve fish or other aquatic species that serve as paratenic hosts (intermediate hosts in which no development of the parasite occurs). New human cases are thought to occur when inadequately cooked paratenic hosts are consumed by humans and when such hosts are consumed raw by dogs (*7*). Overall, 503 infected dogs (as well as five infected domestic cats) were reported during 2015; during January–June 2016, 653 infected dogs were reported, a 116% increase over the 302 reported during the same period in 2015. However, the increase in dog infections compared with the same months of the previous year has begun to decline. The overall 116% increase from January–June 2015 to January–June 2016 is much less than the 325% increase that occurred during the first 6 months of 2015 compared with the first 6 months of and 2014 (*4*).

Beginning in October 2013, Chad's Guinea Worm Eradication Program urged villagers to be certain their fish were well cooked, bury fish entrails, and prevent dogs from eating fish entrails. By May 2016, according to monthly sample surveys, this intervention was being implemented by about 89% of respondents in surveyed communities with at-risk populations. In February 2014, health education efforts began to persuade villagers to tether infected dogs until the worms emerged to prevent contamination of water and infection of copepods. In February 2015, the program introduced a reward equivalent to US$20 for reporting and tethering an infected dog. Whereas 40% of infected dogs were tethered in 2014 and 68% were tethered in 2015, 81% of 498 infected dogs reported during January–May 2016 were tethered.

Chad has offered a cash reward equivalent to US$100 for reporting a case of dracunculiasis in humans beginning before 2010. In areas under active surveillance, 85% of 66 residents surveyed in May 2016 knew of the cash reward for reporting a case of dracunculiasis, and 68% knew of the cash reward for reporting and tethering an infected dog.

As of June 2016, 88% of villages with endemic dracunculiasis had safe water (i.e., water sources free of copepods, such as rapidly flowing rivers, protected hand-dug wells, and borehole wells). Temephos usage is limited by the extremely large lagoons used for fishing and as sources of drinking water; however, beginning in August 2014, an innovative technique of applying temephos to smaller cordoned sections of the lagoons at entry points used by infected humans or dogs was introduced to protect 19 villages in 2014, 29 villages in 2015, and 32 villages during January–June 2016.

The Carter Center and the WHO Collaborating Center for Research, Training and Eradication of Dracunculiasis at CDC are supporting research to better understand the unusual epidemiology of the current outbreak of dracunculiasis in Chad, assess antihelminthic treatment of dogs to prevent maturation of worms, and study the food sources and movements of dogs in an area of Chad with endemic disease. In collaboration with researchers from the University of Georgia, this initiative has demonstrated for the first time that *D. medinensis* can use an amphibian (frog) as a paratenic host in the laboratory (*8*) and has recovered, for the first time ever, a *Dracunculus* larva from a frog captured in the wild in Chad (*9*).

Ethiopia. In 2015, Ethiopia reported three cases of dracunculiasis (all three contained), one each in two villages in Gog district and one in a village in Abobo district of Gambella Region; the latter case occurred in a patient who also appeared to have been infected in one of the implicated villages in Gog district. This is the same number of cases that Ethiopia reported in 2014. Ethiopia also reported 13 infected dogs and one infected baboon in 2015, compared with three infected dogs and one unconfirmed report of an infected baboon in 2014, all in the same area of Gog district. During January–June 2016, Ethiopia reported two human cases and three infected dogs, compared with one human case, one infected dog, and one infected baboon during the same period of 2015. The program applied temephos monthly to almost all water sources used by humans in the at-risk area of Gog district throughout 2015. Coverage was increased threefold to include numerous smaller water sources in 2016. The program also introduced a cash reward equivalent to US$20 in April 2015 for reporting an infected animal, and the Ministry of Health held two press conferences to publicize the eradication initiative during the first half of 2016. A total of 152 villages are under active surveillance in two districts of Gambella Region. Ethiopia offers a cash reward equivalent to US$100 for reporting a case of dracunculiasis. Among 1,021 persons surveyed in Gog district in January–June 2016, 95% were aware of the reward for reporting an infected person; 51% of 1,068 surveyed knew of the reward for reporting an infected animal.

Mali. In 2015, Mali reported five cases of dracunculiasis (three contained) in three villages, located in Ansongo district of Gao Region (Tanzikratene, three cases), Tominian district of Segou Region (Parasilame, one case) and Gourma Rharous district of Timbuktu Region (Ngariatane, one case). This represented an 88% reduction from the 40 cases (35 [88%] contained) reported in 2014. Tanzikratene had reported 29 (73%) of Mali's cases in 2014; the other two villages with cases had not previously reported a case. Mali reported no cases during January–June 2015 or January–June 2016. However, Mali reported one infected dog in Tominian district in 2015 for the first time since the program began and one infected dog in the first half of 2016. Tanzikratene received a rehabilitated source of safe drinking water in 2015. There are 698 villages under active surveillance. Mali offers a cash reward equivalent to US$100 for reporting a case of dracunculiasis and US$20 for reporting and tethering an infected dog. In areas under active surveillance, 89% of 974 persons surveyed in June 2016 knew of the reward for reporting a case of dracunculiasis, and 61% of 461 surveyed knew of the reward for reporting an infected dog. In a sign of increased political support, in June 2016, the minister of health visited the area of Segou Region where dracunculiasis is endemic.

South Sudan. South Sudan reported five cases of dracunculiasis (two contained) in five villages in 2015, representing a 93% reduction from the 70 cases reported in 2014. It also reported the country's only known infected dog in 2015, which belonged to the household of one of the human patients. During January–June 2016, South Sudan reported four cases in June (three contained) in Tonj East County of Warrap State and Jur River County of Western Bahr Al Ghazal State, compared with only one case reported during January–June 2015. South Sudan has reported zero cases of dracunculiasis for 10 of the 18 months under review. South Sudan had 2,610 villages under active surveillance in 2015. Coverage with interventions in villages with endemic disease remains high, except for providing safe sources of drinking water (Table 2). In early July 2016, increased insecurity forced evacuation of all expatriate staff members assisting the South Sudan Guinea Worm Eradication Program. South Sudan began offering a cash reward equivalent to about US$125 for reporting a case of dracunculiasis in April 2014; in 2015, approximately 72% of 4,125 persons surveyed in areas under active surveillance knew of the reward (*10*).

Summary

What is already known about this topic?

The number of new cases of dracunculiasis (Guinea worm disease) occurring worldwide has decreased each year since 1986, when the World Health Assembly declared global elimination as a goal, from an estimated 3.5 million in 1986 to 22 in 2015.

What is added by this report?

The number of dracunculiasis cases reported worldwide during 2015 declined by 83% compared with 2014, but increased by 25% in January–June 2016 compared with January–June 2015. Despite missing earlier target dates for global dracunculiasis eradication, progress in eradicating human disease accelerated in 2015, although the rate of decline has been modest so far in 2016. Transmission is ongoing in four countries: Chad, Ethiopia, Mali, and South Sudan. The emergence of *Dracunculus* infections in domestic dogs in Chad and program disruptions caused by civil unrest and insecurity in Mali and South Sudan are now the greatest challenges to interrupting transmission.

What are the implications for public health practice?

Although earlier target dates for global dracunculiasis eradication were missed, progress has accelerated, and eradication is likely within the next year or two if disruption of program operations caused by insecurity in Mali can be minimized. However, rigorous implementation of all interventions (including recent interventions to prevent transmission to and from dogs) must continue to be maintained in Chad to ensure impact becomes manifest during 2016 and beyond.

Discussion

Led by sharp reductions in Mali and South Sudan, the unprecedented 83% reduction in total reported cases of dracunculiasis from 2014 to 2015 included 3 months (January, September, and December 2015) with zero cases worldwide. The 10 cases reported during January–June 2016 represent a 25% increase over the eight reported during January–June 2015, although zero cases were reported worldwide for the months of January and March 2016.

Political support for Guinea worm eradication remains very strong in South Sudan and has improved recently in Ethiopia and Mali, although civil unrest and associated insecurity remain major challenges to completing the eradication campaign, especially in Mali and South Sudan. The health ministers of all four countries attended or were represented at the annual informal meeting of countries with current or former endemic dracunculiasis during the World Health Assembly in Geneva, Switzerland, in May 2016 and at the International Review Meeting for Guinea Worm Eradication Program Managers held at the Carter Center in March 2016. The continued increase in infections of dogs in Chad and a lesser increase in Ethiopia in 2015 present a substantial challenge as the global program negotiates its final phase. Specific interventions and vigorous research to address these challenges could reduce infections in humans and dogs in Chad before the end of 2016.

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Notes from the Field

Mycobacterium chimaera Contamination of Heater-Cooler Devices Used in Cardiac Surgery — United States

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In the spring of 2015, investigators in Switzerland reported a cluster of six patients with invasive infection with *Mycobacterium chimaera*, a species of nontuberculous mycobacterium ubiquitous in soil and water. The infected patients had undergone open-heart surgery that used contaminated heater-cooler devices during extracorporeal circulation (*1*). In July 2015, a Pennsylvania hospital also identified a cluster of invasive nontuberculous mycobacterial infections among open-heart surgery patients. Similar to the Swiss report, a field investigation by the Pennsylvania Department of Health, with assistance from CDC, used both epidemiologic and laboratory evidence to identify an association between invasive *M. avium* complex, including *M. chimaera,* infections and exposure to contaminated Stöckert 3T heater-cooler devices, all manufactured by LivaNova PLC (formerly Sorin Group Deutschland GmbH) (*2*). *M. chimaera* was described as a distinct species of *M. avium* complex in 2004 (*3*). The results of the field investigation prompted notification of approximately 1,300 potentially exposed patients.* Although heater-cooler devices are used to regulate patients' blood temperature during cardiopulmonary bypass through water circuits that are closed, these reports suggest that aerosolized *M. chimaera* from the devices resulted in the invasive infections (*1*,*2*). The Food and Drug Administration (FDA) and CDC have issued alerts regarding the need to follow updated manufacturer's instructions for use of the devices, evaluate the devices for contamination, remain vigilant for new infections, and continue to monitor reports from the United States and overseas (*2*).

Whole genome sequencing was completed on isolates from 11 patients and from five Stöckert 3T heater-cooler devices from hospitals in Pennsylvania and Iowa, two of the states where clusters of infections were identified (*2*). Samples from heater-cooler devices included swabs from the interior of the device, water drained from the devices, and air samples collected while a device was operating. Single nucleotide polymorphisms (SNPs) were identified after comparing patient and device samples against sequence data from an *M. chimaera* reference isolate. Results from pairwise comparisons among all sequences across a core genome of approximately 5 million base pairs revealed a maximum of 38 SNPs between any two isolates related to the outbreak investigation, versus a minimum of 2,900 SNPs between any single outbreak isolate and the epidemiologically unlinked isolate (sequence files available from the National Center for Biotechnology Information: Pennsylvania isolates Bioproject PRJNA344472; Iowa isolates Bioproject PRJNA345021; epidemiologically unlinked isolate RefSeq Assembly Accession GCF_001307335.1).

These results strongly suggest a point-source contamination of Stöckert 3T heater-cooler devices with *M. chimaera*. A recent report from Germany noted that preliminary typing results of *M. chimaera* from heater-cooler devices from three different European countries were almost identical to samples obtained from the manufacturing site, further supporting the likelihood of point-source contamination (*4*). Additional sequence comparisons between patient specimens and device samples obtained from facilities from various regions in the United States are ongoing. Sequence comparisons between U.S. and European samples, as well as samples from the manufacturing site, could provide additional information for evaluating the possibility of point-source contamination at the heater-cooler manufacturing site. Efforts are currently ongoing to obtain and compare European sequencing results.

Although thousands of patients in the United States have been notified regarding potential exposure to contaminated heater-cooler devices, the number who were exposed might be much larger. Over 250,000 procedures using cardiopulmonary bypass are performed in the United States each year (*5*). Stöckert 3T heater-cooler devices represent approximately 60% of the U.S. market (*2*). CDC and FDA are continuing their efforts to increase provider and patient awareness of the risk. CDC has issued guidance on identifying patients at risk to ensure timely diagnosis and treatment of these indolent and often unrecognized infections (*2*). FDA is continuing to gather information, issue communications, and assess the situation from both public health and regulatory perspectives (*6*).†

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* https://www.wellspan.org/news/story/15810.

† http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/UCM520191.htm.

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Announcements

National Teen Driver Safety Week — October 16–22, 2016

Motor vehicle crashes are the leading cause of death for teens in the United States. In 2014, a total of 2,450 teens and young adults aged 15–19 years died in motor vehicle crashes, and approximately 288,000 were treated in emergency departments or hospitalized for injuries (*1*). In the last decade, motor vehicle crash deaths and injuries among teens decreased significantly (*1*); however, projections for 2015 data indicate a 10% increase in fatalities among persons aged 15–20 years (*2*).

The 2016 National Teen Driver Safety Week will be observed October 16–22, 2016. This year's theme, "Talk to Your Teen About the '5 to Drive,'" encourages families to agree upon the rules to address driving risks for teens, including alcohol use, not using seat belts, distracted driving, speeding, and teen passengers (*3*).

According to teens, parents can have the most influence on driving habits by demonstrating skills and setting limits (*4*). Parent-imposed rules and limits can reduce the risk for teens being involved in a crash or other negative driving outcomes (*4*,*5*). Online resources are available to help parents in supervising their new driver and monitoring and reinforcing the "rules of the road" as their teen begins driving independently. A Parent-Teen Driving Agreement (http://www.cdc.gov/parentsarethekey/parents) puts these rules in writing to set clear expectations and limits.

Additional information on National Teen Driver Safety Week available at https://www.trafficsafetymarketing.gov/teens.

Additional information on safe teen driving is available at the following websites: http://www.cdc.gov/MotorVehicleSafety/Teen_Drivers/teendrivers_factsheet.html; http://www.cdc.gov/parentsarethekey/danger/index.html; http://www.teendriversource.org/; and http://www.nhtsa.gov/Driving+Safety/Teen+Drivers.

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Global Handwashing Day — October 15, 2016

October 15, 2016, marks Global Handwashing Day. This observance increases awareness and understanding of the importance of handwashing with soap as an effective and affordable means of preventing disease around the world.

Handwashing with soap plays an important role in child survival and health. An estimated 1.8 million children aged <5 years die each year from diarrheal diseases and pneumonia, the top two causes of death among young children worldwide (*1*). Handwashing with soap can reduce the incidence of diarrhea among this age group by approximately 30% (*2*) and respiratory infections by approximately 20% (*3*).

Although water is commonly used to wash hands, because of the limited availability of soap in developing countries, many persons do not use soap for handwashing. Even when soap is available, it is often used primarily for laundry and bathing rather than handwashing. Washing hands with soap effectively removes bacteria (*4*).

Additional information on handwashing and Global Handwashing Day is available at http://www.cdc.gov/handwashing. Information on water-related hygiene is available at http://www.cdc.gov/healthywater/hygiene.

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Announcements

World Thrombosis Day — October 13, 2016

October 13, 2016, is World Thrombosis Day. Deep vein thrombosis (DVT) and pulmonary embolism (PE) are together referred to as venous thromboembolism (VTE). A DVT is a blood clot that develops in the veins of the lower leg, thigh, pelvis, or arm; PE occurs when a portion of a DVT breaks off and travels through the bloodstream to the lungs.

VTE is an underdiagnosed and serious, but preventable, condition that affects up to 900,000 persons and is responsible for an estimated 60,000–100,000 deaths in the United States each year (*1*). Risk factors for VTE include injury to a vein, slow blood flow, increased estrogen levels, certain chronic medical illnesses, and family history, as well as presence of a catheter in a central vein, advanced age, obesity, inherited clotting disorders, and previous VTE. Approximately one third of persons who have a VTE will have a recurrence within 10 years (*1*).

The theme of this year's World Thrombosis Day is health care–associated VTE (HA-VTE). Approximately half of all VTEs are related to a recent hospitalization or surgical procedure; and most of these VTEs do not occur until after hospital discharge (*2*,*3*). As much as 70% of cases of HA-VTE are preventable with appropriate use of anticoagulants or compression stockings (*4*–*6*), yet fewer than half of hospitalized patients at risk for HA-VTE receive these measures (*7*).

CDC is working to increase HA-VTE awareness and prevention. CDC, in partnership with the National Blood Clot Alliance, recently launched the Stop the Clot, Spread the Word campaign, which provides resources to reduce HA-VTE for patients and providers; awareness and prevention measures include risk assessment tools, educational materials, videos, and infographics. Readers can learn more about HA-VTE on the Stop the Clot website (https://www.stoptheclot.org/spreadtheword/), and can access resources by visiting the CDC Venous Thromboembolism website (http://www.cdc.gov/ncbddd/dvt/index.html).

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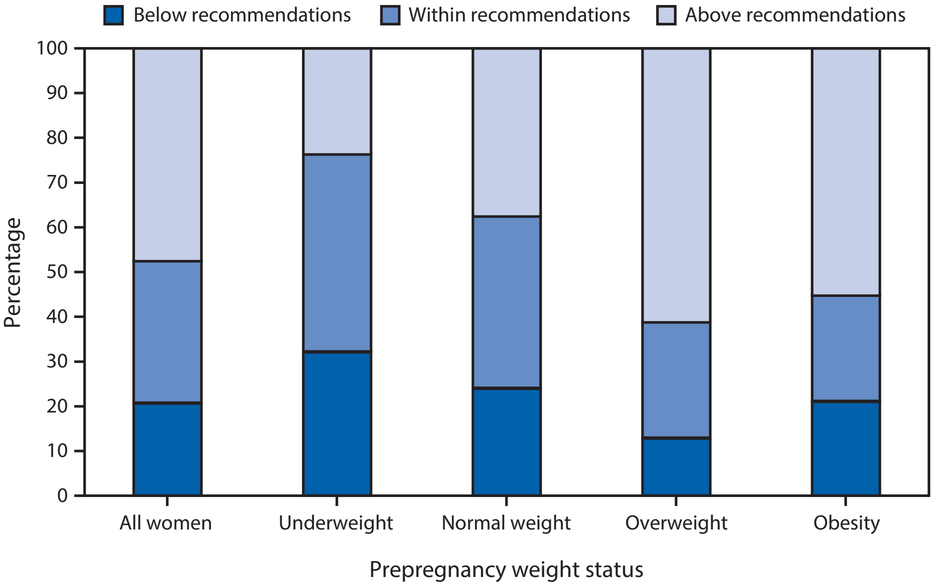
QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Gestational Weight Gain* Among Women with Full-Term, Singleton Births, Compared with Recommendations — 48 States and the District of Columbia, 2015



* Institute of Medicine recommendations are based on prepregnancy body mass index (BMI): 28–40 pounds for underweight women (BMI <18.5), 25–35 pounds for normal weight women (BMI = 18.5–24.9), 15–25 pounds for overweight women (BMI = 25.0–29.9), and 11–20 pounds for women with obesity (BMI ≥30.0).

Gestational weight gain was within the recommended range for 32% of women giving birth to full-term, singleton infants in 2015, with 48% gaining more weight and 21% less weight than recommended. Approximately 44% of women who were underweight before pregnancy gained within the recommendations, compared with 39% of women who were normal weight, 26% of women who were overweight, and 24% of women with obesity before pregnancy. Weight gain above the recommendations was highest among women who were overweight (61%) or had obesity (55%) before pregnancy.

Source: National Vital Statistics System birth data. http://www.cdc.gov/nchs/nvss/births.htm.

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