National HIV Testing Day — June 27, 2016

National HIV Testing Day (http://www.cdc.gov/features/HIVtesting), June 27, highlights the importance of testing in detecting, treating, and preventing human immunodeficiency virus (HIV) infection. Awareness of HIV infection through HIV testing is the first step to prevention, health care, and social services that improve quality of life and length of survival (*1*). CDC's National HIV Behavioral Surveillance (NHBS) monitors behaviors among populations at risk for acquiring or transmitting HIV infection. In 2012, NHBS data indicated that 9% of persons who inject drugs tested positive for HIV, and among those persons, 36% were unaware of their infection before testing (*2*). In 2013, 2% of heterosexuals at increased risk for HIV infection tested positive for HIV, and among those, 44% were unaware of their infection before testing (*3*). In 2014, among 22% of men who have sex with men who tested HIV-positive, 25% were unaware of their infection before testing (*4*).

Basic HIV testing information for consumers (http://www.cdc.gov/hiv/basics/testing.html) and health professionals (http://www.cdc.gov/hiv/testing), and CDC guidelines for HIV testing of serum (http://www.cdc.gov/hiv/testing/laboratorytests.html) are available online.

References

1. Bradley H, Hall HI, Wolitski RJ, et al. Vital signs: HIV diagnosis, care, and treatment among persons living with HIV—United States, 2011. MMWR Morb Mortal Wkly Rep 2014;63:1113–7.
2. CDC. HIV infection, risk, prevention, and testing behaviors among persons who inject drugs. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-HSSR_NHBS_PWID_2012.pdf
3. CDC. HIV infection, risk, prevention, and testing behaviors among heterosexuals at increased risk of HIV infection. Atlanta, GA: US Department of Health and Human Services, CDC; 2013. http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-hssr_nhbs_het_2013.pdf
4. CDC. HIV infection risk, prevention, and testing behaviors among men who have sex with men. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-hssr-nhbs-msm-2014.pdf

Evaluation of the Impact of National HIV Testing Day — United States, 2011–2014

Shirley Lee Lecher, MD[1]; NaTasha Hollis, PhD[1]; Christopher Lehmann, MD[1]; Karen W. Hoover, MD[1]; Avatar Jones[1]; Lisa Belcher, PhD[1]

Human immunodeficiency virus (HIV) testing is the first step in the continuum of HIV prevention, care, and treatment services, without which, gaps in HIV diagnosis cannot be addressed. National HIV testing campaigns are useful for promoting HIV testing among large numbers of persons. However, the impact of such campaigns on identification of new HIV-positive diagnoses is unclear. To assess whether National HIV Testing Day (NHTD, June 27) was effective in identifying new HIV-positive diagnoses, National HIV Prevention Program Monitoring and Evaluation (NHM&E) data for CDC-funded testing events conducted during 2011–2014 were analyzed. The number of HIV testing events and new HIV-positive diagnoses during June of each year were compared with those in other months by demographics and target populations. The number of HIV testing events and

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

new HIV-positive diagnoses were also compared for each day leading up to and after NHTD in June and July of each year. New HIV-positive diagnoses peaked in June relative to other months and specifically on NHTD. During 2011–2014, NHTD had a substantial impact on increasing the number of persons who knew their HIV status and in diagnosing new HIV infections. NHTD also proved effective in reaching persons at high risk disproportionately affected by HIV, including African American (black) men, men who have sex with men (MSM), and transgender persons. Promoting NHTD can successfully increase the number of new HIV-positive diagnoses, including HIV infections among target populations at high risk for HIV infection.

After two decades of campaigns promoting the annual NHTD, it is important to know whether these efforts have resulted in an increase in the number of new HIV diagnoses and whether persons at highest risk for HIV infection are effectively reached. NHTD includes approximately 400 events across the United States, spanning several days. The primary goal is to promote HIV testing, an essential step in the diagnosis of HIV, linkage to antiretroviral therapy, and prevention of new infections (1,2). This goal aligns with the National HIV/AIDS Strategy focused on reducing HIV infections, optimizing health outcomes, and decreasing disparities (3). Among persons disproportionately affected, blacks account for approximately half of all newly identified HIV-positive persons, and gay, bisexual, and other MSM are more severely affected by HIV than any other group (4–6). In 2010, HIV

testing during the week of NHTD indicated both an increase in CDC-funded HIV testing events and new HIV diagnoses compared with 2 control weeks (7).

To evaluate whether NHTD campaigns have been successful at increasing the number of persons who know their HIV status, test-level data from the NHM&E data system were extracted and analyzed for the years 2011–2014. Data submitted by 55 grantees in 2011, 59 in 2012, 61 in 2013, and 60 in 2014 from CDC-funded jurisdictions in the United States, Puerto Rico, and the U.S. Virgin Islands were included. Analysis of valid HIV testing event data was conducted. A valid HIV testing event was defined as an event in which either HIV test technology or an HIV test result was reported. A single testing event included one test (i.e., a single rapid test or single conventional test) or more tests (i.e., single rapid test followed by a single conventional test) conducted to determine a person's HIV status. An HIV-positive testing event for a person who was not reported previously as testing positive for HIV was categorized as a newly identified HIV infection. The number of HIV testing events conducted during the month of June was compared with the number of HIV testing events conducted during all remaining months of the year (i.e., January–May and July–December). A chi-square test was used to detect differences between the number of HIV testing events conducted in June and the average number of HIV testing events conducted during the remainder of the year. A p-value <0.05 was considered statistically significant. The differences in the number of testing events and newly identified HIV infections

were analyzed by selected demographic characteristics, including age, sex, gender, sexual orientation, race/ethnicity, and risk behaviors. The number of newly identified HIV-positive persons identified each day during the 2 weeks before and after June 27th were compared to determine whether there was an increase on NHTD and to examine testing trends leading up to and after NHTD.

A total of 13,051,035 CDC-funded HIV testing events were conducted during 2011–2014, including 3,299,690 (2011); 3,287,024 (2012); 3,343,633 (2013); and 3,120,688 (2014). The numbers of new HIV-positive test results were 17,216 (0.52%) for 2011; 16,976 (0.52%) for 2012; 17,426 (0.52%) for 2013; and 16,530 (0.53%) for 2014. The number of testing events peaked in June compared with the mean during January–May and July–December for each year during 2011–2014, and the mean number of newly identified HIV-positive persons increased significantly during June (p<0.001) compared with January–May and July–December (Figure 1). When the number of new HIV infections diagnosed each day during the 2 weeks before and after NHTD was compared with new HIV infections diagnosed on June 27, the annual national

testing event identified the largest number of new HIV infections compared with any of the other days (Figure 2). New HIV infections identified on NHTD, compared with those identified on the next highest day, increased 25% in 2011, 40% in 2012, 20% in 2013, and 17% in 2014 (Figure 2). The increase in total HIV testing events and the number of newly identified HIV infections was significant for persons aged ≥20 years; for all sex and gender groups (male, female, and transgender); MSM and heterosexuals; and white, black and Hispanic/Latino racial/ethnic groups (Table). MSM identified as white, black, or Hispanic/Latino experienced a significant increase in testing events and newly identified HIV-positive persons in June (Table).

Discussion

National HIV Testing Day (NHTD) effectively targets groups disproportionately affected by HIV. During 2011–2014, there was a significant increase in total testing events as well as newly identified HIV-positive persons in June compared with other months, with a peak in new HIV diagnoses on NHTD. This increase was seen across gender groups, persons

FIGURE 1. Newly identified HIV infections, by month — CDC-funded HIV testing sites, 2011–2014
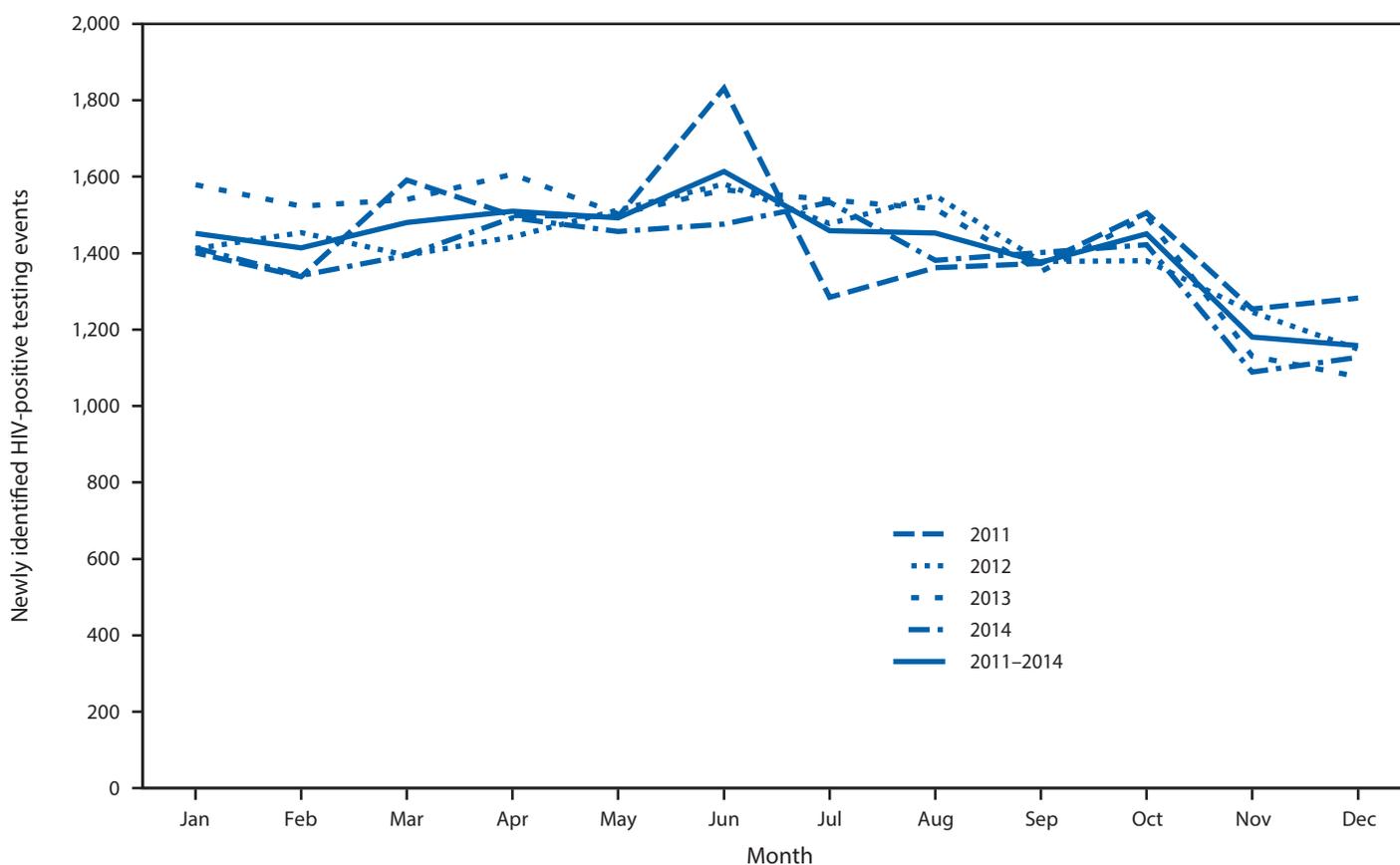
Abbreviation: HIV = human immunodeficiency virus.

FIGURE 2. Newly identified HIV infections during the 2 weeks before and after National HIV Testing Day (NHTD, June 27), by date — CDC-funded HIV testing sites, 2011–2014
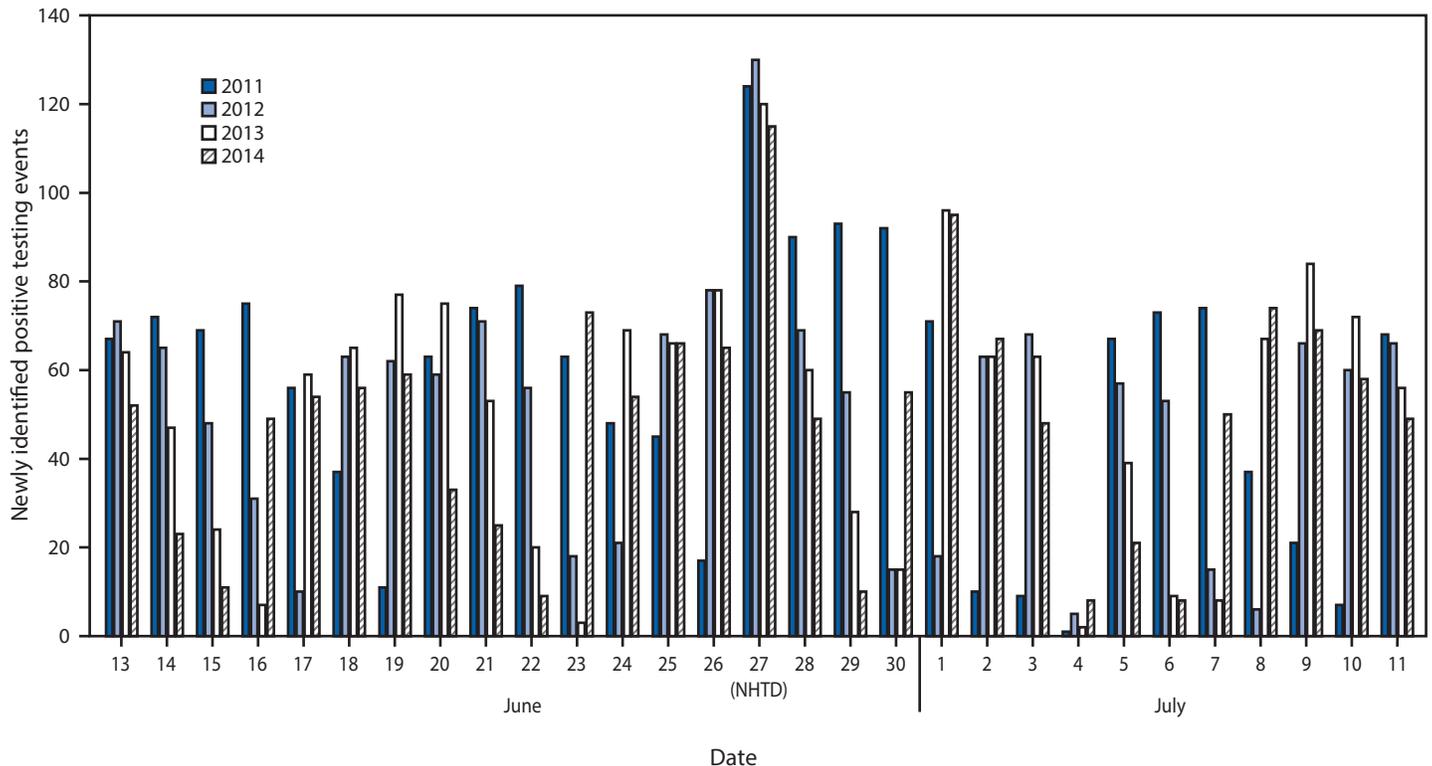
Abbreviation: HIV = human immunodeficiency virus.

aged ≥20 years, and all major racial/ethnic groups. A higher number of testing events and newly identified positive HIV diagnoses occurred among MSM, irrespective of race/ethnicity, and among transgender persons in June compared with the mean during all other months.

Testing is the first link in the chain to provide treatment and disrupt transmission, because persons who are aware that they have HIV infection are less likely to transmit HIV (*8,9*). Promoting NHTD is an effective strategy to increase HIV testing and thereby, the number of persons who are aware of their HIV status. Because blacks are less likely to have their infection diagnosed and have higher HIV-related mortality rates than other racial/ethnic groups in the United States, it is important to design interventions that specifically target HIV testing for this population (*4*). NHTD campaigns are usually scheduled by state and local health departments, pharmacies, and HIV community-based organizations in June, leading up to NHTD. These findings indicate persons at highest risk for HIV by age, sex, racial/ethnic group, and target population are effectively reached by mass testing campaigns.

Summary

What is already known about this topic?

For approximately 2 decades, June 27th has been designated as National human immunodeficiency virus (HIV) Testing Day (NHTD) to promote HIV testing and increase awareness of the importance of getting tested for HIV.

What is added by this report?

During 2011–2014, there were more CDC-funded HIV testing events and newly identified HIV infections during the month of June compared with the mean for all other months, with significant differences for those most affected by HIV, such as African American (black) men and men who have sex with men (MSM). Compared with the 2 weeks before and after NHTD, the highest number of newly identified HIV positive persons occurred on June 27th each year.

What are the implications for public health practice?

NHTD is an important event to help achieve the National HIV/AIDS Strategy to increase the percentage of persons living with HIV who are aware of their status. NHTD is effective in identifying new HIV-positive diagnoses and identifies persons at highest risk for HIV infection, including black men and MSM.

TABLE. Number of HIV testing events and HIV positivity for selected characteristics conducted by health departments providing test-level data in the United States, Puerto Rico and the U.S. Virgin Islands, 2011–2014

Characteristic	Total HIV testing events, 2011–2014			Newly identified HIV infections, 2011–2014		
	June (total)	11 mos (mean)*	p-value	June (total)	11 mos (mean)*	p-value
Age group (yrs)						
<13	2,225	2,058	0.011	7	7	0.942
13–19	100,297	96,689	<0.001	212	193	0.343
20–29	473,562	439,494	<0.001	2,469	2,239	0.001
30–39	267,331	239,610	<0.001	1,486	1,341	0.006
40–49	173,300	150,241	<0.001	1,265	1,012	<0.001
≥50	173,506	141,857	<0.001	982	766	<0.001
Invalid/Missing[†]	7,498	7,626	—	34	51	—
Sex						
Male	583,786	525,661	<0.001	5,141	4,454	<0.001
Female	604,552	543,579	<0.001	1,177	1,063	0.016
Transgender	4,343	3,284	<0.001	103	69	0.010
Invalid/Missing[§]	5,038	5,050	—	34	23	—
Race/Ethnicity						
White	318,557	292,036	<0.001	1,309	1,159	0.003
Black	538,850	476,566	<0.001	3,404	2,964	<0.001
Hispanic	257,342	229,503	<0.001	1,361	1,167	<0.001
Other[¶]	40,428	36,468	<0.001	201	170	0.105
Invalid/Missing**	42,542	43,001	—	180	148	—
Target population[††]						
Male-to-male sexual contact and injection drug use	2,782	2,564	0.003	112	97	0.287
Male-to-male sexual contact	97,890	79,991	<0.001	2,720	2,420	<0.001
Transgender and injection drug use	187	164	0.214	6	5	0.676
Transgender	4,156	3,121	<0.001	97	65	0.011
Injection drug use	28,604	25,879	<0.001	133	122	0.498
Heterosexual	537,641	485,172	<0.001	1,767	1,551	<0.001
Male-to-male sexual contact by race/ethnicity						
White, non-Hispanic	43,512	35,985	<0.001	803	662	<0.001
Black, non-Hispanic	24,540	19,998	<0.001	1,196	1,102	0.049
Hispanic	23,617	19,065	<0.001	681	605	0.034
Total	**1,197,719**	**1,077,574**	**<0.001**	**6,455**	**5,608**	**<0.001**

Abbreviation: HIV = human immunodeficiency virus.
 * The sum of the average during January–May and July–December over 3 years (2011–2014).
 [†] Includes invalid and/or missing values that are needed to determine age.
 [§] Includes other specified, declined/not asked, or invalid/missing.
 [¶] Includes multirace, Asian, American Indian, Alaskan Native, Native Hawaiian, or Pacific Islander.
 ** Includes declined, don't know/not asked, invalid/missing.
 [††] Data to identify target populations are required for all testing events conducted in non-health care settings and only HIV-positive testing events in health care settings.

The findings in this report are subject to at least three limitations. First, these analyses included only CDC-funded HIV tests. Therefore, HIV tests supported by other funding sources were not included. Second, the month of June also includes a substantial number of community-based testing events associated with gay pride celebrations in large U.S. cities. It is difficult to know how this might have contributed to an increase in HIV testing and new diagnoses observed during this month. However, a peak in HIV testing and new HIV diagnosis was observed on NHTD compared with all other days. Finally, this study shows increased HIV testing with NHTD; however, receipt of individual test results was not examined. Hence, the magnitude of awareness of individual HIV status cannot be determined from the study.

As a public health strategy consistent with the National HIV/AIDS Strategy, NHTD identifies a number of new HIV infections in populations disproportionately affected by HIV and might increase awareness of HIV status among HIV-infected persons. NHTD might be used strategically in future efforts to increase testing in areas with the highest incidence of HIV. These findings suggest that community-level approaches to advocate early detection and treatment of HIV infection might use mass testing events such as those promoted for NHTD in areas where HIV is most prevalent.

[1]Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, CDC.

Corresponding author: NaTasha Hollis, nhollis@cdc.gov, 404-718-8636.

References

1. CDC. National HIV testing day and new testing recommendations. MMWR Morb Mortal Wkly Rep 2014;63:537.
2. CDC. National HIV testing day—June 27, 2012. MMWR Morb Mortal Wkly Rep 2012;61:441.
3. Office of National AIDS Policy. National HIV/AIDS strategy for the United States. Washington, DC: Office of National AIDS Policy; 2010. http://www.aids.gov/federal-resources/national-hiv-aids-strategy/nhas.pdf
4. Siddiqi AE, Hu X, Hall HI. Mortality among blacks or African Americans with HIV infection—United States, 2008–2012. MMWR Morb Mortal Wkly Rep 2015;64:81–6.
5. CDC. Estimated HIV incidence among adults and adolescents in the United States, 2007–2010. Atlanta, GA: US Department of Health and Human Services, CDC; 2012. http://www.cdc.gov/hiv/pdf/statistics_hssr_vol_17_no_4.pdf
6. Seth P, Walker T, Hollis N, Figueroa A, Belcher L. HIV testing and service delivery among blacks or African Americans—61 health department jurisdictions, United States, 2013. MMWR Morb Mortal Wkly Rep 2015;64:87–90.
7. Van Handel M, Mulatu MS. Effectiveness of the US national HIV testing day campaigns in promoting HIV testing: evidence from CDC-funded HIV testing sites, 2010. Public Health Rep 2014;129:446–54.
8. Marks G, Crepaz N, Janssen RS. Estimating sexual transmission of HIV from persons aware and unaware that they are infected with the virus in the USA. AIDS 2006;20:1447–50. http://dx.doi.org/10.1097/01.aids.0000233579.79714.8d
9. Hall HI, Holtgrave DR, Maulsby C. HIV transmission rates from persons living with HIV who are aware and unaware of their infection. AIDS 2012;26:893–6. http://dx.doi.org/10.1097/QAD.0b013e328351f73f

Health Care Use and HIV Testing of Males Aged 15–39 Years in Physicians' Offices — United States, 2009–2012

D. Cal Ham, MD[1]; Ya-lin Huang, PhD[1]; Roman Gvetadze, MD[1]; Philip J. Peters, MD[1]; Karen W. Hoover, MD[1]

In 2014, 81% of new human immunodeficiency virus (HIV) infection diagnoses in the United States were in males, with the highest number of cases among those aged 20–29 years. Racial and ethnic minorities continue to be disproportionately affected by HIV; there are 13 new diagnoses each year per 100,000 white males, 94 per 100,000 black males, and 42 per 100,000 Hispanic males (*1*). Despite the recommendation by CDC for HIV testing of adults and adolescents (*2*), in 2014, only 36% of U.S. males aged ≥18 years reported ever having an HIV test (*3*), and in 2012, an estimated 15% of males living with HIV had undiagnosed HIV infection (*4*). To identify opportunities for HIV diagnosis in young males, CDC analyzed data from the 2009–2012 National Ambulatory Medical Care Survey (NAMCS) and U.S. Census data to estimate rates of health care use at U.S. physicians' offices and HIV testing at these encounters. During 2009–2012, white males visited physicians' offices more often (average annual rate of 1.6 visits per person) than black males (0.9 visits per person) and Hispanic males (0.8 visits per person). Overall, an HIV test was performed at 1.0% of visits made by young males to physicians' offices, with higher testing rates among black males (2.7%) and Hispanic males (1.4%), compared with white males (0.7%). Although higher proportions of black and Hispanic males received HIV testing at health care visits compared with white males, this benefit is likely attenuated by a lower rate of health care visits. Interventions to routinize HIV testing at U.S physicians' offices could be implemented to improve HIV testing coverage.

In 2014, 75% of males responding to the National Health Interview Survey reported having at least one visit to a health care office during the previous year (*5*). In 2011, among men aged 19–25 years participating in the National Health Interview Survey, 63% self-reported having a usual place for health care, and 59% reported having a doctor visit in the previous year (*6*). Early initiation of antiretroviral therapy for persons with diagnosed HIV infection has been shown to reduce the risk for HIV transmission (*7*) and improve clinical outcomes (*8*). Persons who are found to be HIV-negative but at substantial risk for acquiring HIV infection should be offered prevention services, including preexposure prophylaxis (*9*) and other risk-reduction interventions.

Data from the 2009–2012 NAMCS* and the U.S. Census† were analyzed to estimate the average annual number of visits to physicians' offices per person, and the average annual percentage of visits where an HIV test was performed in HIV-negative non-Hispanic white, non-Hispanic black, and Hispanic males aged 15–39 years. Current HIV infection was defined using *International Classification of Diseases, Ninth Revision (ICD-9)* codes§ and Reason for Visit codes consistent with HIV infection. A four-stage probability sampling design is used in NAMCS to allow generation of nationally representative weighted estimates of patient health care visits. Each selected physician was randomly assigned a 1-week data reporting period, and data collectors abstracted medical records from a systematic random sample of patient visits (*10*). Data collected included patients' demographic characteristics, services provided, patients' symptoms, physicians' diagnoses, and medications prescribed. Eligible physicians included those who were engaged in office-based patient care, were principally engaged in patient care activities, were not federally employed, and were not in the specialties of anesthesiology, pathology, or radiology (*10*).

Response rates ranged from 39% in 2012 to 62% in 2009. Physicians who provided patient care at Community Health Centers were included in the 2009–2011 NAMCS. The average annual visits per person were calculated by dividing average annual number of visits during 2009-–2012 by the average U.S. population during those years. The average annual percentage of visits with an HIV test was estimated by 5-year age group and by race/ethnicity, and was calculated by subtracting the average annual number of visits in which an HIV test was not performed from the average annual total number of visits and dividing by the average annual total number of visits. This methodology was used because the outcome, visits with an HIV test, had unweighted cell sizes <30 for several subgroups. Using visits in which an HIV test was not performed provided more reliable weighted estimates. All analyses used weighting to account for the complex sampling design.

---

* http://www.cdc.gov/nchs/ahcd/index.htm.
† http://wonder.cdc.gov/Bridged-Race-v2014.HTML.
§ http://www.cdc.gov/nchs/icd/icd9.htm.

During 2009–2012, males aged 15–39 years made an average of 1.4 visits per year to physicians' offices. Visits by white males (1.6 visits per person) were more frequent than visits by black males (0.9) and Hispanic males (0.8) (Table 1). Among all racial/ethnic groups, visits per person per year by males aged 15–19 years, 20–24 years, and 35–39 years were 1.6, 1.0, and 1.8, respectively (Table 1). The number of annual visits per

persons was lower for all age groups among black and Hispanic males compared with white males (Figure).

Overall, HIV testing was performed at 674,001 (1.0%) of the visits made by males aged 15–39 years (Table 2). Compared with white males, for whom HIV testing was reported at 0.7% of visits, HIV testing was reported at 2.7% of visits by black males (prevalence ratio [PR] = 3.8; p<0.001) and 1.4% of visits by Hispanic males (PR = 2.0; p = 0.08). Compared with the rate found among males aged 35–39 years (0.6%), HIV testing rates were higher among those aged 20–24 years (1.7%) (PR = 3.0; p = 0.007) and 25–29 years (1.8%) (PR = 3.1; p = 0.002) (Table 2). Along with age group 35–39 years, the HIV testing rate was lowest among males aged 15–19 years (0.6%) (PR = 1.0; p = 0.997).

Discussion

HIV testing of young males is important to identify undiagnosed infections and for initiation of crucial HIV treatment and care services for those who test HIV-positive and for HIV prevention services. HIV testing during physicians' office visits can facilitate immediate initiation of antiretroviral therapy or preexposure prophylaxis, or expeditious referral for these services. Males aged 15–39 years frequently visited physicians' offices, but HIV testing was not performed at 99% of those visits. CDC recommends repeat testing at least annually for persons at high risk for HIV infection (2), and although the optimal annual percentage of visits with an HIV test to achieve

TABLE 1. Average annual number of health care visits to physicians' offices* by males aged 15–39 years and number of visits per person,[†] by age group and race/ethnicity — National Ambulatory Medical Care Survey, United States, 2009–2012

Characteristic	U.S. Census pop.	Average annual no. of visits	Average annual no. of visits per person (95% CI)
Overall	49,550,703	66,905,523	1.35
Age group (yrs)			
15–19	10,517,269	16,645,519	1.58 (1.48–1.69)
20–24	10,464,714	10,159,600	0.97 (0.91–1.04)
25–29	9,954,208	10,736,014	1.08 (1.02–1.14)
30–34	9,433,174	13,056,197	1.38 (1.31–1.47)
35–39	9,181,339	16,308,193	1.78 (1.69–1.87)
Race/Ethnicity			
White, non-Hispanic	31,192,483	51,159,233	1.64 (1.59–1.68)
Black, non-Hispanic	7,227,841	6,425,278	0.89 (0.78–1.01)
Hispanic	11,130,379	9,321,012	0.84 (0.71–0.99)

**Abbreviation:** CI = confidence interval.
* Total visits are weighted values. A four-stage probability sampling design is used by the National Ambulatory Medical Care Survey to allow generation of nationally representative weighted estimates of patient visits.
[†] Total visits divided by U.S. Census population.

FIGURE. Average number of annual visits to physicians' offices by males aged 15–39 years, by age group and race/ethnicity — National Ambulatory Medical Care Survey, United States, 2009–2012
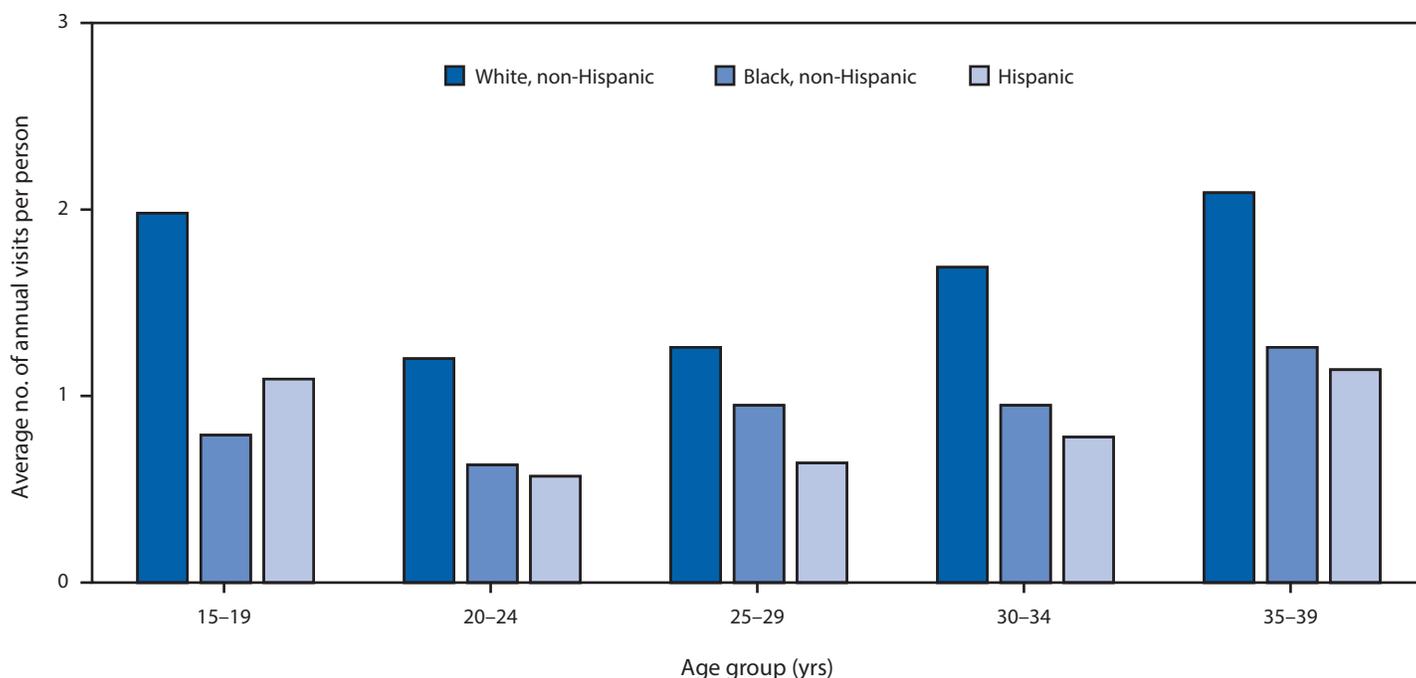
TABLE 2. Average annual number of health care visits to physicians' offices* by males aged 15–39 years, average annual number and percentage of visits with a test for human immunodeficiency virus (HIV) infection,[†] and HIV testing prevalence ratio,[§] by age group and race/ethnicity — National Ambulatory Medical Care Survey, United States, 2009–2012

Characteristic	Average annual no. of visits	Average annual no. of visits with an HIV test	Average annual percentage of visits with an HIV test (95% CI)	HIV testing prevalence ratio (95% CI)	p-value
Overall	**66,905,523**	**674,001**	**1.01 (0.76–1.33)**	—	—
Age group (yrs)					
15–19	16,645,519	92,949	0.56 (0.28–1.10)	1.00 (0.40–2.50)	0.997
20–24	10,159,600	173,028	1.70 (0.95–3.03)	3.04 (1.36–6.83)	0.007
25–29	10,736,014	188,683	1.76 (1.14–2.71)	3.14 (1.50–6.58)	0.002
30–34	13,056,197	128,096	0.98 (0.50–1.92)	1.75 (0.71–4.33)	0.223
35–39	16,308,193	91,244	0.56 (0.31–1.01)	Referent	—
Race/Ethnicity					
White, non-Hispanic	51,159,233	367,378	0.72 (0.50–1.04)	Referent	—
Black, non-Hispanic	6,425,278	173,991	2.71 (1.58–4.59)	3.77 (1.96–7.24)	<0.001
Hispanic	9,321,012	132,632	1.42 (0.73–2.75)	1.98 (0.93–4.23)	0.077

Abbreviation: CI = confidence interval.
* Total visits are weighted values. A four-stage probability sampling design is used by the National Ambulatory Medical Care Survey to allow generation of nationally representative weighted estimates of patient visits.
[†] Visits with an HIV test performed calculated by subtracting number of visits with an HIV test not performed from total visits.
[§] Univariate logistic regression model used to estimate prevalence ratios.

universal testing is unknown, these results indicate there are opportunities to improve HIV testing rates at physicians' offices.

Reasons why providers might not be conducting routine HIV testing include lack of knowledge of national testing recommendations, belief that their patients are not at risk, and belief that HIV testing is the responsibility of other health care professionals in different settings. White males had more visits per person at all ages than black or Hispanic males, possibly reflecting differences in access to health care and health insurance rates among racial and ethnic groups in the United States. Fewer annual visits per person among minority males represent fewer HIV testing opportunities. Although HIV testing was performed at a higher percentage of visits made by black and Hispanic males compared with visits made by white males, testing rates were low in all male populations. Interventions to routinize HIV testing, such as opt-out testing, might help to increase testing coverage among young men who might not otherwise seek HIV testing.

The findings in this study are subject to at least three limitations. First, nonresponse to an invitation to participate in NAMCS might have resulted in underestimation or overestimation of HIV testing, given that response rates ranged from 39% to 62% of health care providers contacted for participation. Second, small sample sizes in NAMCS permitted only limited subgroup analyses of HIV testing. Finally, behavioral risk factor data such as sexual behavior or injection drug use were not available in NAMCS, so estimation of HIV testing reflecting these factors was not possible.

Summary

What is already known about this topic?

In 2006, CDC recommended routine HIV testing of adults and adolescents; however, testing coverage in the United States has been suboptimal. Among new HIV diagnoses in 2014, 81% were in males, with the highest number reported in those aged 20–29 years.

What is added by this report?

During 2009–2012, males aged 15–39 years had an average of 1.35 visits to physicians' offices each year. Fewer than 1.1% of the visits by males included an HIV test.

What are the implications for public health practice?

HIV testing of young males is important to identify undiagnosed infection and for those who test HIV-positive can serve as an entry point for HIV treatment and prevention of further HIV transmission. Opportunities exist to increase HIV testing coverage at visits to physicians' offices. Interventions such as opt-out testing, standing laboratory orders for HIV testing, and electronic medical record reminders could be implemented in physicians' offices to increase testing coverage.

Young males are disproportionately affected by HIV in the United States. HIV testing serves as an entry point for HIV prevention and care services, such as preexposure prophylaxis and antiretroviral therapy. Visits to physicians' offices are important venues for HIV testing. Young men had on average at least one visit each year, indicating that there are many opportunities for testing in these settings. A systems-level approach to increase HIV testing rates that does not rely on

individual providers could use interventions to routinize HIV testing such as electronic medical records reminders, opt-out testing policies, provider education campaigns, and removal of barriers to HIV testing (i.e., special consent forms). These interventions can help ensure that when young men do access the health care system, the opportunity for HIV testing with subsequent linkage to care and prevention services is not lost.

[1]Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention, CDC.

Corresponding author: D. Cal Ham, dham@cdc.gov, 404-639-2038.

References

1. CDC. HIV surveillance report, 2014. Vol. 26. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. http://www.cdc.gov/hiv/library/reports/surveillance/
2. CDC. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR Recomm Rep 2006;55(No. 14).
3. National Health Interview Survey, 2014. Summary health statistics table A-20a. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2014. http://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2014_SHS_Table_A-20.pdf
4. Hall HI, An Q, Tang T, et al. Prevalence of diagnosed and undiagnosed HIV infection—United States, 2008–2012. MMWR Morb Mortal Wkly Rep 2015;64:657–62.
5. National Health Interview Survey, 2014. Summary health statistics table A-17a. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2014. http://ftp.cdc.gov/pub/Health_Statistics/NCHS/NHIS/SHS/2014_SHS_Table_A-17.pdf
6. Kirzinger WK, Cohen RA, Gindi RM. Health care access and utilization among young adults aged 19–25: early release of estimates from the National Health Interview Survey, January–September 2011. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2011. http://www.cdc.gov/nchs/nhis/releases.htm
7. Cohen MS, Chen YQ, McCauley M, et al.; HPTN 052 Study Team. Prevention of HIV-1 infection with early antiretroviral therapy. N Engl J Med 2011;365:493–505. http://dx.doi.org/10.1056/NEJMoa1105243
8. Lundgren JD, Babiker AG, Gordin F, et al.; INSIGHT START Study Group. Initiation of antiretroviral therapy in early asymptomatic HIV infection. N Engl J Med 2015;373:795–807. http://dx.doi.org/10.1056/NEJMoa1506816
9. CDC. Preexposure prophylaxis for the prevention of HIV infection in the United States—2014 clinical practice guideline. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. http://www.cdc.gov/hiv/pdf/prepguidelines2014.pdf
10. NAMCS documentation 2010. Hyattsville, MD: US Department of Health and Human Services, CDC, National Center for Health Statistics; 2010. ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NAMCS/

State and Local Comprehensive Smoke-Free Laws for Worksites, Restaurants, and Bars — United States, 2015

Michael A. Tynan[1]; Carissa Baker Holmes, MPH[1]; Gabbi Promoff, MA[1]; Cynthia Hallett, MPH[2]; Maggie Hopkins[2]; Bronson Frick[2]

Exposure to secondhand smoke from burning tobacco products causes stroke, lung cancer, and coronary heart disease in adults (1,2). Children who are exposed to secondhand smoke are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth (1,2). Secondhand smoke exposure contributes to approximately 41,000 deaths among nonsmoking adults and 400 deaths in infants each year (2). This report updates a previous CDC report that evaluated state smoke-free laws in effect from 2000–2010 (3), and estimates the proportion of the population protected by comprehensive smoke-free laws. The number of states, including the District of Columbia (DC), with comprehensive smoke-free laws (statutes that prohibit smoking in indoor areas of worksites, restaurants, and bars) increased from zero in 2000 to 26 in 2010 and 27 in 2015. The percentage of the U.S. population that is protected increased from 2.72% in 2000 to 47.8% in 2010 and 49.6% in 2015. Regional disparities remain in the proportions of state populations covered by state or local comprehensive smoke-free policies, as no state in the southeast has a state comprehensive law. In addition, nine of the 24 states that lack state comprehensive smoke-free laws also lack any local comprehensive smoke-free laws. Opportunities exist to accelerate the adoption of smoke-free laws in states that lack local comprehensive smoke-free laws, including those in the south, to protect nonsmokers from the harmful effects of secondhand smoke exposure.

CDC assessed laws that completely prohibit smoking in all indoor areas of private-sector worksites, restaurants, and bars. These three venues were selected because they are a major source of secondhand smoke exposure for nonsmoking employees and the public (1–3). CDC considers a smoke-free law to be comprehensive if it prohibits smoking in indoor areas of all of these three venues. Some states and communities have enacted laws with less stringent smoking restrictions (e.g., provisions restricting smoking to designated areas or to separately ventilated areas); however, these laws do not eliminate secondhand smoke exposure (1).

Data on state smoke-free policies were obtained from CDC's State Tobacco Activities Tracking and Evaluation (STATE) System database.* State legislation is collected quarterly from an online legal research database of state laws and is analyzed, coded, and entered into the STATE System. Data on local smoking restrictions and the percentage of the population covered were obtained from the American Nonsmokers' Rights Foundation (ANRF) U.S. Tobacco Control Laws Database.† This database categorizes various types of U.S. municipal and county laws relating to tobacco, including smoking restrictions. Laws included in the database are identified through various means, including systematic scanning of tobacco control publications, websites, and e-mail discussion lists and through partnerships with the National Association of County and City Health Officials and the National Association of Local Boards of Health. The number of states with comprehensive smoke-free laws during 2000–2015 was assessed. The percentage of state populations with local comprehensive smoke-free laws and the percentage of the U.S. population that lives in a state or community with a comprehensive smoke-free law was calculated using 2007 U.S. Census data.
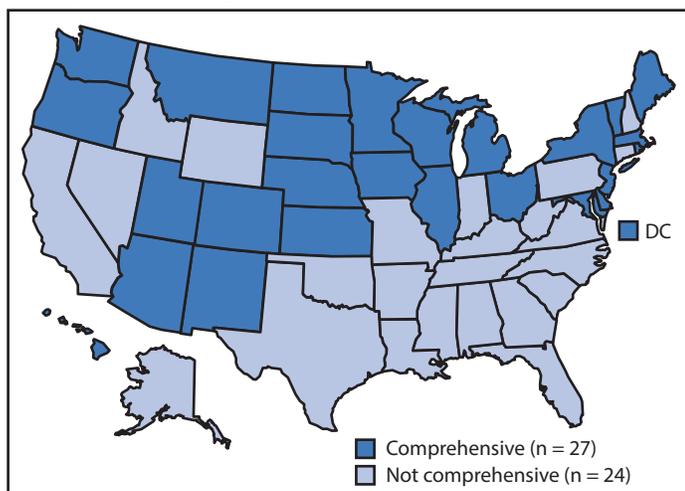
The number of states (including DC) with comprehensive smoke-free laws in effect increased from zero on December 31, 2000 to 26 on December 31, 2010 and 27 on December 31, 2015 (Figure). During 2011–2015, only North Dakota implemented a comprehensive smoke-free law. Among the 24 states that lack a comprehensive smoke-free law, five prohibit smoking in two of three venues; five prohibit smoking in one venue; eight allow smoking in ventilated or designated smoking areas; and six lack any statewide smoking restrictions (Table 1).

In some states without statewide comprehensive smoke-free laws, substantial progress has been made in adopting comprehensive smoke-free laws at the local level (Table 2). For example, although West Virginia has no statewide smoke-free law, local laws that prohibit smoking in worksites, restaurants, and bars provide protection for 60.1% of West Virginia's population. Between one fourth and one third of a state's population is protected through local comprehensive smoke-free laws in other states, such as Texas (36.6%), South Carolina (31.8%), Kentucky (31.4%), and Mississippi (24.2%). Overall, 49.6% of the U.S. population was protected by state or local comprehensive smoke-free laws as of December 31, 2015.

---

* http://www.cdc.gov/statesystem.

† http://www.no-smoke.org/pdf/SummaryUSPopList.pdf and http://www.no-smoke.org/pdf/percentstatepops.pdf.

FIGURE. Statewide comprehensive* smoke-free air laws — United States,[†] December 31, 2015[§]

Legend:
- ■ Comprehensive (n = 27)
- ▫ Not comprehensive (n = 24)
- ■ DC

Source: CDC's State Tobacco Activities Tracking and Evaluation System (http://apps.nccd.cdc.gov/statesystem/Default/Default.aspx).
Abbreviation: DC = District of Columbia.
* Comprehensive = prohibited in worksites, restaurants, and bars.
[†] Includes District of Columbia.
[§] California law became effective June 9, 2016.

TABLE 1. State smoking restrictions* for worksites, restaurants, and bars in 24 states that do not have a comprehensive smoke-free law[†] — United States, December 31, 2015

State	Locations of smoking restrictions		
	Worksites	Restaurants	Bars
Smoke-free in two locations (n = 5)			
Florida	Smoke-free	Smoke-free	—
Indiana	Smoke-free	Smoke-free	—
Louisiana	Smoke-free	Smoke-free	—
Nevada	Smoke-free	Smoke-free	—
North Carolina	—	Smoke-free	Smoke-free
Smoke-free in one location (n = 5)			
Arkansas	Smoke-free	Designated[§]	—
Idaho	Designated	Smoke-free	—
New Hampshire	Designated	Smoke-free	—
Pennsylvania	Smoke-free	Ventilated	—
Tennessee	Smoke-free	Designated[§]	—
Other restrictions (n = 8)			
Alabama	Designated	—	—
Alaska	—	Designated	—
California[¶]	Ventilated	Ventilated	Ventilated
Connecticut	Ventilated	Ventilated	Ventilated
Georgia	Designated	Designated[§]	Designated[§]
Missouri	Designated	Designated	Designated
Oklahoma	Designated	Ventilated	—
Virginia	—	Ventilated	Ventilated
No smoking restrictions (n = 6)			
Kentucky	—	—	—
Mississippi	—	—	—
South Carolina	—	—	—
Texas	—	—	—
West Virginia	—	—	—
Wyoming	—	—	—

Source: State Tobacco Activities Tracking and Evaluation System, Office on Smoking and Health, CDC.
* Smoke-free = no smoking allowed; designated = designated smoking areas required or allowed; ventilated = designated smoking areas allowed if separately ventilated.
[†] States with comprehensive smoke-free laws are those that require worksites, restaurants, and bars to be smoke-free.
[§] State law allows smoking in venues that prohibit minors.
[¶] Data reported as of December 31, 2015. However, California adopted a smoke-free law in May 2016, that became effective June 9, 2016, and eliminates exemptions that allow smoking in certain ventilated areas of locations; therefore, as of June 9, 2016, California is considered to have a comprehensive smoke-free law.

Nine of 24 states without comprehensive statewide smoke-free laws also lack any local comprehensive smoke-free laws; eight of the nine (Connecticut, Florida, New Hampshire, North Carolina, Oklahoma, Pennsylvania, Tennessee, and Virginia) have preemption statutes that prohibit adoption of local smoke-free laws (Table 2) (4).[§] Nevada is the only one of these nine states where local comprehensive smoke-free laws are allowed, yet none have been adopted. Although local smoke-free laws are permitted in Georgia, Arkansas, and Wyoming, relatively few local comprehensive laws exist in those states.

Discussion

This report marks the 10-year anniversary of the 2006 U.S. Surgeon General's report, *The Health Consequences of Involuntary Exposure to Tobacco Smoke,* which concluded that there is no risk-free level of secondhand smoke exposure (1). The report also found that completely eliminating smoking indoors was the only way to protect persons from involuntary exposure to secondhand smoke, and that separating smokers from nonsmokers, cleaning the air, and ventilating buildings cannot eliminate secondhand smoke exposure (1). Smoke-free laws have been shown to substantially improve indoor air quality, reduce secondhand smoke exposure, change social norms regarding the acceptability of smoking, prevent youth and

young adult smoking initiation, and reduce heart attack and asthma hospitalizations among nonsmokers (1,2). Smoke-free laws aid smokers as well; for example, smoke-free laws increase smokers' efforts to quit smoking (1,2). Although considerable progress has been made in adopting comprehensive smoke-free laws during the past two decades (3), as of December 31, 2015, half the U.S. population remained unprotected by a comprehensive smoke-free law at the state or local level.

In May 2016, California adopted a law eliminating exemptions in the state smoke-free law.[¶] Those exemptions

[§] In addition, although they lack any local smoke-free ordinances, the following states have statewide comprehensive smoke-free laws in effect, which could impact local enforcement of smoke-free provisions: Maine, Michigan, South Dakota, and Vermont.

[¶] California enacted a law eliminating exemptions in the state smoke-free law, effective June 9, 2016. http://www.leginfo.ca.gov/pub/15-16/bill/asm/ab_0001-0050/abx2_7_bill_20160504_chaptered.pdf.

TABLE 2. Percent of state population with local comprehensive smoke-free laws* for 24 states that do not have a statewide comprehensive smoke-free law — United States, December 31, 2015

State	State population with local comprehensive smoke-free laws (%)
West Virginia	60.1
Alaska	43.9
Texas	36.6
South Carolina	31.8
Kentucky	31.4
California	28.1
Indiana	26.8
Mississippi	24.2
Missouri	21.9
Idaho	13.6
Alabama	12.7
Louisiana	11.2
Georgia	2.4
Arkansas	0.5
Wyoming	0.3
Connecticut[†]	0.0
Florida[†]	0.0
Nevada	0.0
New Hampshire[†]	0.0
North Carolina[†]	0.0
Oklahoma[†]	0.0
Pennsylvania[†]	0.0
Tennessee[†]	0.0
Virginia[†]	0.0

Sources: CDC and American Nonsmokers' Rights Foundation.
* Comprehensive smoke-free laws are those that require worksites, restaurants, and bars to be smoke-free.
[†] State law preempts local communities from enacting smoke-free laws.

Summary

What is already known about this topic?

In 2006, the Surgeon General reported that there is no level of risk-free exposure to secondhand smoke. The only effective way to eliminate involuntary exposure to secondhand smoke is to eliminate smoking completely in all indoor areas.

What is added by this report?

The number of states that enacted statewide comprehensive smoke-free policies (i.e., no smoking allowed in worksites, restaurants, and bars) increased from zero in 2000 to 27 in 2015. Overall, nearly 50% of the U.S. population is protected by smoke-free laws. Although regional disparities remain, such as in the southeastern United States, substantive progress has been made adopting comprehensive smoke-free laws at the local level in some states in those areas.

What are the implications for public health practice?

Continued efforts to promote implementation of statewide and local comprehensive smoke-free laws are critical to protect nonsmokers from this preventable health hazard in the places they live, work, and gather.

previously precluded CDC from considering California's law as comprehensive. When California's law became effective on June 9, 2016, the number of states that have a comprehensive smoke-free law increased to 28. With this change in California's smoke-free status, it is estimated the proportion of the U.S. population protected by a comprehensive state or local law increased from 49.6% in December 2015 to nearly 60% in June 2016.

Exposure to secondhand smoke is not limited to private-sector worksites, restaurants, and bars. For example, casino workers are heavily exposed to secondhand smoke at work (5). Casinos are also not categorized as a private workplace in smoke-free tracking systems because they are sometimes excluded from laws and tracked as their own category (similar to restaurants and bars). In casinos where smoking is permitted, studies have consistently found substantial levels of secondhand smoke including in designated no-smoking areas of such casinos (5). CDC conducted a health hazard evaluation in three Las Vegas, Nevada, casinos, found nicotine and chemicals from secondhand smoke in the air, and determined that carcinogens from secondhand smoke were absorbed into workers' bodies (6,7). Evidence from that evaluation led to a recommendation that smoking should be prohibited in these

casinos (7). Further policy surveillance should be conducted to evaluate which states and communities prohibit smoking in casinos and other state-regulated gaming facilities, such as racetracks and card rooms.

Smoke-free laws can also be extended to other types of tobacco products, such as electronic nicotine delivery systems (ENDS), which include e-cigarettes (8). It is important for ENDS to be included in state and local smoke-free laws because indoor use of ENDS can expose nonusers to aerosolized nicotine and other harmful constituents, complicate smoke-free enforcement, and impact the social acceptability of tobacco use (2,8). Currently, approximately 350 communities and seven states (California,** Delaware, Hawaii, New Jersey, North Dakota, Oregon, and Utah) prohibit the use of ENDS in private worksites, restaurants, and bars.[††]

The findings in this report are subject to at least two limitations. First, the STATE System and ANRF only capture information on certain types of smoking restrictions, primarily laws and executive orders; therefore, this report does not include information on state or local administrative laws, regulations, or implementation guidelines. As a result, the manner in which a smoking statute is implemented or enforced in practice might differ from the way it is coded by CDC or ANRF. Second, because statewide smoke-free law information was based on data collected by CDC, and local smoke-free information is based on

---

** California enacted a law that prohibits ENDS use, effective June 9, 2016. http://www.leginfo.ca.gov/pub/15-16/bill/sen/sb_0001-0050/sbx2_5_bill_20160504_chaptered.pdf.
[††] http://www.no-smoke.org/pdf/ecigslaws.pdf.

data collected by ANRF, differences in how laws are interpreted might occur, which could alter state and national population coverage estimates and could increase the total population covered by state comprehensive smoke-free laws. Therefore, national population estimates can be considered conservative.[§§]

Considerable progress has been made at state and local levels in the adoption of comprehensive smoke-free laws in indoor public places over the past two decades. However, even after considering the recent change in smoke-free status in California, state comprehensive smoke-free adoption progress has stalled in recent years (*9*), and no states in the southeast have a statewide comprehensive smoke-free law. Further, some states without comprehensive smoke-free laws legally prohibit local communities from adopting such laws to protect persons from secondhand smoke exposure. Persisting gaps in smoke-free protections leave large numbers of vulnerable populations exposed to secondhand smoke and could contribute to health disparities (*10*). Continued efforts to promote implementation of statewide and local comprehensive smoke-free laws are critical to protect nonsmokers from this preventable health hazard in the places they live, work, and gather.

[§§] For example, CDC considered Colorado or New Mexico to have comprehensive smoke-free laws, although ANRF does not because of certain workplace exemptions for small employers. Therefore, population coverage estimates only account for 10.1% of Colorado and 36.6% of New Mexico populations. If these states were considered to have state comprehensive smoke-free laws, it is expected that the total population covered by smoke-free laws in the United States would increase.

---

[1]Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC; [2]American Nonsmokers' Rights Foundation, Berkeley, California.

Corresponding author: Michael A. Tynan, mtynan@cdc.gov, 404-498-1202.

References

1. US Department of Health and Human Services. The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2006. http://www.surgeongeneral.gov/library/secondhandsmoke/report
2. US Department of Health and Human Services. The health consequences of smoking—50 years of progress. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. http://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/index.htm
3. CDC. State smoke-free laws for worksites, restaurants, and bars—United States, 2000–2010. MMWR Morb Mortal Wkly Rep 2010;60:472–5.
4. CDC. State preemption of local tobacco control policies restricting smoking, advertising, and youth access—United States, 2000–2010. MMWR Morb Mortal Wkly Rep 2011;60:1124–7.
5. Babb S, McNeil C, Kruger J, Tynan MA. Secondhand smoke and smoking restrictions in casinos: a review of the evidence. Tob Control 2015;24:11–7. http://dx.doi.org/10.1136/tobaccocontrol-2013-051368
6. CDC. Health hazard evaluation report: environmental and biological assessment of environmental tobacco smoke exposure among casino dealers, Las Vegas, Nevada. Cincinnati, OH: US Department of Health and Human Services, CDC, National Institute for Occupational Safety and Health; 2009.
7. Achutan C, West C, Mueller C, Bernert JT, Bernard B. Environmental tobacco smoke exposure among casino dealers. J Occup Environ Med 2011;53:346–51. http://dx.doi.org/10.1097/JOM.0b013e318212235f
8. Marynak K, Holmes CB, King BA, Promoff G, Bunnell R, McAfee T. State laws prohibiting sales to minors and indoor use of electronic nicotine delivery systems—United States, November 2014. MMWR Morb Mortal Wkly Rep 2014;63:1145–50.
9. Holmes CB, King BA, Babb SD. Stuck in neutral: stalled progress in statewide comprehensive smoke-free laws and cigarette excise taxes, United States, 2000–2014. Prev Chronic Dis 2016;13:E80. http://dx.doi.org/10.5888/pcd13.150409
10. Huang J, King BA, Babb SD, Xu X, Hallett C, Hopkins M. Sociodemographic disparities in local smoke-free law coverage in 10 states. Am J Public Health 2015;105:1806–13. http://dx.doi.org/10.2105/AJPH.2015.302655

Screening of Blood Donations for Zika Virus Infection — Puerto Rico, April 3–June 11, 2016

Matthew J. Kuehnert[1]; Sridhar V. Basavaraju[1]; Robin R. Moseley[1]; Lisa L. Pate[2]; Susan A. Galel[2]; Phillip C. Williamson[3]; Michael P. Busch[4]; Jose O. Alsina[5]; Consuelo Climent-Peris[6]; Peter W. Marks[7]; Jay S. Epstein[7]; Hira L. Nakhasi[7]; J. Peyton Hobson[7]; David A. Leiby[7]; Pradip N. Akolkar[7]; Lyle R. Petersen[1]; Brenda Rivera-Garcia[8]

On June 17, 2016, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Transfusion-transmitted infections have been documented for several arboviruses, including West Nile and dengue viruses (*1*). Zika virus, a flavivirus transmitted primarily by *Aedes aegypti* mosquitoes that has been identified as a cause of congenital microcephaly and other serious brain defects (*2*), became recognized as a potential threat to blood safety after reports from a 2013–2014 outbreak in French Polynesia. Blood safety concerns were based on very high infection incidence in the population at large during epidemics, the high percentage of persons with asymptomatic infection, the high proportion of blood donations with evidence of Zika virus nucleic acid upon retrospective testing, and an estimated 7–10-day period of viremia (*3*). At least one instance of transfusion transmission of Zika virus has been documented in Brazil after the virus emerged there, likely in 2014 (*4*). Rapid epidemic spread spread has followed to other areas of the Americas, including Puerto Rico.

In February 2016, the Food and Drug Administration (FDA) issued recommendations for donor screening, donor deferral, and product management to reduce the risk for transfusion-transmitted Zika virus in the United States and its territories (*5*). In addition to behavioral- and health-risk questionnaires for blood donors in all areas, FDA recommends deferrals for donors in unaffected areas who recently lived in or visited an area with active mosquito-borne transmission of Zika virus. For establishments collecting blood in areas with active, local mosquito-borne transmission, such as Puerto Rico and other U.S. territories, the recommendations include discontinuing local blood collections and importing blood units from unaffected areas of the continental United States unless one of the following is implemented: 1) Zika virus screening of locally collected blood donations or 2) treatment of locally collected units with pathogen-reduction technology (FDA-approved only for plasma and apheresis platelets). In Puerto Rico, interventions initially were limited to importation of blood units from unaffected U.S. areas and to treatment of plasma and apheresis platelets with pathogen-reduction technology; no Zika virus screening test was available. On April 3, 2016, Zika virus screening of locally collected blood donations was implemented using a newly developed nucleic acid test (NAT) (cobas Zika, Roche Molecular Systems, Inc., Pleasanton, California)
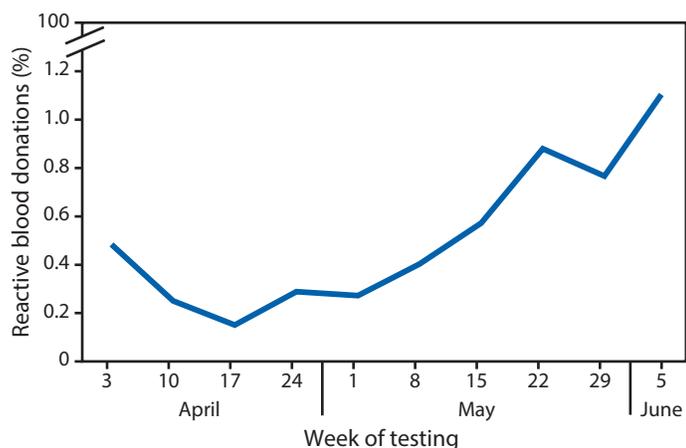
authorized by FDA under an investigational new drug application (IND) (*6*). As part of the IND, plasma samples from blood donors are screened individually, and specimens with reactive results are subjected to additional testing including an alternate NAT and immunoglobulin M serology. A blood donation with an initial reactive result by NAT is regarded as a presumptive viremic donor, indicating an infected donor, and is interdicted and removed from the blood supply.

During April 3–June 11, 2016, a total of 68 (0.5%) presumptive viremic donors were identified from 12,777 donations tested. The highest weekly incidence was 1.1% for the latest week of reporting, June 5–June 11, and incidence has been increasing over time (Figure).

Although the blood donor population of Puerto Rico is not intended to be statistically representative of the general population, the increasing prevalence of Zika virus nucleic acid among blood donors likely reflects an overall increase in infection incidence in the population at large. Based on data from previous outbreaks caused by arboviruses transmitted by *Aedes aegypti*, the high incidence often associated with these outbreaks can result in a substantial proportion of the population becoming infected. For example, chikungunya virus was introduced into Puerto Rico in 2014. Retrospective screening for chikungunya virus nucleic acid was performed on blood donations collected during June–December 2014, and the estimated detectable viremia was 0.65%, with a peak of 2.1% in October. Testing for chikungunya virus immunoglobulin M antibody of retained individual blood donation samples obtained during March 1–9, 2015, suggested that nearly 25% of the Puerto Rico population became infected during the previous year's epidemic (*7*). Because viremia is only present days after acute infection, immunoglobulin M antibody can provide a more precise estimate of the burden of recent infection. The 2014–2015 chikungunya virus data suggest that detection of viremia in a relatively small proportion of blood donors each week can reflect a substantial proportion of the general population becoming infected during the course of an epidemic season.

Currently, no medication or vaccine is available to treat or prevent Zika virus disease. Prevention relies on avoidance of mosquito bites, elimination of mosquito breeding sites, community mosquito control, and taking measures to prevent sexual transmission. Screening of the U.S. blood supply using

FIGURE. Proportion of screened blood donations reactive for Zika virus infection, by week of testing — Puerto Rico, April 3–June 11, 2016

References

1. Petersen LR, Busch MP. Transfusion-transmitted arboviruses. Vox Sang 2010;98:495–503. http://dx.doi.org/10.1111/j.1423-0410.2009.01286.x
2. Rasmussen SA, Jamieson DJ, Honein MA, Petersen LR. Zika virus and birth defects—reviewing the evidence for causality. N Engl J Med 2016;374:1981–7. http://dx.doi.org/10.1056/NEJMsr1604338
3. Lanteri MC, Kleinman SH, Glynn SA, et al. Zika virus: a new threat to the safety of the blood supply with worldwide impact and implications. Transfusion 2016. Epub June 9, 2016. http://dx.doi.org/10.1111/trf.13677
4. Barjas-Castro ML, Angerami R, Cunha M, et al. Probable transfusion-transmitted Zika virus in Brazil. Transfusion 2016. In press.
5. Food and Drug Administration. Recommendations for donor screening, deferral, and product management to reduce the risk of transfusion-transmission of Zika virus. Silver Spring, MD: US Department of Health and Human Services, Food and Drug Administration; 2016. http://www.fda.gov/downloads/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/Guidances/Blood/UCM486360.pdf
6. Food and Drug Administration. FDA allows use of investigational test to screen blood donations for Zika virus. Silver Spring, MD: US Department of Health and Human Services, Food and Drug Administration; 2016. http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm493081.htm
7. Simmons G, Brès V, Lu K, et al. High incidence of chikungunya virus frequency of viremic blood donations during epidemic, Puerto Rico, USA, 2014. Emerg Infect Dis 2016;22:1221–8. Epub April 2016. http:// dx.doi.org/10.3201/eid2207.160116

nucleic acid tests has markedly reduced the risk for transfusion transmission for multiple pathogens, including for West Nile virus after it was associated with arboviral epidemics in the United States. Measures to protect the blood supply from Zika virus, including donor deferrals, laboratory screening, and pathogen reduction technology, are expected to similarly reduce the risk for transfusion transmission.

[1]Zika virus response blood safety team, CDC; [2]Roche Molecular Systems, Inc., Pleasanton, California; [3]Creative Testing Solutions, Tempe, Arizona; [4]Blood Systems Research Institute, San Francisco, California; [5]Banco de Sangre de Servicios Mutuos, San Juan, Puerto Rico; [6]Banco de Sangre de Puerto Rico; [7]Food and Drug Administration, Silver Spring, Maryland; [8]Puerto Rico Department of Health.

Corresponding author: Matthew J. Kuehnert, eocevent281@cdc.gov, 800-232-4636.

Zika Virus Surveillance and Preparedness — New York City, 2015–2016

Christopher T. Lee, MD[1,2]; Neil M. Vora, MD[3,4]; Waheed Bajwa, PhD[5]; Lorraine Boyd, MD[6]; Scott Harper, MD[3,4]; Daniel Kass, MSPH[5]; Aileen Langston, MD[6]; Emily McGibbon, MPH[3]; Mario Merlino, MS, MPH[5]; Jennifer L. Rakeman, PhD[7]; Marisa Raphael, MPH[8]; Sally Slavinski, DVM[3]; Anthony Tran, DrPH[7]; Ricky Wong[9]; Jay K. Varma, MD[3,10]; NYC Zika Response Team

On June 21, 2016, this report was posted as an MMWR *Early Release on the* MMWR *website (http://www.cdc.gov/mmwr).*

Zika virus has rapidly spread through the World Health Organization's Region of the Americas since being identified in Brazil in early 2015. Transmitted primarily through the bite of infected *Aedes* species mosquitoes, Zika virus infection during pregnancy can cause spontaneous abortion and birth defects, including microcephaly (*1,2*). New York City (NYC) is home to a large number of persons who travel frequently to areas with active Zika virus transmission, including immigrants from these areas. In November 2015, the NYC Department of Health and Mental Hygiene (DOHMH) began developing and implementing plans for managing Zika virus and on February 1, 2016, activated its Incident Command System. During January 1–June 17, 2016, DOHMH coordinated diagnostic laboratory testing for 3,605 persons with travel-associated exposure, 182 (5.0%) of whom had confirmed Zika virus infection. Twenty (11.0%) confirmed patients were pregnant at the time of diagnosis. In addition, two cases of Zika virus-associated Guillain-Barré syndrome were diagnosed. DOHMH's response has focused on 1) identifying and diagnosing suspected cases; 2) educating the public and medical providers about Zika virus risks, transmission, and prevention strategies, particularly in areas with large populations of immigrants from areas with ongoing Zika virus transmission; 3) monitoring pregnant women with Zika virus infection and their fetuses and infants; 4) detecting local mosquito-borne transmission through both human and mosquito surveillance; and 5) modifying existing *Culex* mosquito control measures by targeting *Aedes* species of mosquitoes through the use of larvicides and adulticides.

Current Testing and Epidemiologic Surveillance for Zika Virus

Because commercial testing for Zika virus only recently became available, DOHMH coordinated diagnostic testing with health care providers and public health laboratories, particularly DOHMH's Public Health Laboratory and the New York State Department of Health Wadsworth Center. The testing process has varied with the evolution of CDC guidelines regarding whom should be tested and as local capacity for testing expanded. Initially, medical epidemiologists screened all health care provider requests for Zika virus testing (based on

CDC testing recommendations) for the presence of compatible symptoms and travel histories before authorizing testing (*3*).

On February 4, 2016, New York state testing criteria* were expanded to include asymptomatic pregnant women who traveled to an affected area at any time during pregnancy. This resulted in an increase in the number of patients for whom specimens were sent for reverse transcription–polymerase chain reaction (RT-PCR) and serology testing from a median of seven per day during January 21–February 3 to 52 per day during February 4–February 17. As a result of the increased volume of requests, DOHMH withdrew the requirement for medical epidemiologist authorization on February 12 and began permitting providers to submit specimens directly to the Public Health Laboratory. However, because of subsequent receipt of a large number of specimens that were mislabeled, mishandled, or improperly processed; had incomplete or missing laboratory requisition forms; or were obtained from patients who did not meet testing criteria, the pre-authorization requirement was reinstituted on March 21.

To manage the increased volume of testing requests and ensure adequate specimen processing, DOHMH rapidly established a Zika Testing Call Center using personnel, equipment, software, and physical space that had been used for the NYC Ebola active monitoring program (*4*). The call center triages calls and approves testing requests from providers, completes and faxes laboratory requisition forms to providers to include with the specimen, and arranges, when necessary, transportation of specimens to the Public Health Laboratory via a commercial courier.

During January 1–June 17, 2016, DOHMH coordinated laboratory diagnostic testing for 3,605 persons at the Public Health Laboratory, Wadsworth Center, and CDC. Among all persons tested, 3,319 (92.1%) had a Zika RT-PCR test, and 3,305 (91.7%) had Zika serology testing, which included immunoglobulin M (IgM) antibody capture enzyme–linked immunosorbent assay (MAC-ELISA) and, for some patients, plaque reduction neutralization testing (PRNT). A total of 182 (5.0%) confirmed cases of Zika virus infection were identified, based on positive results of urine or serum RT-PCR or serologic[†] testing. The majority of cases were confirmed by

---

* https://www.health.ny.gov/diseases/zika_virus/docs/2016-02-4_notification.pdf.
† Positive result from IgM antibody capture enzyme linked immunosorbent assay (MAC-ELISA) with confirmatory plaque reduction neutralization test (PRNT).

urine RT-PCR results (Table). Among all confirmed cases, 20 patients (11.0%) were pregnant at the time of diagnosis, nine of whom had symptoms compatible with Zika virus disease. Two cases of Zika virus–associated Guillain-Barré syndrome were diagnosed. Based on PRNT, 27 additional patients (0.7% of persons tested) were found to have unspecified recent flavivirus infection. All confirmed cases occurred in persons who had been in an area with ongoing Zika virus transmission.

To analyze possible undertesting based on residence, on March 1, DOHMH used U.S. Census American Community Survey, 2010–2014[§] data to map by census tract 1) the number of persons living in NYC who were born in Mexico, the Caribbean, Central America, or countries in South America with active transmission of Zika virus (Figure 1), because these persons might travel frequently to areas with active Zika virus transmission, and 2) Zika virus testing rates among women aged 15–44 years during January–February 2016 (Figure 2). This mapping found little correspondence between census tracts with high rates of Zika virus testing and census tracts with high numbers of immigrants from countries with ongoing Zika virus transmission. The highest testing rates among women aged 15–44 years (104 per 100,000 population) occurred in census tracts in the lowest quartile of immigrants from these countries; whereas, the lowest rates of testing (29 per 100,000) occurred in census tracts in the highest quartile of immigrants from countries with ongoing Zika virus transmission. To address this apparent demographic disparity in testing, DOHMH personnel distributed educational materials in English, Spanish, and 10 other languages to practices of 170 health care providers in areas with large immigrant populations. To educate the public, DOHMH responded to dozens of media inquiries, including 25 one-on-one interviews with Spanish language media; distributed approximately 10,000 Zika testing informational cards throughout the city and approximately 6,000 travel warning flyers for pregnant women; and conducted approximately 100 presentations at social, community, and religious gatherings throughout the city regarding prevention of mosquito bites. During April–May 2016, the testing rate among women aged 15–44 years increased in census tracts with the highest quartile of immigrants (65 per 100,000) and decreased in census tracts with the lowest quartile of immigrants (40 per 100,000).

Pregnant women with confirmed Zika virus infection or inconclusive test results are followed for the duration of pregnancy by DOHMH medical epidemiologists in collaboration with their providers, and infants born to these women are periodically followed by DOHMH for the first 12 months of life. In mid-April, DOHMH convened a meeting with the City's nine Regional Perinatal Centers to review DOHMH interim

[§] https://www.census.gov/programs-surveys/acs/data.html.

TABLE. Laboratory test results for 182 confirmed cases of Zika virus disease, by type of test — New York City, January 1–June 17, 2016

Laboratory test	Confirmed cases No. (%)
RT-PCR (total)	178 (97.8)
Urine and serum RT-PCR	25 (13.7)
Urine RT-PCR only	117 (64.3)
Serum RT-PCR only	36 (19.8)
Serology only*	4 (2.2)

Abbreviation: RT-PCR: reverse transcription–polymerase chain reaction.
* Positive result from immunoglobulin M antibody capture enzyme-linked immunosorbent assay (MAC-ELISA) with confirmatory plaque reduction neutralization test (PRNT).

guidance and solicit input on improving Zika preparedness and response in NYC.

Surveillance to Detect Local Transmission

During peak mosquito-biting season in NYC (July–September), DOHMH will implement a sentinel surveillance system to detect human cases of local mosquito-borne transmission of Zika virus. DOHMH has selected 21 primary care clinics and emergency departments as sentinel sites across all five NYC boroughs, prioritizing areas with large populations of immigrants from countries with ongoing Zika virus transmission and areas where there have been previous travel-associated cases of other mosquito-borne infections, including chikungunya and dengue. A suspected case of locally acquired Zika virus disease will be defined as an illness including fever, maculopapular rash, and either arthralgia or conjunctivitis in a person aged >5 years with no history of travel to Zika-affected areas during the preceding 4 weeks. Suspected cases will be reported to DOHMH, and urine will be obtained for RT-PCR testing. A confirmed Zika virus disease case from a sentinel site will trigger an epidemiologic investigation to rule out other sources of exposure (e.g., sexual transmission or blood donation) and confirm local transmission.

Additional methods for detecting local transmission include asking persons with confirmed and suspected cases if any household members who have not traveled reported similar illness, and relying on clinicians to recognize and report clusters of persons with Zika-like illness, but no travel to areas with known Zika virus transmission. Confirmation of vector-borne local transmission would also trigger an environmental response, including enhanced mosquito surveillance and directed mosquito source control strategies to eliminate mosquito breeding sites.

DOHMH expanded its existing West Nile virus mosquito surveillance program, which focuses on *Culex* species mosquitoes, to include *Aedes* sp. mosquitoes. DOHMH added 60 traps optimized for *Aedes* collection, thereby doubling the number of trap sites. Placement of the new traps is based on

historical location of *Aedes* mosquitoes and natural and man-made environment features to enable interpolation of *Aedes* populations in areas without traps. Mosquitoes are collected, identified by species, and tested for Zika virus by RT-PCR at the Public Health Laboratory.

Enhancement of Mosquito Control

Because of the known potential for *Aedes* mosquitoes to transmit Zika virus among humans, the anticipated large number of imported human cases into NYC, and the temporal lag between viremia and disease diagnosis in an infected patient, DOHMH is augmenting its mosquito control program, specifically source control, as well as larviciding and adult mosquito control. Whereas the West Nile virus control program relies on location and population density of West Nile virus–infected *Culex* sp. mosquitoes to guide mosquito control, the Zika virus control program treats *Aedes* sp. mosquitoes as a public health hazard regardless of infection status, with the application of larvicides and adulticides calibrated to mosquito surveillance data.

Aerial application of larvicide over unpopulated marshland and freshwater wetlands began during the week of May 9. Application of larvicide to catch basins will occur four times during mosquito season. As *Aedes* sp. mosquitoes reach a significant number (average of 25 mosquitoes per trap-day, subject to reconsideration based on surveillance findings), DOHMH will conduct truck-based, ultra-low volume spraying of biorational larvicide¶ and chemical adulticide in residential areas. Inspectors from DOHMH will identify potential mosquito breeding sites in the city and work closely with communities to increase awareness of the need to eliminate pools of standing water in residential areas.

Discussion

In the United States, Zika virus disease cases have occurred after travel to affected areas and through sexual transmission (5,6). Areas with imported cases of Zika virus disease and local circulation of *Aedes* sp. mosquitoes are at increased risk for local mosquito-borne transmission of Zika virus. Although *Aedes aegypti* mosquitoes have never been documented in NYC, CDC estimates a potential range north of NYC, and a related species, *Ae. albopictus* is present in NYC and is a potentially competent Zika virus vector (7).

Activation of the Incident Command System in NYC allowed rapid mobilization of 328 pre-designated DOHMH

¶ Biorational pesticides are distinguished from conventional pesticides by the Environmental Protection Agency as those with a nontoxic mode of action, low use volume, target species specificity, and natural occurrence. Additional information is available at http://nepis.epa.gov/Exe/ZyPDF.cgi/9101DPEI.PDF?Dockey=9101DPEI.PDF.

Summary

What is already known about this topic?

Zika virus emerged in the Region of the Americas in early 2015, and imported cases have been detected in the United States, including New York City (NYC).

What is added by this report?

As of June 17, 2016, a total of 3,605 patients had been tested for Zika virus in NYC, 182 (5.0%) of which have been confirmed cases of Zika infection; 20 cases were in women who were pregnant at the time of diagnosis, and two cases of Guillain-Barré syndrome were diagnosed. The majority of cases were diagnosed by urine reverse transcription–polymerase chain reaction. The presence of a potentially competent *Aedes* mosquito vector in NYC necessitates a health department–wide response to identify and respond to potential local transmission of Zika virus, including sentinel surveillance and enhanced mosquito control.

What are the implications for public health practice?

In NYC, pregnant women and persons with a Zika-like illness who have been in Zika virus-affected areas should be tested for Zika virus infection. Providers should offer up-to-date information on the risk for birth defects so that pregnant patients can make informed decisions about pregnancy options. Preparedness for local transmission of Zika virus involves a robust emergency response infrastructure, targeted public health messaging, human and environmental surveillance strategies, and an integrated epidemiologic, clinical, and environmental response.

personnel to enhance human and mosquito surveillance, public and provider awareness, and vector control. All DOHMH employees have emergency response roles officially included in their job descriptions as a mandatory condition of employment, and they undergo training at regular intervals for specific Incident Command System roles regardless of the type of emergency. DOHMH's Zika response relied upon emergency capacities first developed in 1999 in response to West Nile virus and notably expanded in response to the 2014–2015 Ebola emergency, which involved epidemiologists, microbiologists, community outreach workers, emergency preparedness specialists, and equipment and supplies supported by city, state, and federal funds.

DOHMH has worked directly with the public and health care providers to increase awareness about Zika virus risks, prevention strategies, and testing recommendations. Health care providers should offer up-to-date information on the risk for birth defects so that pregnant patients can make informed decisions about pregnancy options. DOHMH has contributed substantial resources to increasing access to testing for persons at risk for Zika virus infection by establishing a Zika Testing Call Center and using geospatial analysis to identify neighborhoods with possible undertesting, based on

FIGURE 1. Number of persons born in Mexico, the Caribbean, Central America, and countries in South America with active Zika virus transmission, by U.S. Census tract of residence — New York City, January–February 2016
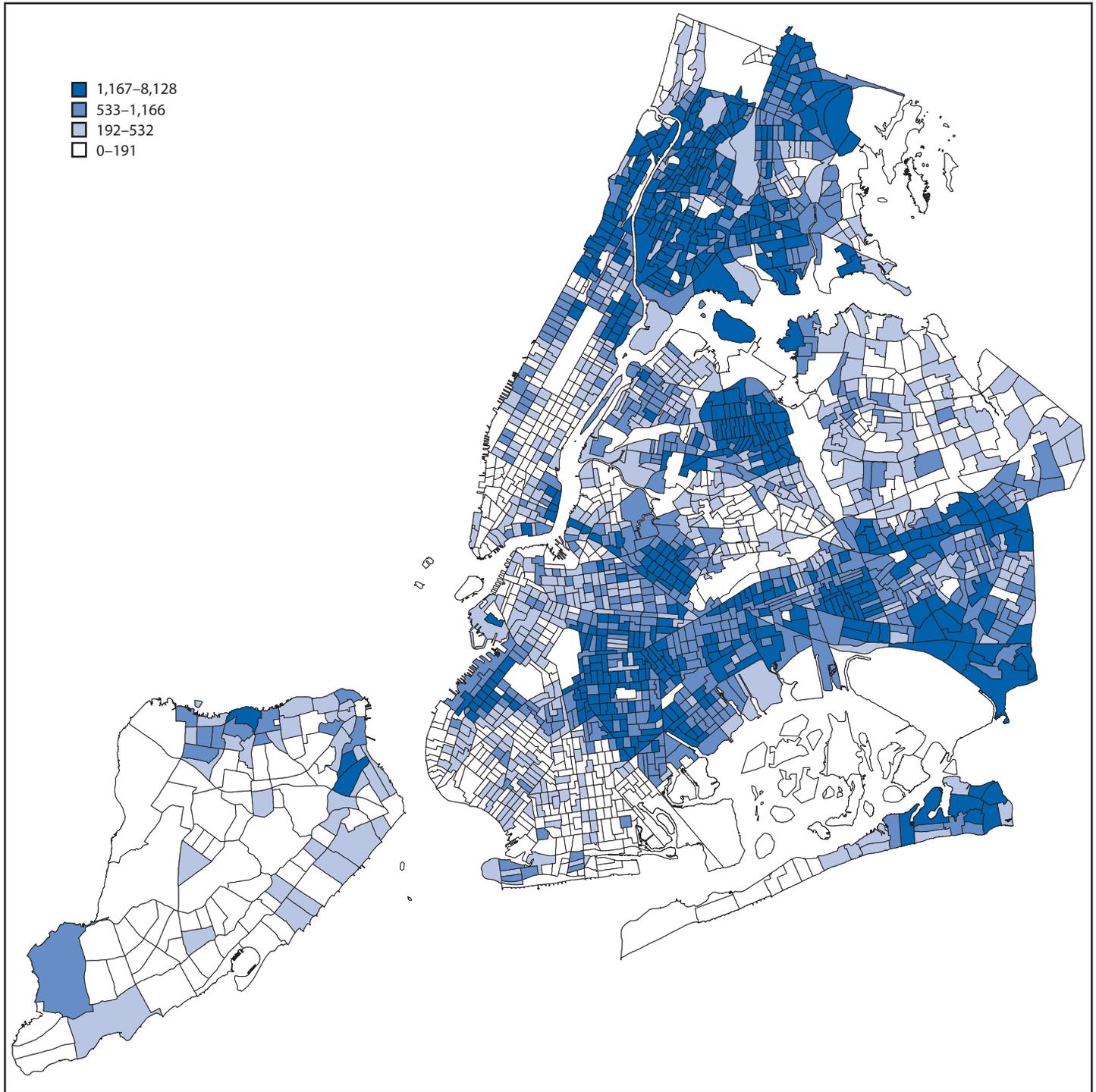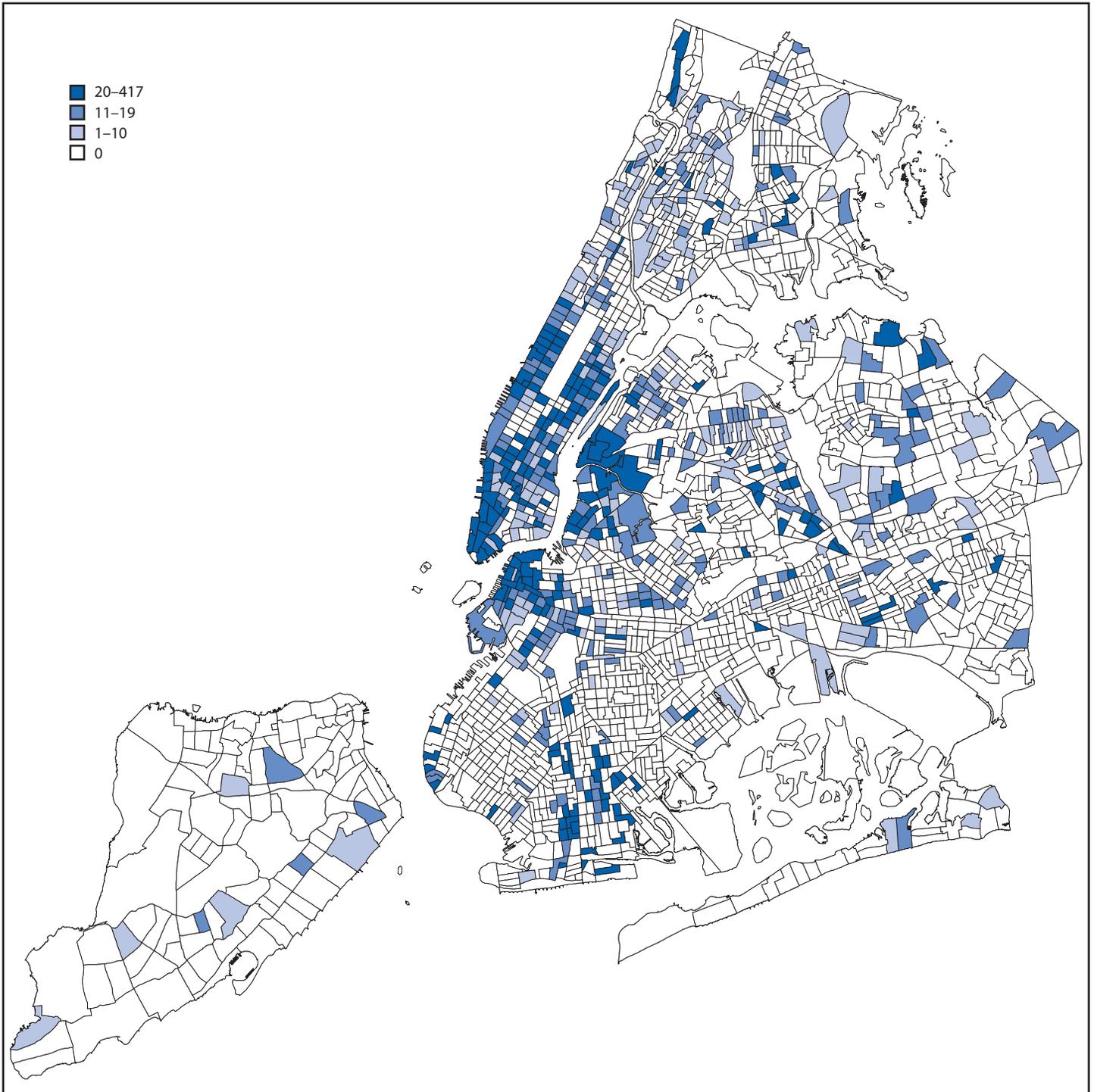
FIGURE 2. Zika virus testing rate per 10,000 among females aged 15–44 years, by U.S. Census tract of residence — New York City, January–February 2016

demographic population characteristics. NYC has invested substantially in expanding Zika virus testing capacity, allowing the Public Health Laboratory to receive and process several hundred specimens each day; however, capacity for testing might be insufficient to meet demand if sustained Zika virus transmission in the United States occurs. In the event of local mosquito-borne transmission, public health laboratory resources might need to prioritize testing among certain groups, including pregnant women and patients with Guillain-Barré syndrome. In the event that testing demand exceeds capacity and NYC DOHMH is unable to return test results within 2 weeks, NYC will collaborate with Wadsworth Center and CDC to facilitate testing. Public health agency collaboration with external partners might expedite availability of clinical nucleic acid and serologic testing at commercial clinical labs.

With the exception of suspected cases of sexually transmitted or congenital Zika virus infection, testing in NYC is currently limited to persons who have been to an area with ongoing Zika virus transmission, which precludes detection of cases acquired from a local mosquito bite. Implementation by DOHMH of sentinel surveillance for Zika virus infection in persons with a clinically compatible illness and no history of travel to an area with ongoing Zika virus transmission will facilitate rapid identification of locally transmitted Zika virus disease. Despite the absence of local mosquito-borne transmission or Zika virus–infected mosquitoes currently, expanded source control and applied larvicides and adulticides for *Aedes* mosquitoes might reduce the likelihood for local transmission. Similar approaches could be considered in other jurisdictions that are likely to have large numbers of imported human cases of Zika virus disease and potential Zika vectors.

[1]Division of Epidemiology, New York City Department of Health and Mental Hygiene; [2]Epidemic Intelligence Service, CDC; [3]Division of Disease Control, New York City Department of Health and Mental Hygiene; [4]Office of Public Health Preparedness and Response, CDC; [5]Division of Environmental Health, New York City Department of Health and Mental Hygiene; [6]Division of Family and Child Health, New York City Department of Health and Mental Hygiene; [7]Public Health Laboratory, New York City Department of Health and Mental Hygiene; [8]Office of Emergency Preparedness and Response, New York City Department of Health and Mental Hygiene; [9]Office of External Affairs, New York City Department of Health and Mental Hygiene; [10]National Center for Emerging and Zoonotic Infectious Diseases, CDC.

Corresponding author: Christopher Lee, klq5@cdc.gov, 347-396-4070.

NYC Zika Response Team

Bisrat Abraham, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Joel Ackelsberg, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Mike Antwi, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Sharon Balter, MD, Division of Disease Control, New York City Department of and Mental Hygiene; Jennifer Baumgartner, MSPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Isaac Benowitz, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene, Epidemic Intelligence Service, CDC; Marie Antoinette Bernard, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Angelica Bocour, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Christine Borges, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Joseph Burzynski, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; James E. Cone, MD, Division of Epidemiology, New York City Department of Health and Mental Hygiene; Alexander Davidson, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Paula Del Rosso, Division of Disease Control, New York City Department of Health and Mental Hygiene; Catherine Dentinger, FNP, Division of Disease Control, New York City Department of Health and Mental Hygiene, Office of Public Health Preparedness and Response, CDC; Bisram Deocharan, PhD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Marie Dorsinville, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Peter Ephross, MA, Division of Epidemiology, New York City Department of Health and Mental Hygiene; Ifeoma Ezeoke, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Anne Fine, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Ana Maria Fireteanu, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Jie Fu, PhD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Sharon K. Greene, PhD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Scott Hughes, PhD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Maryam Iqbal, MS, Division of Disease Control, New York City Department of Health and Mental Hygiene; Jasmine Jacobs-Wingo, MPH, Office of Emergency Public Health Preparedness and Response, New York City Department of Health and Mental Hygiene, Office of Public Health Preparedness and Response, CDC; Kimberly Johnson, MS, Division of Environmental Health, New York City Department of Health and Mental Hygiene; Lucretia Jones, DrPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Hannah T. Jordan, MD, Division of Epidemiology, New York City Department of Health and Mental Hygiene; Fabienne Laraque, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Marcelle Layton, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; David Lee, MPH, MBA, Division of Disease Control, New York City Department of Health and Mental Hygiene; Ellen Lee, MD, Division of Disease Control, New York City Department of Health and Mental Hygiene; Kristen Lee, MPH, Division of Disease Control, New York City Department of Health and Mental Hygiene; Dakai Liu, PhD, Division of Disease Control, New York City Department of Health and Mental Hygiene; David E. Lucero, PhD, Division of Disease Control, New York City Department of Health and Mental

References

1. Pan American Health Organization. Epidemiological alert: neurological syndrome, congenital malformations, and Zika virus infection. Implications for public health in the Americas. Washington, DC: World Health Organization, Pan American Health Organization; 2015. http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&Itemid=&gid=32405

2. Rasmussen SA, Jamieson DJ, Honein MA, Petersen LR. Zika virus and birth defects—reviewing the evidence for causality. N Engl J Med 2016;374:1981–7. http://dx.doi.org/10.1056/NEJMsr1604338

3. Petersen EE, Staples JE, Meaney-Delman D, et al. Interim guidelines for pregnant women during a Zika virus outbreak—United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65:30–3. http://dx.doi.org/10.15585/mmwr.mm6502e1

4. Millman AJ, Chamany S, Guthartz S, et al. Active monitoring of travelers arriving from Ebola-affected countries—New York City, October 2014–April 2015. MMWR Morb Mortal Wkly Rep 2016;65:51–4. http://dx.doi.org/10.15585/mmwr.mm6503a3

5. Armstrong P, Hennessey M, Adams M, et al. Travel-associated Zika virus disease cases among U.S. residents—United States, January 2015–February 2016. MMWR Morb Mortal Wkly Rep 2016;65:286–9. http://dx.doi.org/10.15585/mmwr.mm6511e1

6. Oster AM, Russell K, Stryker JE, et al. Update: interim guidance for prevention of sexual transmission of Zika virus—United States, 2016. MMWR Morb Mortal Wkly Rep 2016;65:323–5. http://dx.doi.org/10.15585/mmwr.mm6512e3

7. Wong PS, Li MZ, Chong CS, Ng LC, Tan CH. *Aedes* (Stegomyia) *albopictus* (Skuse): a potential vector of Zika virus in Singapore. PLoS Negl Trop Dis 2013;7:e2348. http://dx.doi.org/10.1371/journal.pntd.0002348

Announcement

20th Anniversary of PulseNet: the National Molecular Subtyping Network for Foodborne Disease Surveillance — United States, 2016

PulseNet is celebrating 20 years of public health achievements in transforming the way foodborne disease outbreaks are detected and investigated. PulseNet is a national surveillance network of federal, state, and local public health laboratories that work together to detect foodborne disease outbreaks by connecting DNA fingerprints of bacteria that cause illness (*1*). The network facilitates the early identification of common sources of foodborne outbreaks and helps regulatory agencies identify areas where implementation of new measures are likely to improve the safety of the food supply.

A recent economic evaluation of PulseNet activities suggests that the network prevents at least 270,000 illnesses from infection with *Salmonella*, *E. coli*, and *Listeria* and saves an estimated $500 million each year (*2*). In 2013, PulseNet began using whole genome sequencing (WGS) to detect outbreaks caused by *Listeria*, the most deadly foodborne pathogen (*3*). PulseNet is quickly expanding the use of WGS in state laboratories and has begun using WGS in investigations of other foodborne pathogens such as *Campylobacter*, *E. coli*, and *Salmonella*. With incorporation of WGS and other advanced molecular detection methods, PulseNet will continue to improve foodborne disease detection and identify outbreaks faster and with more accuracy.

Additional information regarding CDC's Advanced Molecular Detection initiative is available at http://www.cdc.gov/amd/. Additional materials on the 20th anniversary of PulseNet, including success stories from state public health laboratories and fact sheets are available at the CDC PulseNet website.*

---

* http://www.cdc.gov/pulsenet/anniversary/index.html.

References

1. Swaminathan B, Barrett TJ, Hunter SB, Tauxe RV; CDC PulseNet Task Force. PulseNet: the molecular subtyping network for foodborne bacterial disease surveillance, United States. Emerg Infect Dis 2001;7:382–9. http://dx.doi.org/10.3201/eid0703.017303
2. Scharff RL, Besser J, Sharp DJ, Jones TF, Peter GS, Hedberg CW. An economic evaluation of PulseNet: a network for foodborne disease surveillance. Am J Prev Med 2016;50(Suppl 1):S66–73. http://dx.doi.org/10.1016/j.amepre.2015.09.018
3. Jackson BR, Tarr C, Strain E, et al. Implementation of nationwide real-time whole-genome sequencing to enhance Listeriosis outbreak detection and investigation. Clin Infect Dis 2016. Epub April 18, 2016.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Prevalence* of Abnormal Cholesterol† Levels Among Young Persons Aged 6–19 Years, by Sex and Weight Status§ — National Health and Nutrition Examination Survey, United States, 2011–2014
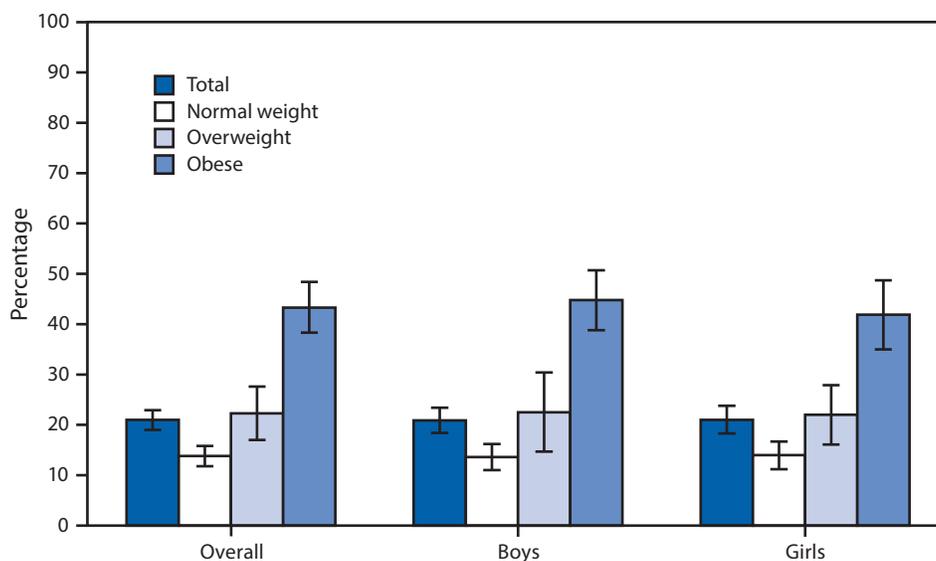
* With 95% confidence intervals indicated with error bars.
† Includes having at least one of the following: high total cholesterol (serum total cholesterol ≥200 mg/dL); low high-density lipoproteins (HDL) cholesterol (serum HDL cholesterol <40 mg/dL); or high non-HDL cholesterol (serum non-HDL cholesterol ≥145 mg/dL).
§ Calculated as body mass index (BMI) rounded to one decimal place; BMI = weight (kg)/height (m²). The age- and sex-specific percentiles of the 2000 CDC growth charts were used to categorize BMI percentiles as follows: normal weight = ≥5th percentile to <85th percentile; overweight = ≥85th percentile to <95th percentile; and obese = ≥95th percentile. During 2011–2014, 61.3% of young persons aged 6–19 years were normal weight, 15.7% were overweight, and 19.3% were obese.

During 2011–2014, 21.0% of young persons aged 6–19 years had at least one of the three indicators of abnormal cholesterol. A larger percentage of persons categorized as obese (43.3%) had abnormal cholesterol than persons categorized as normal weight or overweight (13.8% and 22.3%, respectively). This pattern was found for both males and females. There were no significant differences between males and females in the prevalences of abnormal cholesterol within each of the weight status groups (e.g., males with obesity compared with females with obesity).

Source: Nguyen DT, Kit BK, Carroll MD. Abnormal cholesterol among children and adolescents in the United States, 2011–2014. NCHS data brief no. 228; 2016. http://www.cdc.gov/nchs/data/databriefs/db228.htm.

Reported by: Duong T. Nguyen, DO, Epidemic Intelligence Service, CDC, dtnguyen1@cdc.gov, 301-458-4400; Brian Kit, MD; Margaret D. Carroll, MSPH; Steven M. Frenk, PhD.