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Prevalence of Sugar-Sweetened Beverage Intake Among Adults — 23 States and the District of Columbia, 2013

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The 2015–2020 Dietary Guidelines for Americans recommend that the daily intake of calories from added sugars not exceed 10% of total calories.* Sugar-sweetened beverages (SSBs) are significant sources of added sugars in the diet of U.S. adults and account for approximately one third of added sugar consumption (*1*). Among adults, frequent (i.e., at least once a day) SSB intake is associated with adverse health consequences, including obesity, type 2 diabetes, and cardiovascular disease (*2*). According to the 2009–2010 National Health and Nutrition Examination Survey (NHANES), an in-person and phone follow-up survey, 50.6% of U.S. adults consumed at least one SSB on a given day (*3*). In addition, SSB intake varies by geographical regions (*4*,*5*): the prevalence of daily SSB intake was higher among U.S. adults living in the Northeast (68.4%) and South (66.7%) than among persons living in the Midwest (58.8%). In 2013, the Behavioral Risk Factor Surveillance System (BRFSS), a telephone survey, revised the SSB two-item optional module to retain the first question on regular soda and expand the second question to include more types of SSBs than just fruit drinks. Using 2013 BRFSS data, self-reported SSB (i.e., regular soda, fruit drinks, sweet tea, and sports or energy drinks) intake among adults (aged ≥18 years) was assessed in 23 states and the District of Columbia (DC). The overall age-adjusted prevalence of SSB intake ≥1 time per day was 30.1% and ranged from 18.0% in Vermont to 47.5% in Mississippi. Overall, at least once daily SSB intake was most prevalent among adults aged 18–24 years (43.3%), men (34.1%), non-Hispanic blacks (blacks) (39.9%), unemployed adults (34.4%), and persons with less than a high school education (42.4%). States can use the data for program evaluation and monitoring trends, and information on disparities in SSB consumption could be used to create targeted intervention efforts to reduce SSB consumption.

* http://health.gov/dietaryguidelines/2015.

BRFSS is a state-based, random-digit–dialed telephone survey of U.S. adults aged ≥18 years, conducted annually by CDC and state health departments to monitor health conditions and behaviors related to public health concerns.† BRFSS uses multistage, stratified sampling to select a representative sample of the noninstitutionalized adult population in each state, DC, and three U.S. territories (American Samoa, the Federated States of Micronesia, and Guam). In 2013, the median response rate across all states was 46.4% from

† http://www.cdc.gov/brfss/annual_data/annual_2013.html.

INSIDE

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

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combined landline and cell phone data. Each year, BRFSS offers several optional modules to states on additional specific topics. In 2013, the BRFSS included an optional module with two SSB intake questions: 1) "During the past 30 days, how often did you drink regular soda or pop that contains sugar? Do not include diet soda or diet pop." and 2) "During the past 30 days, how often did you drink sugar-sweetened fruit drinks (such as Kool-Aid and lemonade), sweet tea, and sports or energy drinks (such as Gatorade and Red Bull)? Do not include 100% fruit juice, diet drinks, or artificially sweetened drinks." Respondents answered number of times per month, week, or day, and responses were converted to daily intake. To calculate daily SSB intake, daily intake frequency from both questions was summed and categorized as none, >0 to <1 (coded as <1), and ≥1 time per day.[§] During 2013, 23 states and DC offered the SSB optional module, and 157,668 adults answered both SSB questions. Prevalence estimates are presented as percentages with 95% confidence intervals. Because age has been associated with SSB intake and age distribution varies by state, both crude and age-adjusted prevalences (standardization according to 2000 U.S. projected population) were provided for each state. Chi-square tests were used to examine whether state SSB intake varied by age, sex, race/ethnicity, employment status, or education (statistically significant at $p<0.05$). All analyses took complex survey design and sampling weight into account.

[§] http://www.cdc.gov/brfss/data_documentation/pdf/brfss_ssb-userguide.pdf.

During 2013, after direct age adjustment, 30.1% of respondents reported consuming SSBs at least once per day. At least once daily SSB intake was most common among persons aged 18–24 years (43.3%), men (34.1%), blacks (39.9%), persons who reported being unemployed (34.4%), and persons with less than a high school education (42.4%). The lowest prevalences were reported by adults aged ≥55 years (19.1%), non-Hispanic persons of other races (21.2%), retired persons (18.0%), and college graduates (15.5%). By state, the age-adjusted prevalence of daily SSB intake was highest in Mississippi (47.5%), followed by Louisiana (45.5%), and West Virginia (45.2%) (Table 1). The prevalence of SSB intake of ≥2 times per day ranged from a low of 8.1% in Vermont to 27.3% in Mississippi (pooled mean for 23 states and DC = 14.8%) (data not shown).

When examined by state of residence, SSB intake was most common among younger adults (aged 18–24 years) in most states and among men in all states. Overall, the prevalence of SSB intake ≥1 time per day among the youngest group of adults (persons aged 18–24 years) was 2.3 times the prevalence among the oldest age group (persons aged ≥55 years), ranging from 1.6-fold higher in New York to 3.4-fold higher in New Jersey. The overall prevalence among men was approximately 1.4 times the prevalence among women, ranging from 1.1 times higher in Mississippi to 2.0 times higher in Minnesota. Similarly, when prevalence of at least once daily SSB intake among blacks and Hispanics was compared with at least once daily intake prevalence among non-Hispanic whites (whites), the prevalence among blacks was 1.5 times the prevalence among whites (ranging from 0.9 in West Virginia to

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TABLE 1. Prevalence* of sugar-sweetened beverage† consumption among adults, by state — Behavioral Risk Factor Surveillance System, 23 states and District of Columbia, 2013

State	No. respondents	Crude prevalence, % (95% CI)			Adjusted prevalence,§ % (95% CI)		
		None	<1 time/day	≥1 time/day	None	<1 time/day	≥1 time/day
Overall	**157,668**	**26.2 (25.7–26.6)**	**44.7 (44.1–45.3)**	**29.1 (28.6–29.6)**	**24.7 (24.2–25.2)**	**45.2 (44.6–45.8)**	**30.1 (29.6–30.7)**
Alaska	4,102	25.5 (23.8–27.4)	48.0 (45.8–50.2)	26.5 (24.4–28.6)	25.2 (23.5–27.0)	48.2 (46.0–50.4)	26.6 (24.6–28.7)
Arizona	3,491	28.6 (26.1–31.1)	43.9 (41.0–46.9)	27.6 (24.8–30.6)	25.9 (23.5–28.5)	44.6 (41.4–47.8)	29.6 (26.5–32.8)
California	5,871	26.8 (25.4–28.3)	49.4 (47.6–51.1)	23.8 (22.3–25.4)	25.8 (24.4–27.2)	49.9 (48.1–51.7)	24.3 (22.8–25.9)
Connecticut	5,871	33.4 (31.8–35.0)	47.1 (45.3–48.9)	19.5 (18.1–21.1)	30.8 (29.3–32.5)	48.6 (46.7–50.5)	20.6 (19.0–22.2)
District of Columbia	4,152	26.6 (24.6–28.7)	50.7 (48.2–53.2)	22.7 (20.4–25.1)	26.4 (24.5–28.4)	50.2 (47.7–52.8)	23.4 (21.1–25.8)
Indiana	4,486	23.1 (21.7–24.5)	42.0 (40.1–43.9)	34.9 (33.1–36.9)	21.5 (20.2–22.9)	42.3 (40.3–44.3)	36.2 (34.2–38.2)
Iowa	3,696	27.4 (25.7–29.2)	42.7 (40.6–44.8)	29.9 (27.9–32.1)	25.6 (24.0–27.4)	42.9 (40.7–45.1)	31.5 (29.3–33.7)
Kansas	11,121	26.3 (25.4–27.2)	43.6 (42.4–44.7)	30.1 (29.0–31.3)	24.9 (24.0–25.8)	43.8 (42.6–45.0)	31.3 (30.1–32.4)
Kentucky	9,818	21.8 (20.7–23.0)	36.8 (35.3–38.2)	41.4 (39.9–42.9)	20.3 (19.2–21.4)	36.6 (35.1–38.1)	43.2 (41.6–44.7)
Louisiana	4,759	19.1 (17.7–20.6)	36.8 (34.6–39.0)	44.1 (41.8–46.4)	17.8 (16.4–19.3)	36.6 (34.4–39.0)	45.5 (43.1–48.0)
Maryland	11,759	28.1 (27.0–29.3)	44.4 (43.0–45.8)	27.5 (26.1–28.9)	26.2 (25.1–27.4)	45.3 (43.8–46.8)	28.5 (27.0–30.0)
Minnesota	12,704	30.6 (29.2–32.1)	48.1 (46.5–49.8)	21.2 (19.9–22.6)	28.7 (27.4–30.1)	49.0 (47.3–50.6)	22.3 (21.0–23.8)
Mississippi	6,692	16.4 (15.3–17.5)	37.4 (35.7–39.1)	46.2 (44.5–48.1)	15.4 (14.3–16.5)	37.1 (35.3–38.9)	47.5 (45.7–49.4)
Nebraska	7,822	24.4 (23.0–25.8)	47.1 (45.4–48.9)	28.5 (26.8–30.3)	23.2 (21.8–24.6)	47.0 (45.2–48.9)	29.8 (28.0–31.7)
New Jersey	3,842	34.0 (31.9–36.2)	43.0 (40.6–45.4)	23.0 (20.9–25.1)	32.0 (30.1–34.1)	43.8 (41.3–46.3)	24.2 (22.1–26.4)
New York	3,751	30.2 (28.5–32.1)	47.3 (45.2–49.4)	22.5 (20.7–24.3)	29.1 (27.3–30.8)	47.9 (45.8–50.0)	23.0 (21.2–25.0)
North Carolina	3,926	19.6 (18.1–21.2)	40.1 (38.0–42.3)	40.3 (38.1–42.5)	18.3 (16.9–19.9)	40.2 (38.0–42.4)	41.5 (39.3–43.7)
Ohio	7,316	25.4 (24.1–26.8)	43.4 (41.7–45.1)	31.2 (29.6–32.9)	23.7 (22.4–25.0)	43.5 (41.7–45.4)	32.8 (31.1–34.6)
Oklahoma	3,638	19.0 (17.5–20.5)	37.9 (35.9–40.0)	43.1 (40.9–45.3)	17.9 (16.4–19.4)	37.6 (35.5–39.7)	44.6 (42.4–46.8)
South Carolina	9,590	19.8 (18.8–20.9)	39.8 (38.4–41.2)	40.4 (39.0–41.9)	18.0 (17.1–19.1)	39.9 (38.4–41.4)	42.1 (40.6–43.6)
Utah	11,428	20.9 (20.1–21.8)	51.6 (50.4–52.8)	27.5 (26.4–28.6)	21.8 (20.9–22.6)	51.2 (50.0–52.4)	27.0 (26.0–28.1)
Vermont	5,784	35.8 (34.3–37.4)	47.5 (45.8–49.2)	16.7 (15.4–18.1)	32.7 (31.2–34.2)	49.3 (47.5–51.1)	18.0 (16.5–19.6)
West Virginia	5,630	22.4 (21.2–23.6)	35.9 (34.4–37.4)	41.8 (40.2–43.4)	19.7 (18.6–20.9)	35.1 (33.5–36.7)	45.2 (43.5–46.9)
Wisconsin	5,500	26.4 (24.7–28.2)	46.9 (44.8–49.0)	26.7 (24.8–28.7)	24.0 (22.4–25.8)	47.4 (45.2–49.7)	28.5 (26.5–30.6)

Abbreviation: CI = confidence interval.
* Weighted percentages might not sum to 100% because of rounding.
† Included regular soda, fruit drinks, sweet tea, and sports or energy drinks.
§ Age standardization according to 2000 U.S. projected population.

4.9 in DC), and among Hispanics, was 1.4 times the prevalence among whites (ranging from 0.7 in Vermont to 2.2 in California). Overall, the prevalence of at least once daily SSB consumption among adults with less than a high school education was 2.7 times the prevalence among college graduates, ranging from 1.5 times higher in Mississippi to 5.4 times higher in DC.

The states with the highest prevalences of at least once daily consumption of SSBs among persons aged 18–24 years were Oklahoma (66.4%) and West Virginia (63.8%). The highest prevalences among men were in Louisiana (50.6%) and Mississippi (48.7%). At least once daily SSB intake was most prevalent among blacks in approximately half of states; states with the highest prevalence among blacks were Louisiana (50.7%) and Iowa (49.0%) (Table 2). Among persons who were unemployed, the highest prevalences of consuming SSBs ≥1 time per day were reported in Mississippi (49.5%) and Louisiana (48.4%). The states with the highest prevalence among persons with less than a high school education were Louisiana (60.0%) and South Carolina (55.6%) (Table 3).

Discussion

The frequency of daily SSB intake remains high in some states and within certain populations. During 2013, approximately one in three adults reported consuming SSBs at least once daily in DC and the 23 states surveyed. Adults in Louisiana, Mississippi, and West Virginia reported the highest prevalence of at least once daily SSB intake. Daily SSB intake was most frequently reported among persons aged 18–24 years, men, blacks, adults who were not employed, and persons with less than a high school education.

The prevalence of daily SSB intake in this study was somewhat lower than that reported by the 2009–2010 NHANES data, which found that 50.6% of U.S. adults reported consuming at least one SSB on a given day (*3*). Potential reasons for this discrepancy might be accounted for by differences in modes of survey administration, methods of collecting dietary intake data, survey year, representativeness, and usual intake assessment. NHANES is an in-person and phone follow-up survey using 24-hour dietary recalls with USDA's Automated Multiple-Pass Method that captures all forms of SSBs. In contrast, the BRFSS is a telephone survey using a short dietary screener about usual intake during the past 30 days.

As has been reported in other studies that used National Health Interview Survey and BRFSS (*4*,*6*) data, the prevalence of at least once daily SSB intake in this analysis was higher in southern states. Higher SSB intake frequency in certain states could result, in part, from variations in beverage retail

TABLE 2. Crude prevalence* of sugar-sweetened beverage† consumption ≥1 time/day among adults, by age group, sex, race/ethnicity, and state — Behavioral Risk Factor Surveillance System, 23 states and District of Columbia, 2013

State	No. respondents	Crude prevalence of sugar-sweetened beverage consumption ≥1 time/day, % (95% CI)									
		Age group (yrs)§				Sex§		Race/Ethnicity§			
		18–24	25–34	35–54	≥55	Male	Female	White, non-Hispanic	Black, non-Hispanic	Hispanic	Other, non-Hispanic
Overall¶	**157,668**	**43.3 (41.2–45.5)**	**38.2 (36.7–39.7)**	**30.1 (29.3–31.0)**	**19.1 (18.5–19.7)**	**34.1 (33.3–35.0)**	**24.4 (23.8–25.0)**	**26.7 (26.2–27.2)**	**39.9 (38.1–41.7)**	**36.3 (34.4–38.3)**	**21.2 (19.2–23.4)**
Alaska	4,102	45.9 (38.7–53.3)	31.3 (26.3–36.7)	25.1 (22.0–28.4)	17.1 (14.5–20.1)	31.2 (28.3–34.3)	21.5 (18.8–24.4)	21.1 (19.0–23.3)	31.5 (18.7–47.8)	26.4 (16.3–39.8)	41.4 (36.5–46.6)
Arizona	3,491	48.8 (38.1–59.7)	41.5 (32.4–51.1)	27.9 (23.2–33.0)	15.7 (13.0–18.9)	34.4 (29.9–39.2)	21.6 (18.3–25.3)	21.5 (18.9–24.5)	32.9 (18.3–51.8)	39.4 (32.0–47.3)	39.1 (28.0–51.4)
California	5,871	36.4 (30.8–42.4)	31.5 (27.5–35.9)	23.9 (21.5–26.4)	14.9 (13.1–17.0)	28.2 (25.8–30.7)	19.4 (17.6–21.5)	16.3 (14.6–18.1)	33.5 (25.3–43.3)	36.0 (33.1–39.0)	14.4 (11.2–18.4)
Connecticut	5,871	30.4 (23.9–37.8)	29.1 (24.5–34.2)	18.0 (15.8–20.4)	14.3 (12.7–16.0)	24.2 (22.0–26.6)	15.3 (13.5–17.3)	16.6 (15.1–18.2)	30.3 (24.8–36.4)	31.1 (25.4–37.4)	18.4 (12.0–27.0)
District of Columbia	4,152	43.0 (32.1–54.7)	20.8 (15.9–26.7)	20.3 (17.0–24.0)	20.5 (18.1–23.1)	24.7 (21.1–28.6)	20.9 (18.2–23.9)	7.5 (5.6–10.0)	37.2 (33.4–41.1)	16.5 (9.6–26.9)	12.7 (7.6–20.3)
Indiana	4,486	45.2 (37.7–52.9)	45.4 (39.8–51.1)	37.5 (34.4–40.7)	24.6 (22.5–26.7)	39.3 (36.5–42.3)	30.9 (28.5–33.4)	33.5 (31.5–35.5)	39.7 (32.4–47.6)	43.1 (33.5–53.3)	45.6 (33.4–58.3)
Iowa	3,696	52.5 (44.1–60.6)	40.2 (34.2–46.5)	31.7 (28.3–35.4)	16.3 (14.4–18.3)	38.2 (34.9–41.5)	22.0 (19.5–24.8)	28.3 (26.2–30.4)	49.0 (31.0–67.2)	37.1 (25.5–50.4)	63.0 (43.9–78.7)
Kansas	11,121	45.3 (41.0–49.6)	39.4 (36.2–42.7)	32.1 (30.2–33.9)	18.7 (17.6–19.9)	36.0 (34.3–37.7)	24.6 (23.2–26.0)	28.8 (27.7–30.0)	32.0 (26.3–38.2)	42.5 (37.7–47.5)	28.2 (23.1–34.1)
Kentucky	9,818	56.8 (51.2–62.3)	55.5 (51.0–59.9)	44.1 (41.5–46.7)	27.9 (26.1–29.8)	46.8 (44.4–49.1)	36.5 (34.5–38.5)	41.4 (39.8–42.9)	44.2 (36.7–52.0)	36.3 (24.1–50.7)	34.6 (26.3–44.1)
Louisiana	4,759	58.2 (49.4–66.6)	55.7 (48.4–62.7)	47.0 (43.1–51.0)	31.3 (28.9–33.7)	50.6 (46.9–54.4)	38.3 (35.5–41.2)	41.0 (38.3–43.8)	50.7 (46.1–55.2)	41.2 (26.0–58.3)	41.2 (27.5–56.5)
Maryland	11,759	40.8 (34.7–47.2)	32.5 (28.6–36.8)	28.7 (26.6–30.9)	20.0 (18.6–21.5)	32.2 (30.0–34.5)	23.3 (21.7–25.0)	24.6 (23.1–26.3)	34.1 (31.1–37.3)	29.8 (24.2–36.2)	22.9 (18.2–28.5)
Minnesota	12,704	33.1 (28.2–38.4)	33.8 (30.2–37.7)	21.1 (18.9–23.4)	11.9 (10.3–13.8)	28.3 (26.2–30.6)	14.5 (13.0–16.2)	20.0 (18.6–21.5)	28.9 (21.1–38.1)	38.9 (30.4–48.1)	20.5 (15.2–27.2)
Mississippi	6,692	62.5 (55.9–68.8)	57.3 (52.1–62.2)	48.1 (45.1–51.2)	33.8 (31.8–36.0)	48.7 (45.8–51.6)	44.1 (41.9–46.3)	45.0 (42.7–47.2)	48.7 (45.5–51.9)	54.9 (39.7–69.3)	39.2 (27.3–52.6)
Nebraska	7,822	42.0 (35.6–48.7)	40.7 (35.7–45.8)	31.3 (28.3–34.5)	15.4 (13.8–17.1)	35.8 (33.1–38.5)	21.7 (19.7–24.0)	26.4 (24.7–28.2)	36.7 (24.7–50.7)	48.7 (40.1–57.4)	31.3 (22.1–42.3)
New Jersey	3,842	46.2 (36.5–56.2)	28.6 (23.2–34.7)	22.6 (19.6–25.9)	13.8 (11.6–16.2)	28.0 (24.8–31.5)	18.2 (15.8–20.9)	19.9 (17.6–22.5)	38.3 (31.8–45.4)	29.8 (23.9–36.3)	11.0 (6.8–17.3)
New York	3,751	25.1 (18.7–32.9)	29.6 (24.9–34.7)	24.3 (21.3–27.6)	16.2 (14.2–18.5)	27.1 (24.3–30.1)	18.2 (16.1–20.4)	17.9 (15.9–20.1)	33.7 (28.1–39.8)	32.9 (27.9–38.3)	17.1 (11.9–24.0)
North Carolina	3,926	61.7 (53.3–69.4)	46.5 (40.5–52.5)	42.8 (39.3–46.5)	27.4 (24.8–30.1)	44.2 (40.9–47.6)	36.6 (33.8–39.5)	38.5 (35.9–41.1)	46.0 (41.0–51.1)	49.9 (41.9–57.8)	26.4 (17.7–37.5)
Ohio	7,316	49.4 (42.5–56.3)	44.1 (39.1–49.2)	31.9 (29.3–34.6)	19.5 (17.8–21.3)	37.1 (34.6–39.8)	25.7 (23.7–27.8)	29.9 (28.2–31.6)	41.6 (35.8–47.6)	38.1 (25.0–53.1)	30.3 (21.6–40.7)
Oklahoma	3,638	66.4 (58.0–73.9)	57.4 (51.4–63.1)	45.1 (41.4–48.8)	25.9 (23.6–28.4)	45.8 (42.5–49.2)	40.5 (37.7–43.3)	40.9 (38.4–43.5)	39.7 (31.4–48.7)	53.8 (45.0–62.5)	50.5 (44.5–56.4)
South Carolina	9,590	58.7 (53.0–64.1)	51.9 (47.8–56.0)	41.4 (38.9–43.9)	29.4 (27.6–31.2)	46.4 (44.2–48.6)	35.1 (33.2–37.0)	38.6 (36.9–40.4)	45.1 (42.2–48.1)	38.5 (28.4–49.6)	40.7 (33.0–48.8)
Utah	11,428	32.6 (29.1–36.3)	35.4 (32.7–38.2)	27.2 (25.4–29.0)	19.0 (17.6–20.5)	34.3 (32.6–36.0)	20.9 (19.5–22.3)	25.3 (24.2–26.4)	36.4 (21.5–54.5)	42.1 (37.8–46.6)	28.7 (23.1–35.1)
Vermont	5,784	25.5 (19.5–32.6)	24.5 (20.2–29.4)	18.0 (15.8–20.4)	10.6 (9.4–12.0)	21.7 (19.5–24.1)	12.2 (10.7–13.9)	16.3 (15.0–17.8)	31.9 (11.5–63.0)	11.2 (4.1–27.0)	29.7 (21.7–39.3)
West Virginia	5,630	63.8 (57.4–69.9)	56.5 (51.8–61.2)	48.0 (45.4–50.7)	25.7 (24.0–27.6)	47.3 (44.9–49.8)	36.5 (34.5–38.5)	42.0 (40.4–43.6)	37.1 (26.4–49.2)	40.0 (25.1–57.0)	40.3 (30.6–50.8)
Wisconsin	5,500	44.1 (36.8–51.7)	41.6 (35.6–47.9)	27.8 (24.7–31.2)	14.2 (12.3–16.4)	33.1 (30.2–36.2)	20.4 (17.9–23.0)	24.9 (23.0–26.9)	48.2 (36.4–60.2)	40.4 (27.3–55.0)	25.2 (17.1–35.6)

Abbreviation: CI = confidence interval.
* Weighted percentages might not sum to 100% because of rounding.
† Includes regular soda, fruit drinks, sweet tea, and sports or energy drinks.
§ Values for all states were significantly different at p<0.05 by chi-square test except for Virginia, where differences in SSB intake by race/ethnicity were not statistically significant.
¶ Missing data: 1.2% for race/ethnicity.

TABLE 3. Crude prevalence* of sugar-sweetened beverage† consumption ≥1 time/day among adults, by employment status, education, and state — Behavioral Risk Factor Surveillance System, 23 states and District of Columbia, 2013

State	No. respondents	Crude prevalence of sugar-sweetened beverage consumption ≥1 time/day (95% CI)						
		Employment status§			Education§			
		Employed	Not employed	Retired	<High school	High school	Some college	College graduate
Overall¶	**157,668**	**30.0(29.3–30.7)**	**34.4(33.2–35.5)**	**18.0(17.2–18.9)**	**42.4(40.6–44.3)**	**35.8(34.8–36.8)**	**28.5(27.6–29.5)**	**15.5(14.9–16.2)**
Alaska	4,102	26.2 (23.6–28.9)	32.1 (27.8–36.8)	16.0 (12.6–20.2)	47.1 (37.8–56.5)	34.9 (31.1–38.9)	24.2 (21.0–27.8)	12.9 (10.5–15.7)
Arizona	3,491	33.0 (28.5–37.8)	28.7 (23.5–34.5)	13.8 (10.8–17.5)	40.4 (30.9–50.7)	36.5 (30.7–42.7)	24.4 (19.9–29.4)	14.6 (11.6–18.3)
California	5,871	22.9 (20.9–25.1)	30.2 (27.1–33.4)	15.0 (12.2–18.2)	38.5 (34.2–43.0)	29.9 (26.5–33.7)	21.4 (18.8–24.2)	11.5 (9.8–13.5)
Connecticut	5,871	18.9 (17.1–20.9)	24.3 (20.8–28.2)	15.0 (12.7–17.7)	27.8 (22.4–33.9)	26.9 (23.7–30.3)	19.9 (17.2–23.0)	10.2 (8.7–12.0)
District of Columbia	4,152	18.5 (15.7–21.7)	34.6 (29.5–40.1)	18.5 (15.3–22.1)	45.6 (36.4–55.2)	39.0 (33.1–45.2)	28.9 (23.4–35.0)	8.4 (7.0–10.1)
Indiana	4,486	35.9 (33.3–38.6)	40.5 (36.5–44.5)	23.3 (20.5–26.3)	50.7 (44.3–57.0)	39.6 (36.4–42.9)	33.0 (29.6–36.6)	20.9 (18.1–23.9)
Iowa	3,696	34.2 (31.4–37.1)	33.1 (28.1–38.6)	12.0 (9.9–14.6)	49.2 (40.0–58.5)	34.6 (31.1–38.3)	28.8 (25.2–32.6)	17.6 (14.9–20.6)
Kansas	11,121	32.4 (31.0–33.9)	35.3 (32.6–38.0)	15.4 (14.0–17.0)	45.2 (40.9–49.7)	37.0 (34.8–39.2)	30.6 (28.6–32.6)	17.2 (15.8–18.7)
Kentucky	9,818	43.4 (41.3–45.5)	46.1 (43.0–49.3)	27.3 (24.7–30.0)	53.4 (48.6–58.1)	47.0 (44.4–49.6)	39.7 (37.1–42.4)	24.0 (21.9–26.2)
Louisiana	4,759	46.9 (43.5–50.3)	48.4 (43.8–53.0)	29.3 (26.4–32.5)	60.0 (53.3–66.5)	48.6 (44.8–52.5)	40.7 (36.6–44.9)	26.3 (23.1–29.8)
Maryland	11,759	28.0 (26.2–29.9)	31.5 (28.3–34.9)	20.8 (18.7–23.1)	40.7 (35.2–46.5)	36.9 (34.1–39.9)	27.2 (24.7–29.9)	15.5 (14.1–17.0)
Minnesota	12,704	23.5 (21.8–25.3)	25.0 (21.5–28.9)	8.9 (6.8–11.7)	30.6 (24.6–37.3)	27.1 (24.2–30.1)	21.9 (19.6–24.4)	12.7 (11.2–14.5)
Mississippi	6,692	49.7 (47.1–52.3)	49.5 (46.1–52.9)	29.7 (27.0–32.5)	51.1 (46.6–55.6)	49.2 (46.0–52.4)	47.2 (43.8–50.6)	34.9 (31.9–38.0)
Nebraska	7,822	31.1 (28.9–33.4)	30.5 (26.3–35.1)	14.9 (12.5–17.6)	52.3 (45.0–59.5)	37.0 (33.8–40.3)	25.9 (23.2–28.8)	14.3 (12.2–16.6)
New Jersey	3,842	22.7 (20.1–25.6)	30.1 (25.3–35.3)	13.3 (10.4–17.0)	40.0 (32.2–48.3)	29.5 (25.4–33.9)	22.2 (18.6–26.4)	11.5 (9.5–13.8)
New York	3,751	23.1 (20.7–25.7)	24.6 (21.0–28.7)	16.1 (13.4–19.3)	31.3 (25.2–38.1)	26.1 (22.4–30.2)	24.2 (21.0–27.8)	13.6 (11.6–15.9)
North Carolina	3,926	42.1 (39.2–45.1)	46.0 (41.5–50.7)	25.9 (22.4–29.8)	52.1 (46.2–57.9)	47.2 (43.0–51.3)	41.5 (37.4–45.7)	23.5 (20.4–26.9)
Ohio	7,316	32.0 (29.9–34.3)	39.0 (35.3–42.8)	18.1 (15.7–20.8)	44.4 (38.0–50.9)	36.6 (33.8–39.5)	31.8 (28.9–34.9)	16.0 (14.0–18.2)
Oklahoma	3,638	46.5 (43.5–49.6)	48.2 (43.8–52.6)	21.9 (19.0–25.1)	51.5 (44.5–58.3)	50.8 (46.9–54.6)	43.5 (39.7–47.4)	24.9 (21.8–28.3)
South Carolina	9,590	42.0 (40.0–44.1)	46.5 (43.6–49.4)	26.2 (23.8–28.6)	55.6 (51.3–59.7)	46.5 (43.9–49.1)	39.1 (36.5–41.8)	23.5 (21.4–25.7)
Utah	11,428	30.3 (28.9–31.8)	25.6 (23.3–27.9)	17.4 (15.5–19.5)	48.5 (43.1–53.8)	36.4 (34.2–38.6)	25.0 (23.3–26.7)	15.1 (13.8–16.5)
Vermont	5,784	16.7 (15.0–18.6)	21.5 (18.0–25.5)	11.2 (9.4–13.4)	32.9 (26.0–40.6)	21.5 (19.0–24.2)	16.9 (14.3–19.8)	7.8 (6.6–9.3)
West Virginia	5,630	46.1 (43.7–48.4)	47.7 (44.7–50.8)	22.3 (20.0–24.9)	47.5 (43.1–51.8)	46.6 (44.1–49.1)	40.7 (37.6–43.9)	26.1 (23.4–29.0)
Wisconsin	5,500	29.7 (27.1–32.3)	30.8 (26.1–35.8)	12.5 (10.0–15.5)	35.5 (27.5–44.5)	32.6 (29.2–36.2)	27.6 (24.2–31.3)	13.6 (11.5–16.1)

Abbreviation: CI = confidence interval.
* Weighted percentages might not sum to 100% because of rounding.
† Includes regular soda, fruit drinks, sweet tea, and sports or energy drinks.
§ Values for all states were different by chi-square test (p<0.05).
¶ Missing data: 0.4% for employment status and 0.2% for education.

environments, including access and availability, cultural norms (*7*,*8*), and advertising.¶ This study found higher prevalences of daily SSB intake among younger adults, men, blacks, and persons with lower levels of education, which is consistent with previous reports that used data from the 2009–2010 NHANES (*3*) and 2011 and 2012 BRFSS (*6*,*9*). Adults with less knowledge about the adverse health consequences of SSB intake (*5*) might in part account for the higher reported consumption in some populations. Daily SSB intake was higher among young adults and unemployed adults but lower among older adults and retired adults in this analysis; previous studies based on NHANES and BRFSS data have found that older adults have lower SSB intake (*3*,*6*,*9*).

The findings in this report are subject to at least three limitations. First, because BRFSS data are self-reported, they are subject to recall and social desirability bias, which might have underestimated or overestimated SSB intake. Second, only half of states elected to use the module; thus the findings might not be generalizable to the entire U.S. adult population. Finally, SSB intake was measured in frequency rather than volume of consumption; therefore, estimating the amount of SSBs consumed or the caloric intake from SSBs was not possible.

The frequency of daily SSB intake is high among adults, especially among certain subpopulations, as well as persons living in southern states. SSBs can contribute to obesity, type 2 diabetes, and cardiovascular disease related to excess intake of added sugars and calories from SSBs (*2*). SSB intake has been positively associated with markers of inflammation and insulin resistance, which might increase risk for cardiovascular disease and diabetes independently of obesity (*2*). Considering potential adverse health effects of SSB intake and the substantial contribution that SSBs make to excess dietary sugar, continuation of public health efforts aimed at decreasing high SSB intake is important. Actions can include education and awareness initiatives, increasing access to and promotion of healthier options through nutrition standards,

¶ http://www.aacorn.org/RepoRese-2542.html.

Summary

What is already known about this topic?

Sugar-sweetened beverages (SSBs) are significant sources of added sugars among U.S. adults. SSB intake differs by geographical region and sociodemographic characteristics.

What is added by this report?

Data from the SSB intake module in the 2013 Behavioral Risk Factor Surveillance System provide the most recent state-specific data on consumption of SSBs. Among the 23 states surveyed and the District of Columbia, adult SSB intake was highest in Mississippi (47.5%), followed by Louisiana (45.5%) and West Virginia (45.2%). At least once daily SSB intake was most common among persons aged 18–24 years (43.3%), men (34.1%), non-Hispanic blacks (39.9%), persons who reported not being employed (34.4%), and persons with less than high school education (42.4%).

What are the implications for public health practices?

Because of the potential adverse health outcomes associated with SSB intake, including obesity, type 2 diabetes, and cardiovascular disease, public health practitioners should continue efforts aimed at decreasing SSB intake among demographic groups with the highest reported consumption. Strategies can include education initiatives, increasing access to healthier options through nutrition standards, increasing availability of drinking water in schools and public venues, screening and counseling patients on SSB reduction, and facility food and beverage changes in clinic or hospital settings for employees, families, and patients.

including food service guidelines,** and increasing the availability and promotion of drinking water in schools and public venues.†† In addition, health care providers can screen and counsel patients on SSB reduction and support facility food and beverage changes in their clinic or hospital settings for employees, families, and patients.§§

** http://www.cdc.gov/obesity/strategies/food-serv-guide.html.
†† https://www.planning.org/research/publichealth/pdf/wateraccessreport.pdf.
§§ http://www.cdc.gov/obesity/strategies/healthy-hospital-environment-toolkit/index.html.

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Outbreak of Foodborne Botulism Associated with Improperly Jarred Pesto — Ohio and California, 2014

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On July 28, 2014, the Cincinnati Health Department was notified of suspected cases of foodborne botulism in two women admitted to the same hospital 12 days apart. Patient A had been treated for 12 days for suspected autoimmune disease. When patient B, the roommate of patient A, was evaluated at the same medical center for similar symptoms, it was learned that on July 13, patient A and patient B had shared a meal that included prepackaged pesto from a jar; clinicians suspected botulism and notified the local health department. The pesto had been purchased from company A's farm stand in San Clemente, California. Laboratory testing detected botulinum toxin type B by enzyme-linked immunosorbent assay (ELISA) in leftovers of pasta with pesto. A culture of these food samples yielded *Clostridium* spp. that produced botulinum toxin type B; polymerase chain reaction (PCR) testing also was positive for type B toxin gene. Environmental assessment of company A identified improper acidification and pressurization practices and lack of licensure to sell canned products commercially, including products in hermetically-sealed jars. On July 30, the vendor voluntarily recalled all jarred products, and the California Department of Public Health (CDPH) warned the public not to consume company A's jarred foods. This report describes the two cases and the public health investigation that traced the source of the outbreak.

Patient A

On the evening of July 15, 2014, patient A, an otherwise healthy woman aged 20 years, was evaluated at the emergency department (ED) of hospital A, reporting 12 hours of worsening throat pain. She received a diagnosis of pharyngitis and was discharged with a prescription for antibiotics. The next day she returned to the same ED with worsening symptoms, including inability to swallow, double vision on lateral gaze, and decreased sensation in her right arm. She was admitted because of concern for airway compromise. She was noted to have dysarthria and nasal speech; however, a motor examination of the arms and legs was normal. A neurologist described these clinical findings as consistent with myasthenia gravis or Miller Fisher syndrome, a rare, acquired nerve disease that is considered to be a variant of Guillain-Barré syndrome. Neostigmine challenge and acetylcholine receptor antibody test were not consistent with myasthenia gravis. Cerebrospinal fluid analyses and magnetic resonance imaging of the brain were unremarkable.

On July 19, patient A was transferred to the neurologic intensive care unit (ICU) of facility B with worsening bulbar symptoms, where she was intubated for impending respiratory failure and treated with 5 days of intravenous immunoglobulin. On July 27, a physician suspected botulism as the likely diagnosis after learning that patient A had shared a meal with patient B, who had recently been admitted for neurologic dysfunction. A July 30 nerve conduction study and electromyogram demonstrated a presynaptic defect in neuromuscular junction function, suggestive of botulism. Patient A was not treated with botulinum antitoxin because 17 days had elapsed since exposure and there was evidence of clinical improvement. She was transferred to a long-term acute care facility on August 1 and discharged home 22 days later.

Patient B

On the evening of July 16, 2014, patient B, an otherwise healthy woman aged 22 years, was evaluated at facility A's ED for a sore throat. She made three additional ED visits to a different health care facility (facility C) on July 18, 19, and 23, reporting difficult and painful swallowing, nausea, abdominal pain, and dehydration. Over the course of these visits, she received a prescription for amoxicillin, an injection of penicillin, and oral corticosteroids for presumed tonsillitis. On July 27, patient B went to the ED of facility B with difficulty speaking, progressive weakness, and shortness of breath. Later that day, she developed upper extremity weakness, ptosis, diplopia, and hoarse voice and was admitted to the neurologic ICU and intubated. Botulism was suspected after the link to patient A was identified, and botulinum antitoxin was administered to patient B on the evening of July 28. Patient B was transferred to a long-term acute care facility on August 6, and discharged home 9 days later.

Clinical specimens from the two patients were sent to the Ohio Department of Health Laboratory (ODHL) for *Clostridium botulinum* testing by culture and mouse bioassay. All clinical specimens were collected ≥12 days after the shared meal, and tests were negative (Table).

Public Health Investigation

After being notified of the possible botulism cases, Cincinnati Health Department epidemiologists interviewed the two patients and their families. The two patients reported sharing a meal of baked chicken breasts, boiled pasta, steamed

TABLE. Results of laboratory testing for botulinum toxin–producing Clostridium spp. and botulinum toxin type B in clinical specimens and food samples collected during an outbreak investigation — Ohio, Colorado, and California, July–August 2014

Specimen/Sample	Date collected	ELISA*	PCR†	Mouse bioassay*	Culture§
Patient specimen					
Serum (patient A)	July 25	NP	NP	Negative	NP
Serum (patient A)	July 28	NP	NP	Negative	NP
Serum (patient B)	July 28	NP	NP	Negative	NP
Stool (patient A)	July 25	NP	NP	Negative	Negative
Stool (patient A)	August 4	NP	NP	Negative	Negative
Stool (patient B)	July 29	NP	NP	Negative	Negative
Stool (patient B)	August 5	NP	NP	Negative	Negative
Food sample					
Pasta with pesto 1	July 28	Positive	Positive	Inconclusive	Positive
Pasta with pesto 2	July 28	Positive	Positive	Inconclusive	Positive
Cooked chicken	July 28	Negative	Negative	Negative	Negative
Pesto jar 1 (Ohio)	July 28	Negative	Negative	Negative	Negative
Pesto jar 2 (Ohio)	July 28	Negative	Negative	Negative	Negative
Pesto jar 3 (Colorado)	unknown	Negative	NP	Negative	Negative
Pesto jar 4 (California)	August 5	NP	NP	Negative	NP

Abbreviations: ELISA = enzyme-linked immunosorbent assay; NP = test not performed; PCR = polymerase chain reaction.
* Test for botulinum toxin type B.
† Test for botulinum toxin genes.
§ Test for botulinum toxin type B–producing *Clostridium* spp.

vegetables, and company A Pine Nut Basil Pesto on July 13 at approximately 8:30 p.m. The pesto was poured over the chicken and pasta from an unopened glass jar and consumed by both patients without further heating. On July 28, investigators collected leftovers from this shared meal and two unopened jars of company A pesto and sent them to ODHL for testing. The pesto jar from the July 13 shared meal had been discarded. Botulinum toxin type B was detected in leftovers of pasta and pesto by ELISA. A culture of these food samples yielded *Clostridium* spp. that produced botulinum toxin type B, and PCR detected DNA encoding for type B toxin (Table).

Patient A received the pesto from a family member who had purchased several jars in May 2014 at a farm stand in San Clemente, California. Health officials in California collected and analyzed an unopened jar of the pesto from this family member's house. It was found to have a pH of 5.3 and water activity* of 0.965 (parameters insufficient to prevent growth of *C. botulinum*). Several jars also had been sent to family members in Colorado; one jar was collected and tested negative for botulinum toxin–producing *Clostridium* spp. and botulinum toxin at ODHL. Seven persons in Colorado reported that they ate company A pesto on May 29, and no illnesses were reported.

On July 29, 2014, CDPH began an investigation and discovered multiple jarred food items, including the Pine Nut Basil Pesto, available for sale on company A's website and farm stand. Neither company A nor the pesto manufacturer had permits or registrations allowing them to legally manufacture or sell canned food, including food in jars, in California. CDPH investigators identified a lack of knowledge of safety issues involved with jarring foods and inadequate acidification and pressurization practices. There were no records indicating that critical factors (e.g., pH, time, and temperature) were monitored during production. Invoices showed at least 39 jars of pesto were produced in 2014. After discussing the link between the cases in Ohio and company A pesto, company A voluntarily recalled all jarred food products. On July 30, CDPH posted Internet and social media notices warning consumers not to eat company A's jarred foods.

Discussion

This is the first reported botulism outbreak linked to pesto in the United States and the first reported worldwide in >15 years. A 1997 report described two botulism cases in Italy caused by home-canned pesto, also contaminated with botulinum toxin type B (*1*). Similar to this outbreak, both patients in Italy delayed seeking medical care until ≥6 days after exposure.

The clinical diagnosis of botulism can be difficult. In the outbreak described here, both patients sought medical care multiple times before receiving a diagnosis of botulism, and patient A was hospitalized for nearly 2 weeks before a clinician made the epidemiologic link between patient A and patient B. If not for this clinician, the diagnoses might never have been made. In a 1995 outbreak of type B botulism linked to commercial chopped garlic in oil, a food vehicle similar to pesto, 36 previously unrecognized cases of botulism were identified only after two sisters with neurologic symptoms were evaluated (*2*).

* Water activity is the amount of moisture that is available for bacterial growth. Water activity of >0.85, in the absence of other controls, can allow growth of *C. botulinum* in a shelf-stable food product.

Summary

What is already known about this topic?

Foodborne botulism is a rare disease typically caused by consumption of improperly prepared and processed foods, including low-acid canned vegetables. A single case of foodborne botulism constitutes a public health emergency, necessitating an urgent response to identify the source and prevent further consumption of the toxin-containing food.

What is added by this report?

This report describes the first U.S. outbreak of botulism linked to pesto. The outbreak involved two patients, both of whom initially were examined for throat pain. The diagnosis of botulism was not made until nearly 2 weeks after symptom onset when both patients were hospitalized in the same health care facility. The pesto was produced without proper registration and licensure and sold commercially in jars at a farm stand and online.

What are the implications for public health practice?

As the demand for locally made, ready-to-eat food increases, consumers and public health officials should be aware of the risk for botulism from improperly canned foods such as pesto sold in jars. Producers of canned foods for commercial use should ensure that they adhere to food safety regulations.

Clinicians should maintain a high index of suspicion for botulism when evaluating patients with clinically compatible signs and symptoms. Throat pain, although not a classic feature of botulism, has been previously reported, having been attributed to severe dry mouth and throat caused by autonomic dysfunction (*3*). The classical presentation of botulism involves symmetric cranial nerve palsies, typically involving ptosis, blurry vision, dysphagia, and dysarthria, which is sometimes followed by symmetric descending flaccid paralysis, usually in the absence of sensory symptoms (*3*). Clinicians who suspect botulism should immediately call their state health department's emergency 24-hour telephone number. State health departments should call the CDC Emergency Operations Center (770-488-7100) to arrange for rapid clinical consultation, and release of botulism antitoxin if indicated (*4*).

Consumer demand for fresh, farm-to-table foods has increased substantially during the past 15 years; for example, the number of farmers' markets in the United States nearly tripled from 2,863 in 2000 to 8,476 in 2015 (*5*). Consumers at farm stands and markets should be aware of the risk from improperly canned foods, including those in jars, produced without licensure and oversight from regulatory bodies. High-risk foods include low-acid canned foods (e.g., beans and peas) (*6*).

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Evaluation of Routine HIV Opt-Out Screening and Continuum of Care Services Following Entry into Eight Prison Reception Centers — California, 2012

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Early diagnosis of human immunodeficiency virus (HIV) infection and initiation of antiretroviral treatment (ART) improves health outcomes and prevents HIV transmission (*1*,*2*). Before 2010, HIV testing was available to inmates in the California state prison system upon request. In 2010, the California Correctional Health Care Services (CCHCS) integrated HIV opt-out screening into the health assessment for inmates entering California state prisons. Under this system, a medical care provider informs the inmate that an HIV test is routinely done, along with screening for sexually transmitted, communicable, and vaccine-preventable diseases, unless the inmate specifically declines the test. During 2012–2013, CCHCS, the California Department of Public Health, and CDC evaluated HIV screening, rates of new diagnoses, linkage to and retention in care, ART response, and post-release linkage to care among California prison inmates. All prison inmates are processed through one of eight specialized reception center facilities, where they undergo a comprehensive evaluation of their medical needs, mental health, and custody requirements for placement in one of 35 state prisons. Among 17,436 inmates who entered a reception center during April–September 2012, 77% were screened for HIV infection; 135 (1%) tested positive, including 10 (0.1%) with newly diagnosed infections. Among the 135 HIV-positive patient-inmates, 134 (99%) were linked to care within 90 days of diagnosis, including 122 (91%) who initiated ART. Among 83 who initiated ART and remained incarcerated through July 2013, 81 (98%) continued ART; 71 (88%) achieved viral suppression (<200 HIV RNA copies/mL). Thirty-nine patient-inmates were released on ART; 12 of 14 who were linked to care within 30 days of release were virally suppressed at that time. Only one of nine persons with a viral load test conducted between 91 days and 1 year post-release had viral suppression. Although high rates of viral suppression were achieved in prison, continuity of care in the community remains a challenge. An infrastructure for post-release linkage to care is needed to help ensure sustained HIV disease control.

Custody records for all new entrants at the state prison reception centers during April–September 2012 were merged with CCHCS laboratory and pharmacy data to obtain records of HIV tests performed within 14 days of entering custody, as well as ART initiation dates. Baseline and follow-up CD4 and viral load tests conducted during April 2012–July 2013 were compared. Patient-inmates were considered to have newly diagnosed HIV infection if there was no previous documentation of an HIV diagnosis in the medical chart or the California enhanced HIV/acquired immunodeficiency syndrome (AIDS) reporting system (eHARS; a browser-based application used to report HIV/AIDS surveillance data to CDC). Patient-inmates with CD4 <200 cells/mm^3 or an opportunistic infection reported in eHARS within 3 months of HIV diagnosis were considered to have Stage 3 disease (AIDS). Linkage to care in prison was defined as receiving a CD4 or viral load test within 90 days of HIV diagnosis. Patient-inmates who initiated ART within 6 months of HIV diagnosis were classified as having initiated treatment during incarceration, whereas inmates who had ART dispensed before HIV screening or who had an undetectable viral load before ART initiation in prison were classified as continuing treatment at entry. To determine ART response among persons who remained incarcerated, the proportion of persons with undetectable viral load and the median CD4 level at baseline were compared with most recent tests. Medical chart ART records were reviewed to evaluate retention in care while incarcerated. To estimate linkage to care in the community, records of patient-inmates released to the community on ART were matched with eHARS. Because prisons provided patient-inmates a 30-day supply of ART medication at release, uninterrupted care post-release was defined as being linked to care within 30 days. The chi-square test was used to determine associations between categorical variables. The Wilcoxon rank-sum test was used to compare means. A p-value ≤0.05 was considered statistically significant. Analyses were conducted through program evaluation, in collaboration with public health agencies, using routinely collected data following the change in CCHCS policy for HIV screening among California state prison inmates, and were therefore exempt from institutional review board review.

Among 17,436 inmates who entered the prison reception center, 13,388 (77%) were screened for HIV, including 80% in the one women's reception center and 77% in the seven men's reception centers (range = 47%–93%); 135 (1%) inmates were identified as HIV-infected and 10 (0.1%) had newly diagnosed infection (Table 1). Among all HIV-infected patient-inmates, 134 (99%) were linked to care in prison (including one for whom ART was immediately dispensed at entry); one patient-inmate who was released on parole within a week was not linked. Although none of the 10 patient-inmates with

TABLE 1. HIV opt-out screening rate, by gender and reception center (RC) facility — California, April–September 2012 (N = 17,436)

	Evaluations	Screened	HIV-positive	95% CI*	New HIV diagnoses
RC facility	No.	No. (%)	No. (%)	(%)	No. (%)
Total	**17,436**	**13,388 (76.8)**	**135 (1.0)**	**(0.9–1.2)**	**10 (0.1)**
Men (total)	**16,301**	**12,481 (76.6)**	**129 (1.0)**	**(0.9–1.2)**	**8 (0.1)**
RC 1	1,188	1,104 (92.9)	9 (0.8)	(0.4–1.5)	1 (0.1)
RC 2	5,941	4,852 (81.7)	64 (1.3)	(1.0–1.7)	3 (0.1)
RC 3	5,589	4,231 (75.7)	50 (1.2)	(0.9–1.6)	4 (0.1)
RC 4	2,026	1,510 (74.5)	4 (0.3)	(0.1–0.7)	0 (—)
RC 5	320	185 (57.8)	2 (1.1)	(0.1–3.9)	0 (—)
RC 6	1,023	498 (48.7)	0 (—)	(0.0–0.1)	0 (—)
RC 7	214	101 (47.2)	0 (—)	(0.0–3.6)	0 (—)
Women (RC 1)	**1,135**	**907 (79.9)**	**6 (0.7)**	**(0.2–1.4)**	**2 (0.2)**

Abbreviation: HIV = human immunodeficiency virus.
* Exact binomial 95% confidence interval.

newly diagnosed HIV infection had CD4 <200 cells/mm^3, two (20%) had Stage 3 disease. Among 125 patient-inmates who had previously received a diagnosis of HIV infection, 48 (38%) had a detectable viral load and 18 (14%) had CD4 <200 cells/mm^3. Linkage to care took significantly longer for patient-inmates with newly diagnosed infection (median = 28 days; range = 0–35 days) than for patient-inmates with previously diagnosed infection (median = 0 days; range = 0–36 days; p<0.0001). Excluding the one paroled patient-inmate, 91% of patient-inmates initiated ART, including seven (78%) with newly diagnosed infection and 115 (92%) with previously diagnosed infection. Among 43 patient-inmates with CD4 <350 cells/mm^3, 40 (93%) initiated ART and three (7%) refused; 82 (90%) of 91 patient-inmates with CD4 ≥350 cells/mm^3 initiated ART (Table 2). Among 23 patient-inmates who initiated ART while incarcerated, none had an undetectable viral load at baseline, whereas 19 (83%) had an undetectable viral load at the latest monitoring test (p<0.0001), and CD4 increased by a median of 160 cells/mm^3 (p<0.0001) (Table 3).

TABLE 2. CD4 cell count and antiretroviral (ART) treatment initiation among HIV-infected patient-inmates, overall and by HIV diagnosis status and CD4 cell count — California, April 2012–July 2013 (N = 134)

	Previous HIV diagnosis		New HIV diagnoses	
		ART initiated		ART initiated
Characteristic	No.	No. (%)	No.	No. (%)
All*	**125**	**115 (92)**	**9**	**7 (78)**
CD4 cell count†				
<350	39	36 (92)§	4	4 (100)
350–499	34	32 (94)	1	1 (100)
≥500	52	47 (90)	4	2 (50)

Abbreviation: HIV = human immunodeficiency virus.
* Includes one patient-inmate with a previous HIV diagnosis started on ART without baseline CD4 cell count or viral load tests; excludes one patient-inmate who was paroled in 6 days without CD4 cell count and viral load testing.
† California Correctional Health Care Services HIV Care Guide (March 2011) required offer of HIV treatment to patient-inmates with CD4 cell count <350, consideration of treatment if CD4 cell count 350–500, noted that some experts recommend treatment if CD4 cell count >500 cells/mm^3.
§ Three patient-inmates with CD4 cell counts of 25, 38, and 301 cells/mm^3 refused treatment.

Among 83 patient-inmates who initiated ART and remained incarcerated, 81 (98%) were on ART at the end of the follow-up period, and 71 (88%) achieved viral suppression. Thirty-nine patient-inmates were released on ART, among whom 14 (36%) had uninterrupted linkage to care, 11 (28%) were linked within 31–90 days, 10 (26%) were linked within 91 days–1 year, and four were not linked (i.e., lost to care). Among 33 who had a viral load test after release from prison, viral suppression was achieved at the time of linkage or within 30 days for 12 (86%) of 14 with uninterrupted care, eight (80%) of 10 who were linked to care within 90 days, and one (11%) of nine linked to care within 1 year. Among those with treatment interruption, 10 (53%) of 19 with a viral load test performed at the time of linkage to care in the community were not virally suppressed. Among 26 persons with a provider facility reported, eight (31%) were linked to care after incarceration at a county jail, and 14 (54%) were linked at a county or non-profit outpatient HIV specialty clinic.

Discussion

This assessment of prison HIV opt-out screening is the first known to evaluate the full HIV continuum of care outcomes, including opt-out screening during the medical assessment at entry, linkage to and retention in care, ART response during incarceration, and continuity of care and viral suppression after release to the community.

Routine screening identifies asymptomatic persons who are unaware of their infection and might therefore transmit HIV to others. During April–September 2012, HIV opt-out screening at entry into California state prisons identified 10 patient-inmates with new diagnoses of HIV infection. The reported screening rate of 77% in California is lower than that in the Washington prison system (90%) but falls within the higher range among correctional facilities nationwide (22%–98%) (*3*–*7*). The prevalence of new HIV diagnoses (0.1%) is comparable to that in other correctional opt-out screening programs (*3*–*7*). Eight

TABLE 3. Change in proportion of HIV-infected patient-inmates with undetectable HIV viral load following antiretroviral (ART) initiation, by ART status at entry — California, April 2012–July 2013 (N = 122)

	No. (%) with undetectable HIV viral load			
	Baseline	Initial monitoring*	Latest monitoring†	
ART status at entry	No. (%)	No. (%)	No. (%)	(95% CI)§
Not on ART (n = 23)	0 (—)	7 (30)¶	19 (83)**	(61–95)
Newly diagnosed infection (n = 7)	0 (—)	3 (43)	6 (86)	(42–100)
Previously diagnosed infection (n = 16)	0 (—)	4 (25)	13 (81)	(54–96)
Continuing ART (n = 99)††	76 (77)	74 (79)§§	71 (76)§§	(66–84)

Abbreviation: HIV = human immunodeficiency virus.
* First HIV viral load following ART initiation.
† Latest HIV viral load among patient-inmates with ≥1 monitoring test; 16 patient-inmates had baseline viral load only.
§ Exact binomial 95% confidence interval of the latest monitoring test result.
¶ Initial versus baseline: p = 0.01.
** Latest versus baseline: p<0.0001.
†† Excludes one patient-inmate who was not dispensed ART within 6 months of the HIV-positive test.
§§ Five patient-inmates continuing ART at entry had baseline viral load only.

(80%) patient-inmates with newly diagnosed HIV infection were identified before developing AIDS, similar to the 76% reported statewide in California in 2012 (*8*).

The CCHCS HIV opt-out screening program demonstrated that identifying HIV infection at entry resulted in high rates of linkage to care, retention on ART, and significant reduction in viral loads during incarceration. However, continuity of care in the community remains a challenge for persons with a history of incarceration. Despite prerelease planning, including assigning a case worker during the 90 days before the expected release date and providing information about clinic and community resources, two thirds of patient-inmates released on ART experienced treatment interruption, half of whom were not virally suppressed when linked to care (31 days–1 year); this increases the likelihood of poor clinical outcomes and transmission to others (*1*,*2*). A recent study among HIV-infected inmates released from Texas state prisons determined that only 5% filled their ART prescriptions before exhausting the 10-day supply of medications provided at release (*9*). In contrast, a study of HIV patients receiving care at a post-incarceration clinic after release from New York City jails identified 86% as still in care after 6 months (*10*). The 88% viral suppression among persons with uninterrupted care after release from a California prison suggests that continuity of care could lead to improved clinical outcomes and prevention of transmission from this population at high risk.

The findings in this report are subject to at least three limitations. First, HIV screening rates varied by reception center, potentially resulting in missed opportunities for HIV diagnoses. Patient-inmates with HIV infection entering the prison system might be underestimated because 23% of inmates were not screened at entry. Second, it is not known whether those who refused an HIV test upon entry differed in terms of demographic or HIV risk behaviors from those who were screened. Finally, the estimated time to linkage to care after release from prison might be inaccurate because of incomplete or delayed laboratory reporting in California.

Routine HIV opt-out screening at entry into California prisons achieved high rates of linkage to care, retention on ART, and viral suppression while incarcerated, but after release, only one third of patients had uninterrupted care. Integration of HIV opt-out screening into the prison medical assessment might result in improved health of persons with HIV and prevention of onward transmission. This service might have the highest impact in communities with a high prevalence of HIV infection. Effective linkage to care systems between the correctional facility and community services are needed to maintain the health benefits gained by HIV-infected patient-inmates while incarcerated. Supporting continuity of care through actively engaging stakeholders and community partners (e.g., parole and probation agencies, community health care providers, and local health departments) in communication and coordination of medical and social services after release to the community is needed to help ensure sustained HIV disease control.

Summary

What is already known on this topic?

Routine HIV opt-out screening during the health assessment at entry into correctional facilities is associated with higher testing rates and new diagnoses of HIV infection than when using opt-in or risk-based screening methods. Earlier reports have indicated that viral suppression rates achieved during incarceration were not sustained after release to the community.

What is added by this report?

This evaluation of HIV opt-out screening at entry into the California state prison system examined the full spectrum of care and identified high rates of in-custody linkage to care (99%), retention in care (98%), and viral suppression (88%) for persons who remained incarcerated. Sustained viral suppression among 12 (86%) of 14 persons with uninterrupted care following release from prison is evidence that both treatment, and thus prevention of transmission, is achievable on a statewide level.

What are the implications for public health practice?

Supporting continuity of care through actively engaging stakeholders and community partners (e.g., parole and probation agencies, community health care providers, and local health departments) in communication and coordination of medical and social services following release to the community is needed to help ensure sustained HIV disease control.

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Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection — United States, February 2016

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On February 19, 2016, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

CDC has updated its interim guidelines for U.S. health care providers caring for infants born to mothers who traveled to or resided in areas with Zika virus transmission during pregnancy and expanded guidelines to include infants and children with possible acute Zika virus disease (*1*). This update contains a new recommendation for routine care for infants born to mothers who traveled to or resided in areas with Zika virus transmission during pregnancy but did not receive Zika virus testing, when the infant has a normal head circumference, normal prenatal and postnatal ultrasounds (if performed), and normal physical examination. Acute Zika virus disease should be suspected in an infant or child aged <18 years who 1) traveled to or resided in an affected area within the past 2 weeks and 2) has ≥2 of the following manifestations: fever, rash, conjunctivitis, or arthralgia. Because maternal-infant transmission of Zika virus during delivery is possible, acute Zika virus disease should also be suspected in an infant during the first 2 weeks of life 1) whose mother traveled to or resided in an affected area within 2 weeks of delivery and 2) who has ≥2 of the following manifestations: fever, rash, conjunctivitis, or arthralgia. Evidence suggests that Zika virus illness in children is usually mild (*2*). As an arboviral disease, Zika virus disease is nationally notifiable. Health care providers should report suspected cases of Zika virus disease to their local, state, or territorial health departments to arrange testing and so that action can be taken to reduce the risk for local Zika virus transmission. As new information becomes available, these guidelines will be updated: http://www.cdc.gov/zika/.

Zika virus is primarily transmitted to humans through the bite of *Aedes* species mosquitoes, most commonly *Aedes aegypti* and possibly *Aedes albopictus* (*3*). Zika virus was first detected in the Region of the Americas (Americas) in Brazil in the spring of 2015 (*4*) and had spread to 26 countries and territories in the Americas as of February 17, 2016 (http://www.cdc.gov/zika/geo/active-countries.html). In October 2015, a marked increase in the number of infants with microcephaly was reported in Brazil (*5*). Because of the temporal and geographic occurrence of Zika virus infection in pregnant women before the reported increase in microcephaly, a possible association with prenatal Zika virus infection was postulated (*5*). Laboratory evidence from a limited number of cases with microcephaly has supported this potential association (*6*,*7*). Other documented modes of Zika virus transmission include intrapartum transmission from a mother with viremia to her infant, sexual transmission, and laboratory exposures (*8*–*11*). Additionally, blood transfusion (*10*) and organ or tissue transplantation pose theoretical risks for transmission. There is no reported evidence of transmission through breastfeeding, although Zika virus RNA has been found in breast milk (*9*).

Although the exact incubation period of Zika virus disease has yet to be determined, evidence from case reports and experience from related flavivirus infections indicate that the incubation period likely is 3 days to 2 weeks (*12*). Symptomatic disease is generally mild and characterized by two or more of the following: acute onset of fever, rash, arthralgia, or nonpurulent conjunctivitis (*2*,*13*). The rash associated with Zika virus disease has been described as pruritic (*13*) and maculopapular (*14*).

The spectrum of Zika virus disease in neonates infected in the perinatal period is unknown. Perinatal transmission of Zika virus infection to infants from mothers infected near the time of delivery has been reported in two cases; one of these infants was asymptomatic, and the other had thrombocytopenia and a diffuse rash (*9*). Mother-to-infant transmission of dengue virus, a related flavivirus, during the perinatal period has resulted in findings in the newborn ranging from no symptoms to severe illness (including fever, thrombocytopenia, and hemorrhage), most often with fever onset during the first week of life (*15*). Similarly West Nile virus, another mosquito-borne flavivirus, has been transmitted during the perinatal period from three mothers to their infants, with each infant having one of the following manifestations: rash, viral encephalitis, and viral meningitis (*16*). The clinical features that might be observed in infants who acquire Zika virus during the perinatal period are currently unknown.

Available evidence regarding the spectrum of Zika virus disease in infants and children who are infected through mosquito bites indicates that most children are asymptomatic or have mild illness, similar to the findings seen in adults infected with Zika virus disease. In the outbreak in Yap Island, Micronesia, in 2007, among persons with clinical illness (age range = 1–76 years), fever, macular or papular rash, arthralgia, and conjunctivitis were the most common signs and symptoms (*2*). In that outbreak, children aged 0–19 years had lower attack rates of confirmed

and probable Zika virus disease than did adults aged 20–59 years (*2*). Additional published data are available for 10 children, aged 3–16 years (*17*–*22*) with Zika virus disease in Africa, Asia, South America, and the Pacific. All 10 children had fever, but none had rash, two had conjunctivitis, and three had arthralgia. Vomiting was reported in two children (*17*,*22*), and diarrhea was reported in two children (*22*). Among eight recent travel-related cases among children in the United States, all had rash and at least one other sign or symptom (fever, arthralgia, nonpurulent conjunctivitis) (CDC, unpublished data, 2016).

Deaths from Zika virus infection appear to be rare in persons of all ages. One death was reported in a female aged 15 years with sickle cell disease (hemoglobin SC), who experienced 4 days of fever, myalgia, abdominal pain and jaundice (*18*). A blood sample collected 5 days after illness onset was positive by reverse transcription–polymerase chain reaction (RT-PCR) for Zika virus RNA and negative for dengue, chikungunya, and yellow fever viruses (*18*). This patient died from complications of sickle cell disease after developing severe acute respiratory distress syndrome, hemothorax, and splenic sequestration (*18*). An additional death was reported in a female aged 16 years whose symptoms included headache, nausea, and petechiae; blood samples obtained 7 days after illness onset were positive by RT-PCR for Zika virus RNA (*23*). No further information was reported (*23*).

Guillain-Barré syndrome has been reported following Zika virus infection, although a causal link has not been established. Overall Guillain-Barré syndrome incidence appears to increase with increasing age (*24*). However, it is unclear how often Guillian-Barré syndrome after Zika virus infection has occurred in children (*10*). In French Polynesia, among 38 reported cases of Guillian-Barré syndrome after Zika virus infection, none occurred among children (*25*). One report from Brazil refers to six patients, aged 2–57 years, with neurologic syndromes (four with Guillain-Barré and two with acute disseminated encephalomyelitis) after laboratory-confirmed Zika virus infection; however, no further data were reported (*13*).

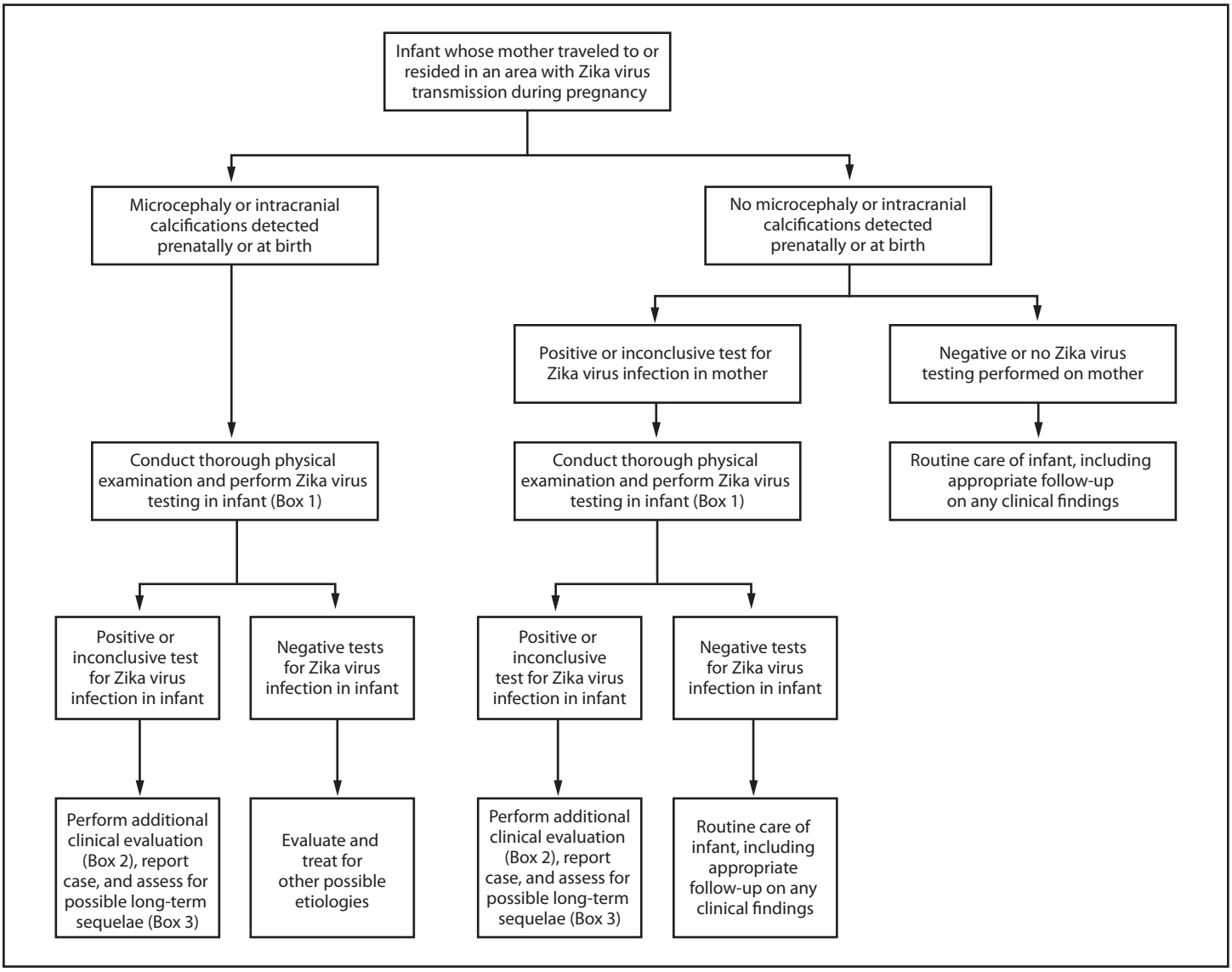
Updated Recommendations for the Evaluation and Testing of Infants with Possible Congenital Zika Virus Infection

Congenital infections result from intrauterine transmission from mother to fetus during pregnancy. Testing of infants with possible congenital Zika virus infection who were born to mothers who traveled to or resided in areas affected by Zika virus during pregnancy should be guided by 1) whether the infant had microcephaly or intracranial calcifications detected prenatally or at birth and 2) the mother's Zika virus testing results. The results of previous prenatal ultrasounds and maternal Zika virus testing should be reviewed, and a thorough newborn physical examination, with assessment of head (occipitofrontal) circumference, length, and weight, should be performed (*26*,*27*). The evaluation of infants with microcephaly or intracranial calcifications or infants whose mothers have positive or inconclusive test results for Zika virus infection remains the same as described in the recommendations released on January 26 (Figure) (Box 1,2,3) (*1*). Infants without microcephaly or intracranial calcifications whose mothers have negative Zika virus test results or who were not tested for Zika virus should receive routine care (Figure). Because information on the effects of congenital Zika virus infection is limited, health care providers should exercise clinical judgment in the assessment of newborns with abnormalities other than microcephaly or intracranial calcifications who were born to mothers who traveled to or resided in an area with active Zika virus transmission during pregnancy. For these infants, health care providers should consider testing the mother before testing the infant. These guidelines will be updated as additional information becomes available.

Guidelines for Evaluation and Management of Infants and Children Aged <18 Years with Possible Acute Zika Virus Disease

Acute Zika virus disease should be suspected in an infant or child aged <18 years who 1) traveled to or resided in an affected area within the past 2 weeks and 2) has two or more of the following manifestations: fever, rash, conjunctivitis, or arthralgia. Acute Zika virus disease should also be suspected in an infant in the first 2 weeks of life 1) whose mother traveled to or resided in an affected area within 2 weeks of delivery and 2) who has two or more of the following manifestations: fever, rash, conjunctivitis, or arthralgia. Arthralgia can be difficult to detect in infants and young children and can manifest as irritability, walking with a limp (for ambulatory children), difficulty moving or refusing to move an extremity, pain on palpation, or pain with active or passive movement of the affected joint. Infants and older children can acquire Zika virus through mosquito-borne transmission. Infants can also be infected perinatally if the mother became infected with Zika virus during travel to or residence in an area with Zika virus transmission within 2 weeks of delivery. Infants whose mothers reported illness consistent with Zika virus disease near the time of delivery should be monitored for signs and symptoms of Zika virus disease. If an infant shows signs and symptoms of acute Zika virus disease within the first 2 weeks of life, both the mother and infant should be tested for Zika virus infection. Persons might be exposed to Zika virus infection through sexual contact with a person who has traveled to or resided in an area affected by Zika virus (*11*).

FIGURE. Interim guidelines for the evaluation and testing of infants whose mothers traveled to or resided in an area with ongoing Zika virus transmission* during pregnancy[†,§,¶]



Adapted from: Staples, JE, Dziuban EJ, Fischer M, et al. Interim guidelines for the evaluation and testing of infants with possible congenital Zika virus infection—United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65:63–7.

* Areas with Zika virus transmission are listed on the CDC website at http://wwwnc.cdc.gov/travel/page/zika-travel-information.

† Microcephaly defined as occipitofrontal circumference less than the third percentile for gestational age and sex based on standard growth curves (*26,27*), not explained by other etiologies.

§ Laboratory evidence of Zika virus infection includes 1) detectable Zika virus, Zika virus RNA, or Zika virus antigen in any clinical specimen; or 2) positive Zika virus IgM with confirmatory neutralizing antibody titers that are ≥4-fold higher than dengue virus neutralizing antibody titers in serum or cerebrospinal fluid. Testing is considered inconclusive if Zika virus neutralizing antibody titers are <4-fold higher than dengue virus neutralizing antibody titers.

¶ For infants, perform reverse transcription–polymerase chain reaction (RT-PCR) testing for Zika virus RNA and Zika virus and dengue virus IgM and neutralizing antibodies on serum collected from the umbilical cord or directly from infant within 2 days of birth, if possible. If cerebrospinal fluid is obtained for other reasons, test for Zika virus RNA, Zika virus IgM and neutralizing antibodies, and dengue virus IgM and neutralizing antibodies. Consider histopathologic evaluation of the placenta and umbilical cord with Zika virus immunohistochemical staining on fixed tissue and Zika virus RT-PCR on fixed and frozen tissue. More information on laboratory testing for Zika virus infection is available at http://www.cdc.gov/zika/state-labs/index.html.

Evaluation of infants and children for acute (symptom onset within the past 7 days) Zika virus infection should include testing of serum and, if obtained for other reasons, cerebrospinal fluid (CSF) specimens for evidence of Zika virus RNA using RT-PCR. If Zika virus RNA is not detected and symptoms have been present for ≥4 days, serum may be tested for Zika virus immunoglobulin M (IgM) and neutralizing antibodies, and dengue virus IgM and neutralizing antibodies (Box 1). Laboratory evidence of Zika virus infection in an infant or child would include, in any clinical specimen, detectable Zika virus in culture,

Zika virus RNA or antigen, or a clinical specimen positive for Zika virus IgM with confirmatory neutralizing antibody titers ≥4-fold higher than dengue virus neutralizing antibody titers (*1*). If Zika virus antibody titers are <4-fold higher than dengue virus neutralizing antibody titers, test results for Zika virus are

BOX 1. Recommended Zika virus laboratory testing for infants and children when indicated*,†,§

For possible congenital Zika virus infection

- Test infant serum for Zika virus RNA, Zika virus immunoglobulin M (IgM) and neutralizing antibodies, and dengue virus IgM and neutralizing antibodies. The initial sample should be collected either from the umbilical cord or directly from the infant within 2 days of birth, if possible.
- If cerebrospinal fluid is obtained for other studies, test for Zika virus RNA, Zika virus IgM and neutralizing antibodies, and dengue virus IgM and neutralizing antibodies.
- Consider histopathologic evaluation of the placenta and umbilical cord with Zika virus immunohistochemical staining on fixed tissue and Zika virus reverse transcription-polymerase chain reaction (RT-PCR) on fixed and frozen tissue.
- If not already performed during pregnancy, test mother's serum for Zika virus IgM and neutralizing antibodies, and dengue virus IgM and neutralizing antibodies.

For possible acute Zika virus disease

- If symptoms have been present for <7 days, test serum (and, if obtained for other reasons, cerebrospinal fluid) for Zika virus RNA by RT-PCR
- If Zika virus RNA is not detected and symptoms have been present for ≥4 days, test serum (and, if obtained for other reasons, cerebrospinal fluid) for Zika virus IgM and neutralizing antibodies, and dengue virus IgM and neutralizing antibodies

Adapted from: Staples, JE, Dziuban EJ, Fischer M, et al. Interim guidelines for the evaluation and testing of infants with possible congenital Zika virus infection—United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65:63–7.

* Indications for testing for congenital infection include 1) an infant with microcephaly or intracranial calcifications born to a woman who traveled to or resided in an area with Zika virus transmission while she was pregnant, or 2) an infant born to a mother with a positive or inconclusive test result for Zika virus infection.

† Indications for testing during acute disease include: Infants and children aged <18 years who 1) traveled to or resided in an affected area within the past 2 weeks and 2) have ≥2 of the following manifestations: fever, rash, conjunctivitis, or arthralgia. Infants in the first 2 weeks of life 1) whose mothers have traveled to or resided in an affected area within 2 weeks of delivery and 2) have ≥2 of the following manifestations: fever, rash, conjunctivitis, or arthralgia.

§ More information on laboratory testing for Zika virus infection is available at http://www.cdc.gov/zika/state-labs/index.html.

BOX 2. Recommended clinical evaluation and laboratory testing for infants with possible congenital Zika virus infection

For all infants with possible congenital Zika virus infection, perform the following:

- Comprehensive physical examination, including careful measurement of occipitofrontal circumference, length, weight, and assessment of gestational age.
- Evaluation for neurologic abnormalities, dysmorphic features, splenomegaly, hepatomegaly, and rash or other skin lesions. Full body photographs and photographic documentation of any rash, skin lesions, or dysmorphic features should be performed. If an abnormality is noted, consultation with an appropriate specialist is recommended.
- Cranial ultrasound, unless prenatal ultrasound results from third trimester demonstrated no abnormalities of the brain.
- Evaluation of hearing by evoked otoacoustic emissions testing or auditory brainstem response testing, either before discharge from the hospital or within 1 month after birth. Infants with abnormal initial hearing screens should be referred to an audiologist for further evaluation.
- Ophthalmologic evaluation, including examination of the retina, either before discharge from the hospital or within 1 month after birth. Infants with abnormal initial eye evaluation should be referred to a pediatric ophthalmologist for further evaluation.
- Other evaluations specific to the infant's clinical presentation.

For infants with microcephaly or intracranial calcifications, additional evaluation includes the following:

- Consultation with a clinical geneticist or dysmorphologist.
- Consultation with a pediatric neurologist to determine appropriate brain imaging and additional evaluation (e.g., ultrasound, computerized tomography scan, magnetic resonance imaging, and electroencephalogram).
- Testing for other congenital infections such as syphilis, toxoplasmosis, rubella, cytomegalovirus infection, lymphocytic choriomeningitis virus infection, and herpes simplex virus infections. Consider consulting a pediatric infectious disease specialist.
- Complete blood count with platelet count and liver function and enzyme tests, including alanine aminotransferase, aspartate aminotransferase, and bilirubin.
- Consideration of genetic and other teratogenic causes based on additional congenital anomalies that are identified through clinical examination and imaging studies.

Adapted from: Staples, JE, Dziuban EJ, Fischer M, et al. Interim guidelines for the evaluation and testing of infants with possible congenital Zika virus infection—United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65:63–7.

BOX 3. Recommended long-term follow-up for infants with possible congenital Zika virus infection

For all infants with possible congenital Zika virus infection, recommended long-term follow-up:

- Report case to state, territorial, or local health department and monitor for additional guidance as it is released.
- Consider conducting additional hearing screen at age 6 months. Refer any child with developmental delay for an audiologic evaluation. Ensure that appropriate follow-up of abnormal newborn hearing screening has occurred.
- Carefully evaluate occipitofrontal circumference and developmental characteristics and milestones throughout the first year of life, in consultation with appropriate medical specialists (e.g., pediatric neurology, developmental and behavioral pediatrics, physical and speech therapy).

Adapted from: Staples, JE, Dziuban EJ, Fischer M, et al. Interim guidelines for the evaluation and testing of infants with possible congenital Zika virus infection—United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65:63–7.

considered inconclusive (*1*). More information on laboratory testing can be found at http://www.cdc.gov/zika/state-labs/index.html. Health care providers should notify their local, state or territorial health department of suspected Zika cases to arrange testing and so that action can be taken to decrease the risk for local transmission in areas with *Aedes* species mosquitoes.

Illness associated with Zika virus is usually mild in children, and treatment of Zika virus infection involves supportive care. Nonsteroidal anti-inflammatory drugs (NSAIDs) should be avoided until dengue virus is ruled out as the cause of illness, because of the potential for hemorrhagic complications of dengue fever, and should be avoided in all children aged <6 months (*28*,*29*). Aspirin should not be used in children with acute viral illnesses because of its association with Reye's syndrome (*30*). The decision to obtain additional laboratory tests, diagnostic studies, and infectious disease consultation should be based on clinical judgment as guided by findings from a complete history and physical examination. Information on long-term outcomes among infants and children with acute Zika virus disease is limited (*10*); until more evidence is available to inform recommendations, routine pediatric care is advised for these infants and children.

Guidelines for Breastfeeding for Mothers with Zika Virus Infection

Zika virus RNA has been identified in breast milk, but attempts to culture the virus have been unsuccessful (*9*). No cases of Zika virus infection associated with breastfeeding have been reported. CDC encourages mothers with Zika virus infection and living in areas with ongoing Zika virus transmission to breastfeed their infants. Current evidence suggests that the benefits of breastfeeding outweigh the theoretical risks of Zika virus transmission through breast milk.

Prevention of Zika Virus Infection in Infants and Children

Prevention of mosquito bites is the primary means of preventing Zika virus infection in persosns of all ages traveling to or residing in areas with local Zika virus transmission. Mosquito bite prevention includes using air conditioning or window and door screens when indoors, wearing long-sleeved shirts and long pants, using permethrin-treated clothing and gear, and using insect repellents. When used as directed on the product label, most Environmental Protection Agency–registered insect repellents can be used to protect children aged ≥2 months against mosquito bites. Oil of lemon eucalyptus should not be used in children aged <3 years (http://wwwnc.cdc.gov/travel/yellowbook/2016/the-pre-travel-consultation/protection-against-mosquitoes-ticks-other-arthropods). Mosquito netting can be used to cover infants in carriers, strollers, or cribs to protect them from mosquito bites. Information on the safe use of insect repellents in children is available at http://www.epa.gov/insect-repellents/using-insect-repellents-safely-and-effectively.

Persons with Zika virus infection should take steps to prevent mosquito bites for at least the first week of illness to decrease the risk for human-to-mosquito-to-human transmission. Health care providers should educate parents and caregivers about mosquito bite prevention in infants and children if they are traveling to or residing in areas affected by Zika virus; mosquitoes also carry other viruses in addition to Zika. More information about prevention of Zika virus infection can be found at http://www.cdc.gov/zika/prevention/index.html.

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Notes from the Field

Ebola Virus Disease Response Activities During a Mass Displacement Event After Flooding — Freetown, Sierra Leone, September–November, 2015

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Since the start of the Ebola virus disease (Ebola) outbreak in West Africa, Sierra Leone has reported 8,706 confirmed Ebola cases and 3,956 deaths (*1*). During September 15–16, 2015, heavy rains flooded the capital, Freetown, resulting in eight deaths, home and property destruction, and thousands of persons in need of assistance (*2*). By September 27, approximately 13,000 flood-affected persons registered for flood relief services from the government (*3*). On September 17, two stadiums in Freetown were opened to provide shelter and assistance to flood-affected residents; a total of approximately 3,000 persons stayed overnight in both stadiums (Sierra Leone Ministry of Health and Sanitation, personal communication, September 2015). On the same day the stadiums were opened to flood-affected persons, the Ministry of Health and Sanitation (MoHS) and Western Area Ebola Response Center (WAERC) staff members from CDC, the World Health Organization (WHO), and the African Union evaluated the layout, logistics, and services at both stadiums and identified an immediate need to establish Ebola response activities. The patient in the last Ebola case in the Western Area, which includes Freetown, had died 37 days earlier, on August 11; however, transmission elsewhere in Sierra Leone was ongoing, and movement of persons throughout the country was common (*4*,*5*).

After their evaluation on September 17, MoHS and WAERC staff members quickly established incident management systems to ensure a defined chain of command, effective resource management, and advance planning. Entrance screening and isolation for persons with suspected Ebola were established at both stadiums within 2 days. Population flow was restricted at access points, where screening consisted of temperature measurement and questions about recent diarrhea or vomiting and general health status. Persons staying in the stadiums who were ill or seeking medical care were directed to triage stations inside the stadiums for further Ebola screening using the national case definition (*6*). Persons meeting the suspected Ebola case definition were isolated until they could be transported by ambulance to an Ebola holding center for testing. When resources became available, separate isolation areas for patients with diarrhea, vomiting, or bleeding were established.

Both stadiums were staffed 24 hours per day, 7 days per week by WAERC district surveillance officers with daytime supervision from a senior district surveillance officer and epidemiologists from CDC and WHO. WAERC partners provided infection prevention and control training to screeners, cleaning personnel, and hygienists, and routinely conducted assessments to improve operations. Clinical staff members from the Ebola holding center at Connaught Hospital in Freetown performed a review of the Ebola response infrastructure at one of the stadiums, and patient flow and staffing procedures were adjusted.

The presence of suspected Ebola cases among the stadiums' populations after the flooding resulted in increased transport, bed usage, and Ebola testing. Ambulances were stationed at each stadium to ensure rapid transport of suspected Ebola patients to a holding center. Expedited laboratory testing was requested for Ebola testing from the stadium population.

During September 17–October 25, among 1,198 living persons (alerts include both living and dead) whose signs and symptoms met the Ebola case definition from alerts in the Western Area, 47 (4%) originated from one of the two stadiums. Alerts were highest immediately after the flooding: 30 (61%) of the 47 suspected case reports occurred by September 23. No confirmed cases occurred in Western Area during this time period.

Challenges to Ebola response activities included resource, space, and personnel constraints; crowding; and flood-associated health needs. A rapid assessment conducted at both stadiums on September 25 identified concerns about crowding and sanitation (*7*). The large number of persons passing through medical triage, as well as overall crowding, posed challenges to organization, screening, and infection prevention and control during meal service, at pedestrian entrances, and in housing tents. In addition, differing hygiene practices implemented by different partners (e.g., recommendations for handwashing using water and soap, water mixed with soap, or chlorine in water) resulted in inconsistent community messaging and difficulty in determining supply needs. Screening lapses caused by inadequate supervision, staffing, or security; miscommunication; large crowds; and inclement weather occurred. Because of security lapses or confusion about oversight of the isolation area, some persons with suspected Ebola were lost from isolation, although most were located and tested.

Flooding in Freetown caused a disaster that resulted in the loss of life and property and the displacement of thousands of persons into two stadiums during an Ebola outbreak of unprecedented size. Ebola response activities were rapidly established to screen thousands of persons. When possible, Ebola response activities during a disaster need to be consistent with those of the national response. Additional important factors for success include implementation of incident management systems to ensure coordination by various governmental, technical, and implementing partners and to establish and maintain clear and documented protocols for consistent operations.

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Western Area Ebola Response Centre; Sierra Leone Ministry of Health and Sanitation; Sierra Leone Ebola Response Team, CDC; World Health Organization; other flood response partners.

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Notes from the Field

Verona Integron-Encoded Metallo-Beta-Lactamase–Producing Carbapenem-Resistant Enterobacteriaceae in a Neonatal and Adult Intensive Care Unit — Kentucky, 2015

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During August 4–September 1, 2015, eight cases of Verona integron-encoded metallo-beta-lactamase (VIM)–producing Carbapenem-resistant Enterobacteriaceae (CRE) colonization were identified in six patients, using weekly active surveillance perirectal cultures in a Kentucky tertiary care hospital. No cases of clinical infection or complications attributable to colonization were reported. Four of the eight isolates were identified as *Enterobacter cloacae*; other organisms included *Raoultella* species (one), *Escherichia coli* (one), and *Klebsiella pneumoniae* (two). Six isolates were reported in a neonatal intensive care unit (ICU), and two isolates in an adult trauma and surgical ICU. Patient ages at isolate culture date ranged from 21 days to 68 years. Fifty percent of the patients were male. Previously, only one VIM-producing CRE-colonized patient (an adult, in 2013) had been reported by the same hospital. The six cases are the largest occurrence of VIM-producing CRE colonization reported in the United States and the only recognized cluster of VIM-producing CRE colonization in the United States reported to include a neonatal population. Despite environmental sampling over the same period, surveying patients for exposure to health care outside the United States, surveying health care providers for risk factors, and surveillance culturing of health care provider nares and axillae, a source of VIM-producing CRE has not been identified for this cluster. Prevention measures throughout the ICUs have been enhanced in response to this cluster, as detailed in CDC's 2015 CRE toolkit update (*1*).

CRE are defined as any Enterobacteriaceae species resistant to any carbapenem or possessing a documented carbapenemase (*2*). Outbreaks of VIM-producing CRE have been described previously, including outbreaks in pediatric and neonatal populations in Spain (*3*) and Hungary (*4*). However, both of these outbreaks involved a single CRE species (*E. cloacae*). The first VIM to be identified in the United States was in an adult patient with *K. pneumoniae* in 2006 (*5*).

Clinical infections with CRE have been reported, with mortality rates of up to 50% (*6*). Enterobacteriaceae species are a common cause of infection in both health care–associated and community-associated infections, and the potential exists for carbapenem-resistant strains to add to this burden of infections. VIM-producing CRE are a substantial threat to public health, with more complicated patient outcomes, including higher relapse rate and a prolonged duration of antimicrobial therapy (*7*). The carbapenemases can be transferred easily from organism to organism through plasmid exchange, facilitating spread of resistance (*2*).

Risk factors for CRE acquisition in the United States primarily include exposure to health care settings and antimicrobial agents (*2*). Travel to countries with higher prevalence also is a risk factor for acquisition, particularly of novel carbapenemases like VIM (*8*). Transmission is believed to be person-to-person, either via contaminated hands of health care providers or through shared equipment. Control measures focus on optimizing infection control practices. Health care facilities should follow prevention strategies outlined in CDC's 2015 CRE toolkit update (*1*).

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Announcement

World Birth Defects Day — March 3, 2016

The importance of World Birth Defects Day on March 3 is underscored as the world's attention has turned to the Zika virus, and scientists around the world are investigating the possible association between Zika virus infection and microcephaly.

Every year, an estimated 3%–6% of infants worldwide are born with a serious birth defect (*1*,*2*). Birth defects can affect an infant regardless of birthplace, race, or ethnicity. In some countries, birth defects remain one of the leading causes of death for infants and young children (*3*). Those who survive and live with these conditions are at an increased risk for lifelong disabilities.

To raise global awareness about birth defects, 34 countries on five continents joined together to support World Birth Defects Day in 2015, its inaugural year (*4*). On March 3, 2015, the social media presence of the hashtag #WorldBDDay reached nearly 3.4 million persons around the world.

For World Birth Defects Day 2016, the same group of partners has reconvened and invited others to join them, to continue to bring attention to this global public health issue. The goals for 2016 are to raise awareness about birth defects, reduce stigma, and increase opportunities for prevention by promoting the following: 1) increasing the number of birth defects surveillance programs globally, 2) improving existing birth defects surveillance programs, 3) improving access to care, and 4) continuing research on the causes of birth defects.

CDC invites other organizations around the world to participate in World Birth Defects Day 2016 by sharing stories and information about birth defects using the hashtag #WorldBDDay.

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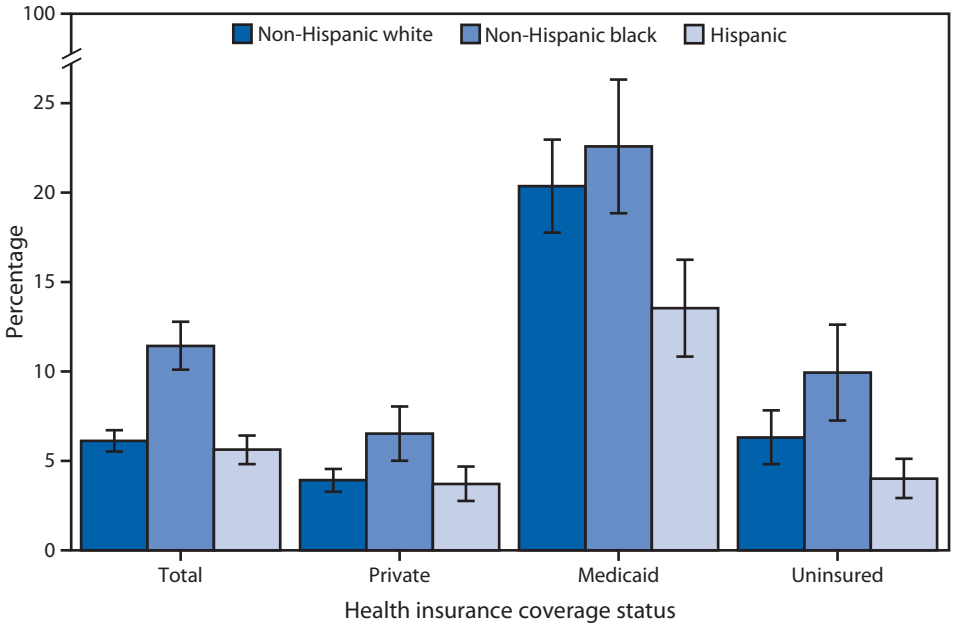
QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage* of Adults Aged 18–64 Years with Two or More Visits to the Emergency Department† in the Past 12 Months, by Health Insurance Coverage Status,§ and Race/Ethnicity¶ — National Health Interview Survey,** 2014



* With 95% confidence intervals.
† Based on a response to the survey question "During the past 12 months, how many times have you gone to a hospital emergency room about your own health? (This includes emergency room visits that resulted in a hospital admission.)"
§ Health insurance coverage is based on the status at the time of interview. Private includes plans obtained through an employer, purchased directly, through local or community programs, through the Health Insurance Marketplace, or a state-based exchange. Medicaid includes those without private insurance who reported Medicaid, Children's Health Insurance Program, or other state-sponsored health plans. Uninsured includes those without any private health insurance, Medicaid, Medicare, other government-sponsored health plan, military plan, or Indian Health Service coverage only, or those who had a private plan that paid for one type of service.
¶ Persons of Hispanic ethnicity may be of any race or combination of races.
** Estimates are based on household interviews of a sample of the civilian noninstitutionalized U.S. population and are derived from the National Health Interview Survey family core and sample adult components.

In 2014, non-Hispanic black (11.4%) adults aged 18–64 were the most likely to have had two or more emergency department (ED) visits in the past 12 months compared with non-Hispanic whites (6.1%) and Hispanics (5.6%). This was true for all insurance coverage types except for Medicaid, where there was no difference between non-Hispanic whites (20.3%) and non-Hispanic blacks (22.5%). For each racial and ethnic group, adults with Medicaid coverage had the highest percentage of two or more ED visits in the past 12 months compared with those with private insurance and the uninsured.

Source: Gindi RM, Black LI, Cohen RA. Reasons for emergency room use among US adults aged 18–64: National Health Interview Survey, 2013 and 2014. National Health Statistics Reports, No. 90. Hyattsville, MD: National Center for Health Statistics; 2016. http://www.cdc.gov/nchs/data/nhsr/nhsr090.pdf.

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