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Driving Among High School Students — United States, 2013

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During 2004–2013, the number of passenger vehicle drivers aged 16–19 years involved in fatal crashes in the United States declined by 55% from 5,724 to 2,568.* In addition to graduated driver licensing (GDL) programs (*1*) and safer vehicles,† other possible contributors to the decline include adolescents waiting longer to get their driver licenses and driving less (*2*). The crash risk for drivers of any age is highest during the first months of independent driving, and this risk is highest for the youngest teenage drivers (*3*). To estimate the percentage of high school students aged ≥16 years who have driven during the past 30 days, by age, race/ethnicity, and location, CDC analyzed 2013 data from the national Youth Risk Behavior Survey (YRBS) and YRBS data collected by 42 states and 21 large urban school districts. Nationwide, 76.3% of high school students aged ≥16 years reported having driven during the 30 days before the survey; 83.2% of white students had driven compared with <70% of black and Hispanic students. Across 42 states, the percentage of students who drove ranged from 53.8% to 90.2%. Driving prevalence was higher in the midwestern and mountain states. Across the 21 large urban school districts, the percentage of drivers varied more than twofold from 30.2% to 76.0%. This report provides the most detailed evidence to date that the percentage of students who drive varies substantially depending on where they live. Such information will be vital as states and communities consider potential ways to improve safety for older teenage novice drivers and plan for safe, affordable transportation options for those who do not drive.

The 2013 national YRBS used a three-stage cluster sample to obtain cross-sectional data representative of public and private school students in grades 9–12 in all 50 states and the District of Columbia (*4*). The usable sample size was 13,583, with a 68% overall response rate.§ The state and large urban school district YRBSs used two-stage cluster samples to obtain cross-sectional data representative of public school students in grades 9–12 in 39 states and 21 districts and of public and private school students in grades 9–12 in three states (Ohio, South Dakota, and Vermont). Sample sizes across states ranged from 1,107 to 53,785, and overall response rates ranged from 60% to 87%. Sample sizes across large urban school districts ranged from 1,102 to 10,778, and overall response rates ranged from 69% to 90%. Data by race/ethnicity are presented for non-Hispanic black, non-Hispanic white, and Hispanic students.

Respondents completed a voluntary, anonymous, self-administered questionnaire that included questions about drinking and driving and questions about texting and driving.

* Available at http://www.iihs.org/iihs/topics/t/teenagers/fatalityfacts/teenagers.
† Available at http://www-nrd.nhtsa.dot.gov/Pubs/812020.pdf.
§ Overall response rate = (number of participating schools/number of eligible sampled schools) × (number of usable questionnaires/number of eligible students sampled).

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In 2013, for the first time, these questions included a response option of "I did not drive a car or other vehicle during the past 30 days." For this report, driving was defined as having responded to the question about drinking and driving or the question about texting and driving with a response other than "I did not drive a car or other vehicle during the past 30 days." Data were weighted to provide estimates at the national, state, or large urban school district level, and statistical software was used to account for the complex sample designs. All analyses were conducted among students aged ≥16 years, the age at which persons in every jurisdiction except New Jersey and New York City, New York, could be licensed to drive independently.¶ Chi-square tests were used to test for significant ($p<0.05$) differences among subgroups for the national data.

Nationwide, 76.3% of U.S. high school students aged ≥16 years reported having driven during the 30 days before the survey (Table 1); 83.2% of white students had driven, compared with 67.6% of black students and 68.9% of Hispanic students. The percentage of students who had driven increased with age from 69.8% for students aged 16 years to 84.2% for those aged ≥18 years. Across the 42 state surveys, the percentage of drivers ranged from 53.8% in Hawaii to 90.2% in South Dakota (median: 80.8%) (Table 2). Among students aged ≥18 years, the percentage who had driven varied from 57.9% in Hawaii to 94.9% in North Dakota (median: 84.4%). Driving prevalence was higher in the midwestern and mountain states compared with other regions of the country (Figure). Across the 21 districts, the percentage of drivers ranged from 30.2% in San Francisco, California, to 76.0% in Charlotte-Mecklenburg, North Carolina (median: 57.7%) (Table 2).

¶Available at http://www.iihs.org/iihs/topics/laws/graduatedlicenseintro?topicName = teenagers.

TABLE 1. Percentage of high school students aged ≥16 years who reported driving a car or other vehicle during the 30 days before the survey — national Youth Risk Behavior Survey, United States, 2013

Characteristic	%	95% CI
Total	**76.3**	**73.4–79.0**
Sex*		
Male	78.3	74.9–81.3
Female	74.2	71.3–76.9
Race/Ethnicity*,†		
White, non-Hispanic	83.2	80.7–85.4
Black, non-Hispanic	67.6	63.8–71.1
Hispanic	68.9	66.0–71.6
Age (yrs)*		
16	69.8	65.8–73.4
17	78.0	74.8–80.9
≥18	84.2	81.2–86.7

Abbreviation: CI = confidence interval.
* Chi-square test, $p<0.05$.
† The numbers of students from other racial/ethnic groups were too small for meaningful analysis.

Discussion

This report indicates that, nationwide, three out of four U.S. high school students aged ≥16 years drove at least once during the 30 days before the survey, and the percentage who

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TABLE 2. Percentage of high school students aged ≥16 years who reported driving a car or other vehicle during the 30 days before the survey, by age — Youth Risk Behavior Surveys, 42 states and 21 large urban school districts,* 2013

Site	≥16 yrs		16 yrs		17 yrs		≥18 yrs	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
State surveys								
Alabama	88.5	83.6–92.1	84.3	76.8–89.8	92.3	86.1–95.8	90.0	84.6–93.7
Alaska	73.0	69.2–76.5	63.2	57.0–68.9	77.5	72.7–81.6	81.3	71.2–88.4
Arizona	68.4	62.2–74.0	67.1	60.6–73.1	66.6	58.2–74.1	72.7	63.5–80.3
Arkansas	82.6	77.5–86.7	80.2	71.4–86.7	81.7	77.3–85.5	87.5	79.6–92.6
Connecticut	67.7	63.8–71.4	55.4	50.5–60.1	75.3	70.2–79.8	78.0	70.0–84.4
Delaware	80.2	77.5–82.6	74.6	70.3–78.4	85.6	82.6–88.2	82.6	76.4–87.4
Florida	74.8	72.6–76.8	69.2	66.4–71.9	75.8	72.9–78.4	82.7	79.5–85.5
Georgia	74.7	69.7–79.2	70.8	65.0–75.9	73.5	64.6–80.9	82.1	77.0–86.3
Hawaii	53.8	49.4–58.2	43.6	38.0–49.3	63.1	58.0–67.8	57.9	49.1–66.2
Idaho	84.0	81.4–86.3	82.0	78.7–84.9	85.0	80.7–88.6	85.7	80.2–89.9
Illinois	80.8	76.8–84.3	79.0	73.0–83.9	80.9	76.3–84.7	83.6	77.1–88.6
Kansas	86.1	83.2–88.6	81.1	77.3–84.4	88.4	83.3–92.0	91.6	85.7–95.2
Kentucky	77.7	72.4–82.2	73.1	66.4–78.9	79.8	73.2–85.0	82.7	71.5–90.1
Louisiana	78.7	74.6–82.3	75.4	66.9–82.3	80.7	75.8–84.8	80.8	69.7–88.5
Maine	75.8	74.0–77.4	71.9	69.7–74.0	79.8	77.4–82.1	75.7	72.9–78.3
Maryland	65.9	64.6–67.2	58.1	56.6–59.6	71.4	69.7–73.0	73.0	70.9–75.0
Massachusetts	66.1	61.9–70.0	53.3	48.6–58.0	73.2	66.9–78.8	78.2	72.5–83.0
Michigan	82.4	78.7–85.6	76.6	71.8–80.8	86.0	81.4–89.6	87.4	82.9–90.8
Mississippi	83.6	78.0–88.0	79.7	70.7–86.5	87.0	80.5–91.6	87.4	81.4–91.6
Missouri	84.7	79.1–89.0	83.4	77.4–88.0	83.8	76.8–89.0	88.7	73.5–95.7
Montana	88.7	87.2–90.2	85.5	83.0–87.7	89.4	87.0–91.4	93.2	90.6–95.1
Nebraska	87.5	84.0–90.3	85.4	80.0–89.6	89.2	84.3–92.7	—†	—
Nevada	71.1	66.2–75.6	61.4	55.4–67.2	74.8	67.4–80.9	82.6	77.3–86.9
New Hampshire	81.8	78.5–84.8	77.6	72.4–82.1	83.5	79.4–87.0	86.6	81.6–90.4
New Jersey	70.5	65.8–74.8	49.8	42.7–56.8	82.8	76.8–87.5	85.5	81.4–88.8
New Mexico	80.8	75.7–85.0	78.7	74.7–82.1	81.9	73.8–88.0	84.8	79.5–88.9
New York	62.4	56.1–68.2	53.2	46.4–59.9	64.7	57.1–71.6	77.5	68.2–84.7
North Carolina	77.6	71.1–82.9	72.1	64.5–78.5	79.7	70.5–86.5	83.8	76.9–89.0
North Dakota	89.7	87.3–91.7	84.1	79.2–88.0	91.7	89.0–93.9	94.9	91.6–97.0
Ohio	81.3	75.6–85.9	78.0	70.1–84.2	80.6	74.6–85.6	88.6	82.1–92.9
Oklahoma	85.1	82.2–87.5	78.1	72.0–83.2	87.4	83.7–90.4	92.8	85.7–96.5
Rhode Island	69.9	63.5–75.7	57.5	48.9–65.6	78.0	70.9–83.7	82.6	77.0–87.1
South Carolina	82.6	78.5–86.0	78.4	73.1–82.9	82.4	74.2–88.4	89.8	83.1–94.1
South Dakota	90.2	87.5–92.3	85.6	79.8–90.0	94.6	91.8–96.6	90.3	82.6–94.8
Tennessee	81.1	76.9–84.7	77.3	70.7–82.7	83.2	77.5–87.8	84.2	77.1–89.4
Texas	78.0	74.3–81.2	69.2	62.2–75.4	80.4	77.4–83.1	88.4	85.7–90.6
Utah	88.1	83.8–91.4	84.7	79.0–89.1	89.2	83.9–92.9	93.0	86.3–96.6
Vermont	82.6	80.6–84.5	79.6	76.9–82.0	84.9	82.0–87.3	84.5	81.7–86.9
Virginia	76.9	73.9–79.6	73.1	69.6–76.3	79.8	75.7–83.4	81.1	75.0–86.0
West Virginia	80.4	77.3–83.2	76.6	72.1–80.6	82.0	76.9–86.2	84.0	77.0–89.2
Wisconsin	83.4	79.9–86.4	77.5	72.5–81.9	86.3	81.5–90.1	87.7	81.8–91.9
Wyoming	86.9	84.2–89.3	85.1	80.9–88.5	87.9	84.7–90.5	88.6	83.6–92.3

See table footnotes on page 316.

drove varied substantially depending on where they lived. The percentage of students who drove was higher in the midwestern and mountain states, where population density is relatively low** and alternative transportation options might be limited (*5*). The lower percentage of student drivers in metropolitan areas compared with states (median: 57.7% versus 80.8%) might be related to family income, shorter travel distances, and wider use of transportation alternatives including walking, bicycling, and taking public transportation (*5–8*). The finding that in some states and most metropolitan areas at least 20% of students aged ≥18 years did not drive has implications for how they will learn to drive. For example, most students are supervised during the learning period by a parent or guardian (*9*). If they do not learn to drive before they leave home, their opportunities for practice driving with a supervisor might be more limited.

The racial/ethnic disparities found in the percentage of teenage drivers are consistent with findings from previous research (*2,6,7*). For example, a 2010 survey of U.S. high school seniors reported that the percentage of black students who were unlicensed was twice the percentage of white students (39% versus 16%), and they were more than twice as likely

** Available at http://www2.census.gov/geo/pdfs/maps-data/maps/thematic/us_popdensity_2010map.pdf.

TABLE 2. (*Continued*) Percentage of high school students aged ≥16 years who reported driving a car or other vehicle during the 30 days before the survey, by age — Youth Risk Behavior Surveys, 42 states and 21 large urban school districts,* 2013

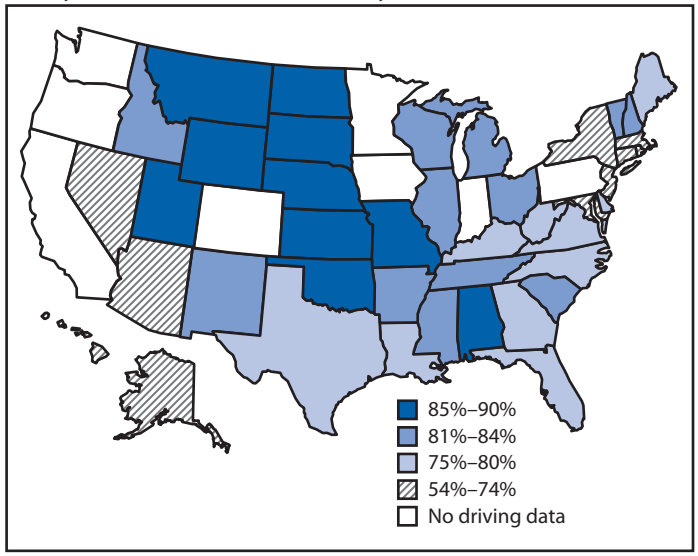
Site	≥16 yrs		16 yrs		17 yrs		≥18 yrs	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Large urban school district surveys								
Baltimore, Maryland	54.5	49.5–59.3	46.9	39.2–54.8	60.6	55.1–65.9	59.0	48.7–68.7
Boston, Massachusetts	33.8	29.7–38.1	24.5	20.0–29.6	33.7	27.9–40.1	42.2	35.0–49.7
Broward County, Florida	73.1	69.1–76.8	65.9	59.5–71.7	76.6	71.0–81.3	80.2	72.7–86.0
Charlotte-Mecklenburg, North Carolina	76.0	72.4–79.3	64.3	58.0–70.1	81.9	76.5–86.3	84.9	78.8–89.5
Chicago, Illinois	49.1	46.1–52.2	37.7	33.2–42.4	53.5	47.0–59.9	60.5	54.2–66.6
Detroit, Michigan	65.5	60.3–70.2	58.5	49.8–66.8	70.0	63.8–75.5	71.0	63.1–77.8
District of Columbia	42.6	41.1–44.1	40.4	38.3–42.4	41.7	39.3–44.0	51.3	47.6–55.1
Duval County, Florida	75.1	72.7–77.3	71.2	67.9–74.3	76.4	72.8–79.6	79.9	72.6–85.6
Houston, Texas	70.5	67.0–73.7	67.7	62.0–72.8	68.8	63.3–73.8	76.4	71.8–80.4
Los Angeles, California	48.8	43.8–53.9	41.2	32.4–50.6	51.1	43.0–59.2	58.3	51.9–64.4
Memphis, Tennessee	67.8	64.0–71.4	56.5	51.0–61.8	74.1	67.9–79.5	77.9	70.7–83.7
Miami-Dade County, Florida	65.8	61.9–69.6	58.4	53.2–63.5	68.0	61.6–73.8	73.6	67.9–78.7
Milwaukee, Wisconsin	54.5	51.3–57.8	50.8	45.9–55.7	57.9	51.4–64.1	55.4	47.8–62.8
New York City, New York	31.0	28.2–33.9	27.0	22.3–32.3	33.3	30.3–36.4	39.8	33.6–46.2
Orange County, Florida	67.5	63.4–71.3	62.1	55.6–68.2	68.8	63.5–73.6	75.4	68.3–81.4
Palm Beach County, Florida	73.5	70.6–76.2	69.9	65.5–74.0	72.8	68.0–77.1	79.4	73.0–84.7
Philadelphia, Pennsylvania	47.7	43.1–52.3	45.1	39.7–50.7	46.8	40.3–53.5	53.0	42.1–63.6
San Bernardino, California	59.6	55.1–64.0	54.9	48.9–60.7	61.5	52.5–69.9	—†	—
San Diego, California	57.7	52.9–62.3	50.9	45.0–56.8	60.2	53.0–67.1	68.5	60.9–75.3
San Francisco, California	30.2	27.0–33.7	24.1	19.5–29.4	32.0	27.5–36.8	39.2	32.5–46.4
Seattle, Washington	54.0	49.8–58.1	51.1	45.0–57.2	55.8	49.7–61.8	57.8	47.0–67.9

Abbreviation: CI = confidence interval.
* Data were not available for California, Colorado, Indiana, Iowa, Minnesota, Oregon, Pennsylvania, and Washington. Data were collected from public school students in 39 states and 21 large urban school districts and from public and private school students in three states.
† Estimate suppressed because cell size was <100.

to not drive in an average week as white students (37% versus 14%) (*2*). Reaching adulthood without having obtained a driver license might limit educational, housing, and employment options.

Declines in licenses and driving among teenagers have coincided with the economic recession of the mid-2000s and have not rebounded (*2*), raising concern that teenagers from lower income families might find that meeting the requirements for licensure is becoming increasingly difficult (*6*,*7*). Stated reasons for delaying licensure support this concern, including not having access to a car and the costs of driving (*7*,*10*). GDL programs are designed to provide teenagers with a protective learning environment through supervised practice driving and by restricting nighttime driving and the number and age of passengers allowed during the first months of independent driving. However, in nearly every state, GDL programs apply only to novice drivers aged <18 years. Therefore, persons who do not obtain a license before their 18th birthday, many of whom are from low income or minority families, do not participate in the GDL program. Research regarding the potential safety benefits and risks associated with teenagers getting licensed after their 18th birthday is being conducted. Some researchers have suggested that extending GDL requirements to novice drivers aged 18–20 years might provide safety benefits, particularly for low income and minority youths (*1*,*6*,*7*).

FIGURE. Percentage of high school students aged ≥16 years who reported driving a car or other vehicle during the 30 days before the survey — Youth Risk Behavior Surveys, 42 states,* 2013



* Data were not available for California, Colorado, Indiana, Iowa, Minnesota, Oregon, Pennsylvania, and Washington.

The findings in this report are subject to at least seven limitations. First, neither licensure status nor whether teens were driving independently or under adult supervision was assessed. Second, state- and district-level percentages of drivers

What is already known on this topic?

Teenagers in the United States are waiting longer to get their driver licenses and driving less. Racial/ethnic and income disparities exist in teen licensure rates and driving experience. The potential safety benefits and risks associated with teenagers getting licensed after their 18th birthday are not well understood.

What is added by this report?

Data from the 2013 national Youth Risk Behavior Survey indicate that 76.3% of high school students nationwide aged ≥16 years drove during the 30 days before the survey; 83.2% of white students had driven compared with <70% of black and Hispanic students. Across 42 states, the percentage of drivers ranged from 53.8% in Hawaii to 90.2% in South Dakota. The prevalence of driving was higher in the midwestern and mountain states. Across 21 large urban school districts, the percentage of drivers varied from 30.2% in San Francisco, California, to 76.0% in Charlotte-Mecklenburg, North Carolina.

What are the implications for public health practice?

The number of persons who reach age 18 years with little or no driving experience is substantial, especially among blacks and Hispanics and in certain metropolitan areas. Because the age at which persons begin driving varies substantially by location, strategies to address transportation needs among teenagers could benefit from considering their local driving patterns. The data provide a baseline for future studies of driving trends among teenagers, which can aid states and communities in considering ways to improve safety for older novice teenage drivers and in planning for safe, affordable transportation options for teenagers who do not drive.

stratified by race/ethnicity were not presented because of small numbers. Third, the data were self-reported, and the extent of any underreporting or overreporting cannot be determined. Fourth, data were not available for eight states, including the west coast states of Washington, Oregon, and California. Fifth, the participating large urban schools districts were clustered on the east and west coasts, resulting in limited representation from districts in the midwestern and mountain regions. Sixth, results are not representative of high school–aged youths who do not attend high school. Finally, the data were weighted to adjust for school and student nonresponse and the distribution of students by grade, sex, and race/ethnicity in each jurisdiction. Nonetheless, nonresponse bias is possible and might have affected the results.

This report provides previously unavailable information on driving among U.S. adolescents by state and metropolitan area. The data reveal substantial variations in driving patterns across the country and provide a baseline for future studies measuring trends. As driving practices among adolescents continue to evolve, such information can aid states and communities in considering potential ways to improve safety for older teenage novice drivers. In addition, these results support the need for safe, affordable transportation options for teenagers who do not drive, especially for those who face economic barriers to licensing.

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References

1. McCartt AT, Teoh ER. Tracking progress in teenage driver crash risk in the United States since the advent of graduated driver licensing programs. J Safety Res 2015;53:1–9.
2. Shults RA, Williams AF. Trends in driver licensing status and driving among high school seniors in the United States, 1996–2010. J Safety Res 2013;46:167–70.
3. Mayhew DR, Simpson HM, Pak A. Changes in collision rates among novice drivers during the first months of driving. Accid Anal Prev 2003;35:683–91.
4. Kann L, Kinchen S, Shanklin SL, et al. Youth risk behavior surveillance—United States, 2013. MMWR Surveill Summ 2014;63(Suppl 4):1–168.
5. McDonald N, Trowbridge M. Does the built environment affect when American teens become drivers? Evidence from the 2001 National Household Travel Survey. J Safety Res 2009;40:177–83.
6. AAA Foundation for Traffic Safety. Young driver licensing in New Jersey: Rates and trends, 2006–2011. Washington, DC: AAA Foundation for Traffic Safety; 2014. Available at https://www.aaafoundation.org/sites/default/files/NJ%20Young%20Driver%20Licensing%20Rates%20FINALFTS.pdf.
7. Tefft BC, Williams AF, Grabowski JG. Driver licensing and reasons for delaying licensure among young adults ages 18–20, United States, 2012. Injury Epidemiology 2014;1:4.
8. Davis B, Dutzik T, Baxandall P. Transportation and the new generation: Why young people are driving less and what it means for transportation policy. Santa Barbara, CA: Frontier Group; 2012. Available at http://www.uspirg.org/sites/pirg/files/reports/Transportation%20%26%20the%20New%20Generation%20vUS_0.pdf.
9. Williams AF, Braitman KA, McCartt AT. Views of parents of teenagers about licensing policies: a national survey. Traffic Inj Prev 2011;12:1–8.
10. Williams AF. Teenagers' licensing decisions and their views of licensing policies: a national survey. Traffic Inj Prev 2011;12:312–9.

Importation and Domestic Transmission of *Shigella sonnei* Resistant to Ciprofloxacin — United States, May 2014–February 2015

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In December 2014, PulseNet, the national molecular subtyping network for foodborne disease, detected a multistate cluster of *Shigella sonnei* infections with an uncommon pulsed-field gel electrophoresis (PFGE) pattern. CDC's National Antimicrobial Resistance Monitoring System (NARMS) laboratory determined that isolates from this cluster were resistant to ciprofloxacin, the antimicrobial medication recommended to treat adults with shigellosis. To understand the scope of the outbreak and to try to identify its source, CDC and state and local health departments conducted epidemiologic and laboratory investigations. During May 2014–February 2015, PulseNet identified 157 cases in 32 states and Puerto Rico; approximately half were associated with international travel. Nine of the cases identified by PulseNet, and another 86 cases without PFGE data, were part of a related outbreak of ciprofloxacin-resistant shigellosis in San Francisco, California. Of 126 total isolates with antimicrobial susceptibility information, 109 (87%) were nonsusceptible to ciprofloxacin (108 were resistant, and one had intermediate susceptibility). Travelers need to be aware of the risks of acquiring multidrug-resistant pathogens, carefully wash their hands, and adhere to food and water precautions during international travel. Clinicians should request stool cultures and antimicrobial susceptibilities when they suspect shigellosis, and counsel shigellosis patients to follow meticulous hygiene regimens while ill.

Shigella causes an estimated 500,000 cases of diarrhea in the United States annually (*1*) and is transmitted easily from person to person and through contaminated food and recreational water. Outbreaks of shigellosis frequently are large and protracted. Although diarrhea caused by *S. sonnei* typically resolves without treatment, patients with mild illness often are treated with antimicrobial medications because they can reduce the duration of symptoms and shedding of shigellae in feces (*2*). However, resistance to the oral antimicrobial medications ampicillin and trimethoprim/sulfamethoxazole is common among shigellae in the United States, and resistance to fluorquinolones is increasing among shigellae globally (*3*). Because only about 2% of shigellae isolated in the United States are resistant to fluoroquinolones (*4*), ciprofloxacin is the first-line treatment for adults with shigellosis and is recommended as an empiric treatment for adult international travelers with diarrhea (*5*).

Between May 24, 2014 and February 28, 2015, PulseNet detected 157 cases of illness caused by *S. sonnei* with closely related pulsed-field gel electrophoresis (PFGE) patterns in 32 U.S. states and Puerto Rico. Most cases were reported in Massachusetts (45 cases), California (25) and Pennsylvania (18). In addition, public health officials in the San Francisco Department of Public Health (SFDPH) identified an outbreak of 95 cases of ciprofloxacin-resistant shigellosis, nine of which were tested using PFGE and have been included in the PulseNet cluster, for a total of 243 cases (Figure). The San Francisco outbreak cases are included in the antimicrobial susceptibility summary but are excluded from other analyses.

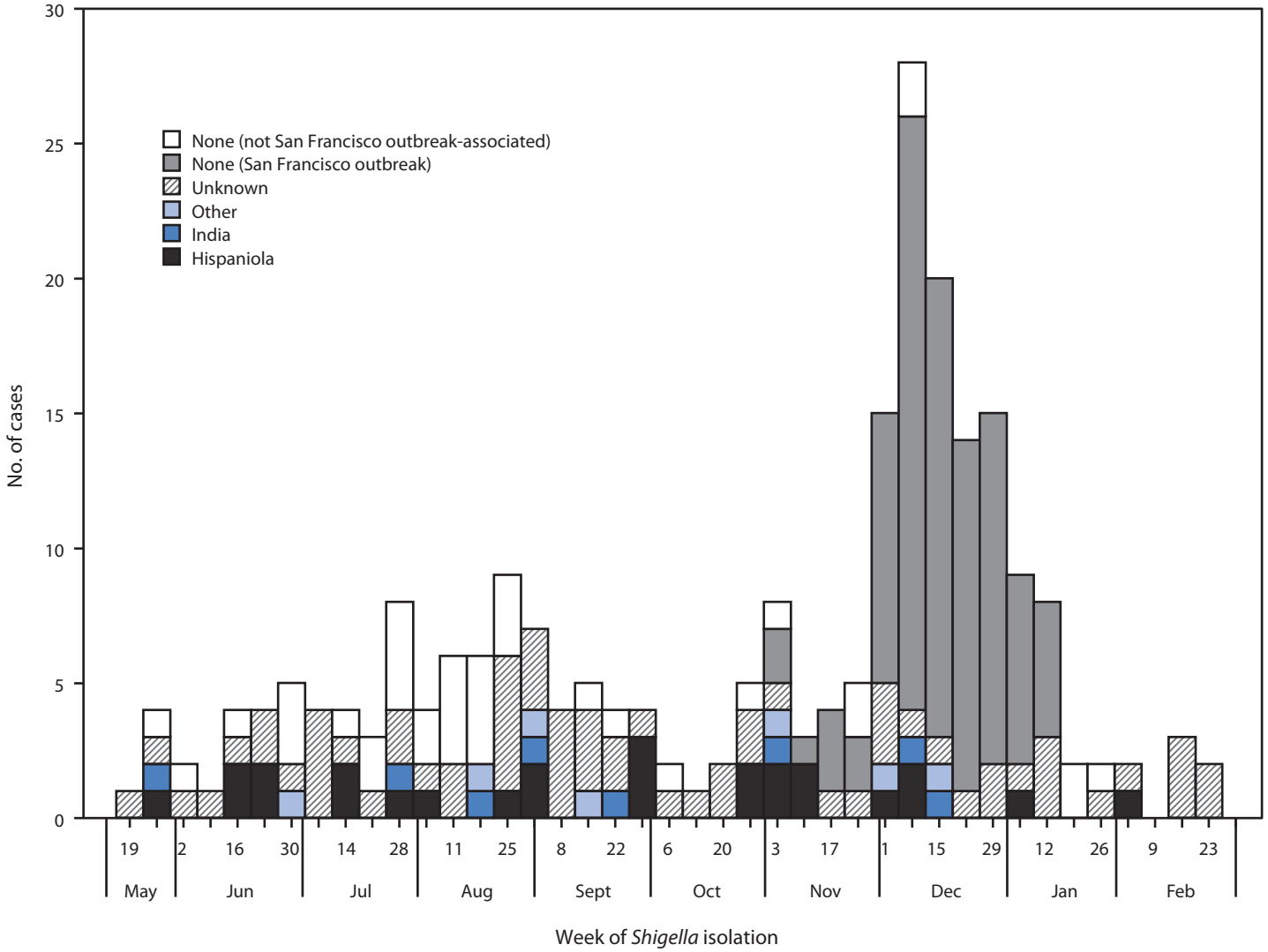
State and federal public health officials reported ciprofloxacin nonsusceptibility in 109 (87%) of 126 isolates tested (108 isolates were resistant and 1 had intermediate susceptibility). Of the 126 isolates, NARMS tested 19. All were resistant to nalidixic acid, and six (32%) were resistant to ciprofloxacin; isolates also exhibited resistance to ampicillin (5%), streptomycin (84%), sulfisoxazole (84%), tetracycline (87%), and trimethoprim/sulfamethoxazole (84%). One isolate displayed an azithromycin minimum inhibitory concentration of >256 μg/ml and harbored macrolide resistance genes *mph*A and *erm*B.

Median age of the patients was 34 years (interquartile range = 20–51 years). Among the patients, 48% (74 of 153) were female. Among 41 patients with such information, median duration of illness was 7 days (interquartile range = 6–12 days). Nineteen (22%) of 88 patients with such information were hospitalized. Treatment information was not available for most patients.

Forty (53%) of 75 patients with such information had traveled internationally during their incubation period; destinations included Hispaniola (the Dominican Republic, 22 cases, and Haiti, four); India (eight); Morocco (three); and other destinations in Asia and Europe. No common airline or airport exposures were identified. Most travelers to the Dominican Republic stayed at resorts in Punta Cana; however, no common hotel, resort, restaurant, or event was reported. NARMS detected ciprofloxacin resistance in isolates obtained from travelers to the Dominican Republic (one of five isolates tested) and India (one of one isolate tested), and among nontravelers (four of seven isolates tested).

Travel information was available for 23 of 37 children; 10 (43%) had recently traveled abroad. None of the five children who were enrolled in group child care settings had traveled internationally. One pediatric case occurred as part of a child care–associated outbreak of five culture-confirmed and 11

FIGURE. *Shigella sonnei* infections (n = 239*) suspected resistant to ciprofloxacin, by isolation date and patient international travel history — United States, May 2014–February 2015



* Isolation date was not available for four isolates.

suspected cases of shigellosis. None of the other four isolates from this cluster were tested using PFGE; however, a single isolate was tested and found to be resistant to ciprofloxacin.

Twelve patients self-identified as men who have sex with men (MSM). Eleven (79%) of 14 men without recent international travel were MSM, compared with one of six men with recent international travel (Fisher's exact p = 0.02).

SFDPH identified 95 ciprofloxacin-resistant *S. sonnei* infections in residents of or travelers to San Francisco during November 1, 2014–January 15, 2015. Nine isolates underwent PFGE and yielded patterns that were indistinguishable from or closely related to others in the PulseNet cluster. Sixty-seven patients (53% of those with such information) were hospitalized. Seventy-four cases (47% of those with such information) occurred among persons who were homeless or living in single-room occupancy hotels. Although the investigation is ongoing, no point source or common exposures such as shelters, soup kitchens, or restaurants have been identified. No patients reported international travel.

Discussion

International travelers are at elevated risk for colonization with multidrug-resistant *Enterobacteriaceae* (*6*). This investigation suggests that ciprofloxacin-resistant *S. sonnei* is being repeatedly introduced into the United States by travelers from various countries and can lead to large outbreaks domestically. The result has been a greater proportion of *Shigella* infections in the United States that are resistant to ciprofloxacin than in the

past (National Antimicrobial Resistance Monitoring System; Division of Foodborne, Waterborne and Environmental Diseases; National Center for Emerging and Zoonotic Infectious Diseases, CDC, unpublished data, 2015). Travelers should be encouraged to 1) observe food, water, and hand-hygiene precautions while traveling; 2) use over-the-counter medications like bismuth subsalicylate (e.g., Pepto-Bismol) or loperamide (e.g., Immodium) if they wish to treat mild or moderate travelers' diarrhea; 3) reserve antimicrobial medications for severe cases of travelers' diarrhea; 4) seek health care if they are experiencing diarrhea upon return to the United States or develop diarrhea shortly thereafter; and 5) remain vigilant regarding hygiene practices while ill. Additional studies are needed to clarify the roles of antimicrobial medications, antidiarrheal medications, and other factors in acquiring multidrug-resistant enteric pathogens during international travel.

Although this *Shigella* strain is strongly associated with international travel, it is now circulating domestically. If introduced to populations of homeless persons, MSM, or children in child care settings, *Shigella* can spread rapidly and cause large, protracted outbreaks, as has occurred in the homeless population in San Francisco.

Hygiene promotion and increased access to hygiene and sanitation infrastructure among vulnerable populations such as the homeless might help prevent transmission. MSM can reduce their risk for acquiring this and other *Shigella* strains by washing their hands meticulously and by preventing fecal-oral exposures during sex (*7*). Health care providers should culture the stool specimens of patients with symptoms consistent with shigellosis, reculture the stool of patients who fail to improve after antimicrobial therapy, and test bacterial pathogens for antimicrobial susceptibility. Reserving antimicrobial treatment for immunocompromised patients and patients with severe shigellosis and using antimicrobial susceptibility data strategically to guide therapy might help preserve the utility of such medications. Clinical guidelines for the testing and interpretation of azithromycin susceptibility among *Shigella* spp. are needed to improve detection and management of cases of azithromycin-nonsusceptible shigellosis.

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What is already known on this topic?

Approximately 500,000 cases of shigellosis occur in the United States annually. High rates of resistance to oral antimicrobial medications complicate management of patients with shigellosis; however, ciprofloxacin has remained the recommended antimicrobial treatment for adults who acquire shigellosis within the United States or while traveling internationally.

What is added by this report?

During May 2014–February 2015, a cluster of 243 cases of shigellosis in 32 states and Puerto Rico was identified; 109 (87%) of 126 isolates tested were nonsusceptible to ciprofloxacin. Ninety-five cases were part of an outbreak of ciprofloxacin-resistant shigellosis associated with the homeless population in San Francisco, California; approximately half of the remaining cases were associated with international travel. Ciprofloxacin-resistant *Shigella sonnei* is being repeatedly introduced into the United States via travelers from various countries and is circulating domestically at rates that are higher than in the past.

What are the implications for public health practice?

International travelers should be aware of the risks for acquiring multidrug-resistant pathogens, wash their hands meticulously, adhere to food and water precautions, and try to reserve antimicrobial medications for severe cases of travelers' diarrhea. Clinicians should request stool specimen cultures and antimicrobial susceptibilities when they suspect shigellosis, carefully consider whether antibiotic treatment is necessary, and counsel shigellosis patients to follow meticulous hygiene regimens while ill. Hygiene promotion and increased access to hygiene and sanitation infrastructure might help prevent transmission among vulnerable populations.

References

1. Scallan E, Hoekstra RM, Angulo FJ, et al. Foodborne illness acquired in the United States—major pathogens. Emerg Infect Dis 2011;17:7–15.
2. Christopher PR, David KV, John SM, Sankarapandian V. Antibiotic therapy for *Shigella* dysentery. Cochrane Database Syst Rev 2009;(4):CD006784.
3. Gu B, Cao Y, Pan S, et al. Comparison of the prevalence and changing resistance to nalidixic acid and ciprofloxacin of *Shigella* between Europe-America and Asia-Africa from 1998 to 2009. Int J Antimicrob Agents 2012;40:9–17.
4. CDC. National Antimicrobial Resistance Monitoring System: enteric bacteria human isolates final report 2012. Atlanta, GA: US Department of Health and Human Sevices, CDC; 2014. Available at http://www.cdc.gov/narms/pdf/2012-annual-report-narms-508c.pdf.
5. CDC. Health information for international travel 2014. New York, NY: Oxford University Press; 2014. Available at http://wwwnc.cdc.gov/travel/page/2014-yellow-book-about.
6. Kantele A, Lääveri T, Mero S, et al. Antimicrobials increase travelers' risk of colonization by extended-spectrum beta-lactamase–producing *Enterobacteriaceae*. Clin Infect Dis 2015;60:837–46.
7. Panel on Opportunistic Infections in HIV-Infected Adults and Adolescents. Guidelines for the prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. Atlanta, GA: US Department of Health and Human Services. Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf.

Ebola Virus Disease in a Humanitarian Aid Worker — New York City, October 2014

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In late October 2014, Ebola virus disease (Ebola) was diagnosed in a humanitarian aid worker who recently returned from West Africa to New York City (NYC). The NYC Department of Health and Mental Hygiene (DOHMH) actively monitored three close contacts of the patient and 114 health care personnel. No secondary cases of Ebola were detected. In collaboration with local and state partners, DOHMH had developed protocols to respond to such an event beginning in July 2014 (*1*). These protocols included safely transporting a person at the first report of symptoms to a local hospital prepared to treat a patient with Ebola, laboratory testing for Ebola, and monitoring of contacts. In response to this single case of Ebola, initial health care worker active monitoring protocols needed modification to improve clarity about what types of exposure should be monitored. The response costs were high in both human resources and money: DOHMH alone spent $4.3 million. However, preparedness activities that include planning and practice in effectively monitoring the health of workers involved in Ebola patient care can help prevent transmission of Ebola.

On October 23, 2014, NYC DOHMH was notified by Médecins Sans Frontières (MSF) that one of its physicians who had returned to NYC nine days earlier from treating Ebola patients in Guinea had an oral temperature of 100.3°F (37.9° C). The physician reported fatigue for 2 days without other symptoms (e.g., vomiting, diarrhea, cough, muscle aches, or abnormal bleeding). He reported having used prescribed personal protective equipment without a known breach and following MSF's protocol of twice daily oral temperature checks and self-monitoring for symptoms since his return to the United States. Because of his travel and work history and symptoms consistent with Ebola, DOHMH arranged for immediate transfer by the Fire Department of New York Emergency Medical Services (FDNY-EMS) to Bellevue Hospital Center, a medical facility designated by the DOHMH and the NYC Health and Hospitals Corporation (HHC) to treat Ebola patients in NYC. DOHMH's laboratory performed nucleic acid amplification testing on blood from the patient, and within 3 hours of specimen receipt, reported a preliminary positive result for Ebola virus on October 23; this result was confirmed at CDC on October 24.

DOHMH investigators used the date of reported onset of fatigue (October 21) to set the initial time of exposure for potential contacts. This was a decision based on knowledge about how the disease might present and an attempt to not miss any persons who might have been exposed. After interviewing the patient about his movements and contacts, DOHMH investigators identified three persons with close (i.e., direct physical) contact. Contact A was a member of the patient's household, and contacts B and C had intermittent close contact during varying time periods after October 21. All three contacts were interviewed, evaluated for symptoms, and, under orders from DOHMH, required initial home confinement and direct active monitoring of oral temperature and symptoms. This included a daily face-to-face visit between the close contact and a DOHMH or vendor staff member, followed by a second daily face-to-face visit or telephone call. After additional evaluation and assessment, contacts B and C were released from home confinement after 10 and 12 days, respectively. Contact A was released from home confinement after 19 days. All three contacts completed direct active monitoring by DOHMH for 21 days (*2*); none developed signs or symptoms suggestive of Ebola. The patient was hospitalized at Bellevue Hospital Center from October 23–November 11 but released from the isolation unit on November 10 after clinical improvement and two nucleic acid amplification tests of blood for Ebola virus had negative results.

DOHMH actively monitored 114 health care personnel based on three criteria: direct patient care responsibilities, entry into the patient's room, and handling of non-decontaminated laboratory specimens. Monitored personnel included seven FDNY-EMS workers, one from the DOHMH laboratory, and 106 at Bellevue Hospital Center. The 106 hospital workers included clinical (38), laboratory (42), environmental management (22), transport (3), and support (1) staff members. All 114 personnel reported using appropriate personal protective equipment without any known breach and were categorized as low (but not zero) risk as directed by CDC guidance of October, 2014 (*2*). Symptoms and twice-daily oral temperatures were reported every day by telephone to DOHMH for 21 days; no movement or work restrictions were imposed. No secondary cases of Ebola were detected among these 114 health care worker contacts. No other cases of Ebola were reported in NYC in the 42 days (two incubation periods) after the patient was first identified.

Discussion

In response to the Ebola epidemic in West Africa, in July 2014 DOHMH began preparation for the potential arrival of imported Ebola cases with enhanced preparedness and interagency collaboration. This included enhancing surveillance to rapidly recognize and respond to a report of a patient meeting the CDC clinical and risk factor criteria for a person under investigation (*3*); working with hospitals to prepare to evaluate any returning traveler with symptoms consistent with Ebola; deploying the U.S. Department of Defense-developed Ebola virus assay at DOHMH's laboratory as part of CDC's Laboratory Response Network; and providing 24-hour per day testing, specimen packaging, and transport services (*1*).

Initial interagency collaboration focused on streamlining preparedness activities. The FDNY-EMS established protocols for responding to emergency telephone (911) calls involving persons with illness and a history of recent travel to an Ebola-affected country, and worked with HHC and DOHMH to perform triage on such persons. The FDNY-EMS and DOHMH also worked with John F. Kennedy International Airport Border Health Station and the Port Authority of New York and New Jersey to prepare for potentially ill travelers. After New York City designated Bellevue as a hospital to manage a patient with Ebola, HHC worked with the hospital to prepare the isolation unit and develop staffing plans for safely treating such patients. DOHMH responded to HHC drills to test and practice safe triage of persons under investigation. The Office of the Chief Medical Examiner, a division of DOHMH, developed procedures for handling the body of a person under investigation or with Ebola.

On October 3, 2014, in response to the Ebola case identified in Texas in late September 2014 (*4*), DOHMH activated its incident command system. The goals of incident command system activation were to 1) enhance interagency coordination and accelerate planning for health care system readiness; 2) quarantine and actively monitor close contacts of an Ebola case; 3) manage waste; and 4) conduct public outreach in NYC. DOHMH collaborated with the New York State Department of Health to assess and support the readiness of three Ebola treatment centers in NYC in addition to Bellevue. DOHMH also provided outreach to support rapid identification and isolation of persons under investigation at emergency departments and other ambulatory facilities. After the Ebola case was diagnosed in NYC on October 23, DOHMH identified contractors for disposal of medical and non-medical waste and worked with the New York State Department of Health and CDC to refine policies for identifying and monitoring people at risk for Ebola.

What is already known on this topic?

Because Ebola virus disease (Ebola) has potential to spread and has a high case-fatality rate, early identification and isolation of cases is essential. To prepare for a potential Ebola case, New York City (NYC) worked to enhance public health preparedness and interagency coordination.

What is added by this report?

The first U.S. case of Ebola diagnosed in a returning humanitarian aid worker was detected in NYC in October, 2014. Three persons who had direct contact with the patient and 114 health care workers required active monitoring. This monitoring was difficult because protocols had not been finalized prior to the identification of the case. No other persons having contact with the patient developed signs or symptoms of Ebola during the monitoring periods. No other cases of Ebola were reported in NYC in the 42 days after the patient was identified.

What are the implications for public health practice?

Interagency preparedness can help to safely and efficiently isolate and diagnose Ebola cases. Public health response to Ebola is likely to be resource intensive. Even as the West Africa Ebola epidemic subsides, it is important for public health agencies to maintain preparedness for other potential imported disease threats.

The public health response to the first case of Ebola in NYC highlighted the importance of collaboration. First, DOHMH and MSF had an established protocol for MSF to contact DOHMH when an MSF worker in NYC met the criteria for a person under investigation, and MSF required its employees to self-monitor and report an elevated body temperature or symptoms immediately. Second, beginning in August 2014, FDNY-EMS and HHC (including Bellevue) developed protocols and conducted drills on their own and with DOHMH, which permitted a person under investigation to be safely and quickly transported from home to the hospital. FDNY-EMS committed to transport of these patients only by personnel who had extensive training and experience in hazardous (chemical, biological, nuclear) materials response and had received additional training to safely and efficiently provide pre-hospital care for an Ebola patient. Third, protocols for packing, transporting, and testing specimens for Ebola virus were established among the receiving hospital, DOHMH's laboratory, and CDC, permitting timely and efficient diagnosis. Finally, DOHMH increased public outreach efforts and, by October 31, had participated in 34 community events, contacted more than 160 West African organizations, sent community outreach teams to neighborhoods to disseminate accurate information on Ebola transmission and symptoms, and distributed 51,000 informational cards.

Despite planning and collaboration, a number of challenges remained. Creating clear and implementable criteria for health care worker monitoring based on a worker's tasks or entry into specific zones was difficult. Persons entering the patient care room clearly required monitoring according to CDC Movement and Monitoring guidance (*2*). However, it was difficult to decide whether others, such as laboratory staff or waste handlers, also required monitoring. For example, "performing laboratory work" as a criterion for monitoring evolved as DOHMH and HHC discussed the exact laboratory work performed. Subsequently, workers performing laboratory work on decontaminated specimens did not require monitoring. Instituting an effective monitoring system that included timely and clear transmission of data between DOHMH and the hospital also proved difficult. Establishing protocols for workers to report oral temperatures and any symptoms to the call center took several days, and some workers had to be reminded to call DOHMH. As monitoring procedures became clearer and more efficient, worker compliance with reporting improved. Data management for worker monitoring initially required more than 12 full-time staff members of DOHMH and HHC, and managing data flow between the two agencies required close communication. Finally, there was insufficient planning on what instructions to give workers who required active monitoring if they planned to travel outside of NYC while being monitored, especially in the context of evolving local, state, federal, and international policies on movement restrictions for persons in contact with Ebola patients.

In NYC, the public health response to one Ebola case was resource intensive for a local health department, with participation of more than 500 DOHMH staff members and expenditures of more than $4,300,000 in DOHMH funds. These figures include not only the direct costs of the local public health response (e.g., contact tracing, environmental issues, and health care worker monitoring) but also the indirect costs of increasing citywide preparedness after identifying the one case (e.g., enhancing hospital preparedness, active monitoring of returning travelers, and community outreach). Ebola preparedness might include advanced planning with all designated Ebola hospitals to establish efficient monitoring programs for workers involved in caring for Ebola patients, as well as a plan for local resource allocation needed once an Ebola case has been confirmed.

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References

1. Benowitz I, Ackelsberg J, Balter SE, et al.; Centers for Disease Control and Prevention (CDC). Surveillance and preparedness for Ebola virus disease — New York City, 2014. MMWR Morb Mortal Wkly Rep 2014;63:934–6.
2. Interim US. guidance for monitoring and movement of persons with potential Ebola virus exposure. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at http://www.cdc.gov/vhf/ebola/exposure/monitoring-and-movement-of-persons-with-exposure.html.
3. CDC. Case definition for Ebola virus disease (EVD). Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at http://www.cdc.gov/vhf/ebola/healthcare-us/evaluating-patients/case-definition.html.
4. Chevalier MS, Chung W, Smith J, et al.; Centers for Disease Control and Prevention (CDC). Ebola virus disease cluster in the United States—Dallas County, Texas, 2014. MMWR Morb Mortal Wkly Rep 2014;63:1087–8.

CDC Grand Rounds: the Future of Cancer Screening

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Cancer is the second leading cause of death in the United States, with 52% of deaths caused by cancers of the lung and bronchus, female breast, uterine cervix, colon and rectum, oral cavity and pharynx, prostate, and skin (melanoma) (*1*). In the 1930s, uterine cancer, including cancer of the uterine cervix, was the leading cause of cancer deaths among women in the United States (*2*). With the advent of the Papanicolaou (Pap) test in the 1950s to detect cellular level changes in the cervix, cervical cancer death rates declined significantly (*2*). Since this first cancer screening test, others have been developed that detect the presence of cancer through imaging procedures (e.g., mammography, endoscopy, and computed tomography) and laboratory tests (e.g., fecal occult blood tests) (*3*).

The U.S. Preventive Services Task Force (USPSTF) provides cancer screening recommendations and continually reviews the scientific evidence for the potential benefits and harms of screening (*4*). USPSTF cancer screening recommendations that are graded A or B (indicating that they are recommended by USPSTF) include those for breast cancer, cervical cancer, colorectal cancer, and for lung cancer in heavy smokers (*4*) (Table 1); Grade A indicates high certainty that the net benefit is substantial, and Grade B indicates high certainty that the net benefit is moderate, or moderate certainty exists that the net benefit is moderate to substantial. *Healthy People 2020* objectives include cancer-related objectives that address incidence, mortality, and screening for each of these cancers; no objective has been established for lung cancer screening because it was not recommended by USPSTF until 2013, after the *Healthy People 2020* objectives were released (*5*) (Table 2).

International Models of Organized Cancer Screening

In the United States, patients frequently receive cancer screening recommendations from a physician during an office visit for a general examination or a medical condition. However, in some parts of the world, such as the Netherlands and the United Kingdom, recommendations for screening are made outside of routine medical care settings. These countries use organized systems to contact all adults for whom screening is recommended to remind them to receive cancer screening at recommended intervals. These systems include comprehensive data collection and evaluation systems that provide feedback to improve quality of screening and minimize breakdowns in the multiple steps of the cancer screening process. In the Netherlands, universal cervical cancer screening every 5 years is available for women aged 35–60 years (*6*). Even though women in the United States received three to four times more Pap tests than women in the Netherlands, the decreases in cervical cancer deaths during 1970–2010 were similar in both countries (*6*). In the United Kingdom, a pilot study was conducted that showed approximately 60% of those invited participated in a colorectal cancer screening pilot before full implementation of the Bowel Cancer Screening Programme, which screens adults aged 60–69 years for colorectal cancer every 2 years with guaiac fecal occult blood testing; follow-up colonoscopy is available for persons with abnormal test results (*7*). In that program, 20 local screening centers are grouped into five program hubs that manage patient screening invitations and recall, process guaiac fecal occult blood tests and their results, and schedule endoscopies with nurses at the screening centers. Although general practitioners in the United Kingdom are not directly involved in conducting the screening program, they receive a copy of the results that are sent to their patients.

Organized Cancer Screening in a Managed Care Setting

System-level changes that have led to a more organized approach to cancer screening are being implemented in certain health care settings in the United States. Kaiser Permanente Northern California (KPNC) is an example of how a large U.S. managed care plan has organized colorectal cancer screening (*8*). KPNC patient-oriented interventions to increase colorectal cancer screening include tracking patients aged 51–75 years to monitor their use of screening. Approximately 13,000 fecal immunochemical test kits are mailed per week according to the patient's birth date (aged 51–75 years) or date of previous screening. Automated reminders and reminder postcards are sent approximately 3 and 6 weeks, respectively, after the initial mailing. KPNC provider-oriented interventions include electronic record-based reminders to providers and tracking

This is another in a series of occasional MMWR *reports titled CDC Grand Rounds. These reports are based on grand rounds presentations at CDC on high-profile issues in public health science, practice, and policy. Information about CDC Grand Rounds is available at http://www.cdc.gov/about/grand-rounds.*

TABLE 1. U.S. Preventive Services Task Force Grade A and Grade B cancer screening recommendations, 2014

Cancer type	Recommendation*
Female breast	Grade B: USPSTF recommends biennial mammography screening for women aged 50–74 years.†
Cervical	Grade A: USPSTF recommends screening for cervical cancer in women aged 21–65 years with cytology (Pap test) every 3 years or, for women aged 30–65 years who want to lengthen the screening interval, screening with a combination of cytology and human papillomavirus testing every 5 years.§
Colorectal	Grade A: USPSTF recommends screening for colorectal cancer using fecal occult blood testing every year, sigmoidoscopy every 5 years combined with fecal occult blood testing every 3 years, or colonoscopy every 10 years for adults aged 50–75 years. The risks and benefits of these screening methods vary.¶
Lung	Grade B: USPSTF recommends annual screening for lung cancer with low-dose computed tomography for adults aged 55–80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. Screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.**

Abbreviation: USPSTF = U.S. Preventive Services Task Force.

* Screening recommendations from other organizations that were current when the USPSTF recommendations were released are included in the full USPSTF statement.

† **Source:** US Preventive Services Task Force. Recommendations for primary care practice. Breast cancer: screening. Rockville, MD: US Preventive Services Task Force; 2009. Available at http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendation-summary/breast-cancer-screening.

§ **Source:** US Preventive Services Task Force. Recommendations for primary care practice. Cervical cancer: screening. Rockville, MD: US Preventive Services Task Force; 2012. Available at http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendation-summary/cervical-cancer-screening.

¶ **Source:** US Preventive Services Task Force. Recommendations for primary care practice. Colon cancer: screening. Rockville, MD: US Preventive Services Task Force; 2008. Available at http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendation-summary/colorectal-cancer-screening.

** **Source:** US Preventive Services Task Force. Recommendations for primary care practice. Lung cancer: screening. Rockville, MD: US Preventive Services Task Force; 2013. Available at http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendation-summary/lung-cancer-screening.

patients with a positive fecal immunochemical test to ensure they receive a timely follow-up colonoscopy. Monthly quality assurance reports are sent to each medical center, including information on colonoscopy follow-up for patients with a positive fecal immunochemical test, time to colonoscopy, and statistics on cancer incidence and stage, including detection rates for precancerous lesions. With the support of leadership at all levels of management for this system-level process, KPNC has improved the Healthcare Effectiveness Data and Information Set performance measure for colorectal cancer screening quality from 37% in 2005 to 79% in 2012 in the commercially insured population and from 41% in 2005 to 91% in the Medicare population (*9*).

Integration of Primary Care and Public Health

The Affordable Care Act (ACA) has the potential to increase access to Grade A and Grade B preventive health services through increased access to insurance coverage and the elimination of cost-sharing (*10*). In addition, ACA includes numerous other provisions that could increase the proportion of persons who are screened for cancer, such as provisions related to Medicaid preventive services, patient-centered medical homes, and community health centers (*11*).

However, even with adequate health insurance, many persons and communities might face substantial barriers to obtaining cancer screening tests. Through the integration of public health and primary care (*12*), opportunities exist to improve both population and individual health, building on the capacities and extensive networks of clinical and preventive services of well-established public health programs and initiatives. Improvements in cancer control can be achieved through population-based approaches to enhance the use of screening and targeted outreach to populations with higher cancer prevalence.

Public health leaders can coordinate hospitals, managed care plans, and other providers of screening services to develop a community-wide, organized approach to cancer screening (*12*,*13*). Examples of core elements include approaches that coordinate and strategically implement the patient- and provider-oriented interventions recommended in the *Guide to Community Preventive Services* (*14*), such as patient reminders and small media (videos and printed materials), combined with enhanced population-level surveillance of cancer screening measures, ideally through integrated electronic data from health care providers. Public health programs could work with electronic databases maintained by Federally Qualified Health Centers, state Medicaid programs, and private insurers to identify unscreened persons eligible for cancer screening, followed by aggressive outreach to encourage participation in cancer screening. In some communities, public health departments might elect to manage or directly provide population-based preventive screening services to geographically defined, vulnerable populations. State-level health-care reform in Vermont has resulted in the integration of chronic disease management, behavioral health, wellness, and preventive services.

Opportunities for CDC

CDC's National Breast and Cervical Cancer Early Detection Program is the only national organized cancer screening program in the United States. For 24 years, this program has provided access

to breast and cervical cancer screening services to low income women who have limited or no health insurance. Similar to the organized screening examples already discussed, the National Breast and Cervical Cancer Early Detection Program is built on a public health model that includes a clinical provider network unique to the health care delivery system in each funded state, tribal jurisdiction, or territory. Since the program began in 1991, 4.3 million women have received services, and the program has conducted 10.7 million screening examinations. Approximately 56,600 breast cancers, 152,400 premalignant cervical lesions, and 3,200 cervical cancers were diagnosed during 1991–2011.* Along with an existing network to provide breast and cervical cancer screening to vulnerable communities with limited or no health insurance, this program offers outreach, public education, continuing education for health professionals, quality assurance, and surveillance that can be expanded to accommodate a larger population. For example, the New York State Health Department and its partners are creating the New York State Federally Qualified Health Center Cancer Prevention Registry to provide screening data to local and state organizations to increase screening rates in underserved communities and improve screening services. In addition to providing screening services, CDC's Colorectal Cancer Control Program emphasizes population-based approaches to increase screening rates across all groups. With this new approach, Colorectal Cancer Control Program grantees are implementing evidence-based strategies in partnership with health care systems, insurers, and others, while also emphasizing the importance of quality assurance in the service provision portion of the program. As ACA increases access to insurance coverage across the nation, collaboration with state Medicaid programs and health care systems, especially those that serve populations with limited or no health insurance or usual source of care, will be important. To advance population-based, organized approaches to cancer screening, systems could be developed so that cancer screening tests are not only recommended when a patient visits a primary care physician for a different medical problem but also are tracked and used to improve cancer screening across communities. In addition, communication and outreach strategies that focus on communities with the greatest need for increased screening are important to improve overall community health measures and address health disparities targeted by CDC programs.

Summary

Effective cancer screening programs that achieve high screening rates depend on patient, provider, and health care system factors. Although cancer screening participation can be improved by increasing access to primary care services and covering cancer screening tests without out-of-pocket costs for patients, public health leaders might still need to collaborate with the health care systems in their communities to better organize cancer screening at the population level, develop surveillance systems that can accommodate electronic data from multiple providers, and eliminate gaps and disparities in cancer screening participation in vulnerable populations. The lessons learned from successful breast, cervical, and colorectal screening programs in national and international settings might be used in the development of initiatives to further expand cancer screening.

TABLE 2. *Healthy People 2020* objectives for breast, cervical, colorectal, and lung cancer incidence, mortality, and screening

Objective	Baseline	Most current data (year)	Target
C-2: Reduce the lung cancer death rate	50.6 per 100,000 population	46.0 per 100,000 population (2011)	45.5 per 100,000 population
C-3: Reduce the female breast cancer death rate	23.0 per 100,000 population	21.6 per 100,000 population (2011)	20.7 per 100,000 population
C-4: Reduce the death rate from cancer of the uterine cervix	2.4 per 100,000 population	2.3 per 100,000 population (2011)	2.2 per 100,000 population
C-5: Reduce the colorectal cancer death rate	17.1 per 100,000 population	15.4 per 100,000 population (2011)	14.5 per 100,000 population
C-9: Reduce invasive colorectal cancer	48.9 per 100,000 population	43.7 per 100,000 population (2010)	41.6 per 100,000 population
C-10: Reduce invasive uterine cervical cancer	8.3 per 100,000 population	7.7 per 100,000 population (2010)	7.5 per 100,000 population
C-11: Reduce late-stage female breast cancer	40.9 per 100,000 population	39.2 per 100,000 population (2010)	38.9 per 100,000 population
C-15: Increase the proportion of women who receive a cervical cancer screening based on the most recent guidelines	84.5%	80.7% (2013)	93.0%
C-16: Increase the proportion of adults who receive a colorectal cancer screening based on the most recent guidelines	52.1%	58.2% (2013)	70.5%
C-15: Increase the proportion of women who receive a breast cancer screening based on the most recent guidelines	73.7%	72.6% (2013)	81.1%

Source: US Department of Health and Human Services. Healthy People 2020 topics and objectives: cancer. Washington, DC: US Department of Health and Human Services; 2015. Available at http://healthypeople.gov/2020/TopicsObjectives2020/objectiveslist.aspx?topicId=5.

*These data were current at the time the Public Health Grand Rounds was presented. More current data are available at http://www.cdc.gov/cancer/nbccedp/data/summaries/national_aggregate.htm.

[1]Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, CDC; [2] National Cancer Institute; [3]The Permanente Medical Group, Inc., and Kaiser Permanente Medical Center, Walnut Creek and Antioch, California; [4]The Colorado Trust; [5]American Cancer Society; [6]Office of the Associate Director for Science, CDC (Corresponding author: Cheryll C. Thomas, ccthomas@cdc.gov, 770-488-3254) *Authors contributed equally to the report.

References

1. US Cancer Statistics Working Group. United States cancer statistics: 1999–2011 incidence and mortality web-based report. Atlanta. GA: US Department of Health and Human Services, CDC and National Cancer Institute; 2014. Available at http://apps.nccd.cdc.gov/uscs.
2. Wingo PA, Cardinez CJ, Landis SH, et al. Long-term trends in cancer mortality in the United States, 1930–1998. Cancer 2003;97(Suppl):3133–275.
3. National Cancer Institute. Cancer screening overview (PDQ). Bethesda, MD: US Department of Health and Human Services, National Cancer Institute; 2014. Available at http://www.cancer.gov/cancertopics/pdq/screening/overview/patient.
4. US Preventive Services Task Force. Recommendations for primary care practice. Rockville, MD: US Preventive Services Task Force; 2014. Available at http://www.uspreventiveservicestaskforce.org/Page/Name/recommendations.
5. US Department of Health and Human Services. Healthy People 2020 topics and objectives: cancer. Washington, DC: US Department of Health and Human Services; 2015. Available at http://www.healthypeople.gov/2020/topics-objectives/topic/cancer/objectives?topicId=5.
6. Habbema D, De Kok IM, Brown ML. Cervical cancer screening in the United States and the Netherlands: a tale of two countries. Milbank Q 2012;90:5–37.
7. Moss SM, Campbell C, Melia J, et al. Performance measures in three rounds of the English bowel cancer screening pilot. Gut 2012;61:101–7.
8. Levin TR, Jamieson L, Burley DA, Reyes J, Oehrli M, Caldwell C. Organized colorectal cancer screening in integrated health care systems. Epidemiol Rev 2011;33:101–10.
9. Lee JK, Levin TR, Corley DA. The road ahead: what if gastroenterologists were accountable for preventing colorectal cancer? Clin Gastroenterol Hepatol 2013;11:204–7.
10. Fox JB, Sahw FE. Clinical preventive services coverage and the Affordable Care Act. Am J Public Health 2015;105:e7–e10.
11. Patient Protection and Affordable Care Act of 2010. Pub. L. No. 111–48, 124 Stat. 119 (2010).
12. Institute of Medicine. Primary care and public health: exploring integration to improve population health. Washington, DC: The National Academies Press; 2012.
13. Plescia M, Richardson LC, Joseph D. New roles for public health in cancer screening. CA Cancer J Clin 2012;62:217–9.
14. Community Preventive Services Task Force. The guide to community preventive services. Atlanta, GA: US Department of Health and Human Services, CDC, Community Preventive Services Task Force. Available at http://www.thecommunityguide.org/index.html.

Update on Progress in Electronic Reporting of Laboratory Results to Public Health Agencies — United States, 2014

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Since 2010, CDC has provided resources from the Prevention and Public Health Fund of the Affordable Care Act (*1*) to 57 state, local, and territorial health departments through the Epidemiology and Laboratory Capacity for Infectious Diseases cooperative agreement to assist with implementation of electronic laboratory reporting (ELR)* from clinical and public health laboratories to public health agencies. To update information from a previous report (*2*) about the progress in implementing ELR in the United States, CDC examined regular communications between the agency and the 57 health departments during 2012–2014. The results indicated that, as of July 2014, 67% of the approximately 20 million laboratory reports received annually for notifiable conditions were received electronically, compared with 62% in July 2013. These electronic reports were received by 55 of the 57 jurisdictions and came from 3,269 (up from nearly 2,900 in July 2013) of approximately 10,600 reporting laboratories (Figure 1). The proportion of laboratory reports received electronically varied by jurisdiction (Figure 2). In 2014, compared with 2013, the number of jurisdictions receiving >75% of laboratory reports electronically was higher (21 versus 14), and the number of jurisdictions receiving <25% of reports electronically was lower (seven versus nine). National implementation of ELR continues to increase and appears it might reach 80% of total laboratory report volume by 2016.

Facilities of four large commercial laboratories† account for 39% of the total ELR volume, whereas public health laboratories account for 23%. Hospital laboratories, which number over 5,000, currently send 20% of ELR volume, an increase from 14% in 2013 (Figure 3).

As of July 2014, 479 hospital laboratories were using the message format§ required under the Centers for Medicare and Medicaid Services' Meaningful Use incentive program to report clinical test results (*3*), compared with fewer than 200 in 2013. In addition, the number of hospital laboratories testing Meaningful Use–compliant ELR transmissions has more than doubled, to more than 1,300 as of July 2014. Nationally, nearly 3,000 eligible hospitals have registered their intent to send electronic laboratory reports to public health agencies under the Meaningful Use program.

Following are reports from four states that highlight some of their experiences with ELR.

Iowa

ELR implementation has streamlined surveillance for reportable diseases at the Iowa Department of Public Health. For example, with ELR in place, the Iowa Department of Public Health handled a large outbreak of pertussis (1,738 cases) in 2012 and concurrent outbreaks of cryptosporidiosis (1,486 cases) and cyclosporiasis (148 cases) in 2013 without the need to divert additional staff members or resources from other public health activities. In contrast, during the 2006 national mumps outbreak (1,965 Iowa cases), before ELR was implemented in Iowa, the disease monitoring team required substantial temporary reassignment of staff members and temporary employees for data entry.

North Carolina

In North Carolina, use of ELR has decreased the time required for case processing by as much as 5 days (from when a case report is received by public health authorities to when it is submitted to CDC). Additionally, cases initiated via ELR are more accurately reported and require less follow-up than cases initiated through traditional mechanisms, such as paper reporting of laboratory results. In 2013, 76% of all laboratory reports were received by the North Carolina Division of Public Health electronically compared with 56% in 2012, largely because of the integration of HIV and syphilis reporting via ELR into the North Carolina Electronic Disease Surveillance System.

Kansas

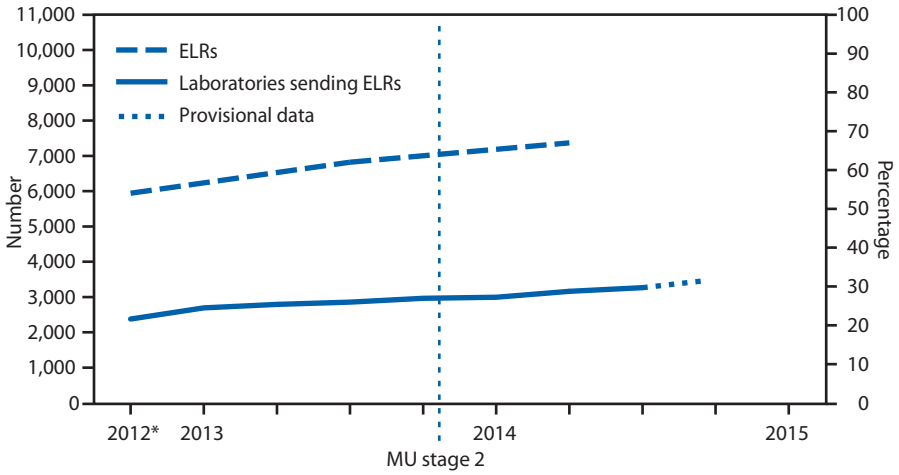
In January 2012, the Kansas Department of Health and Environment implemented an integrated disease surveillance information system that supports ELR for all reportable diseases. As of October 2014, 29 laboratories were reporting electronically, resulting in 74% of all laboratory reports for notifiable conditions being received through ELR and arriving

* Electronic laboratory reporting (ELR) generally refers to the secure, automated messaging of laboratory reports, using HL7 or other formats, sent using one or more electronic communication protocols. Direct Web entry (the manual entering of reports over the Internet by laboratories but not through electronic messaging) is included in this report as ELR because it does not require manual data entry by public health agencies into a surveillance information system or into an ELR repository.

† LabCorp, Quest Diagnostics, ARUP Laboratories, and Mayo Clinic.

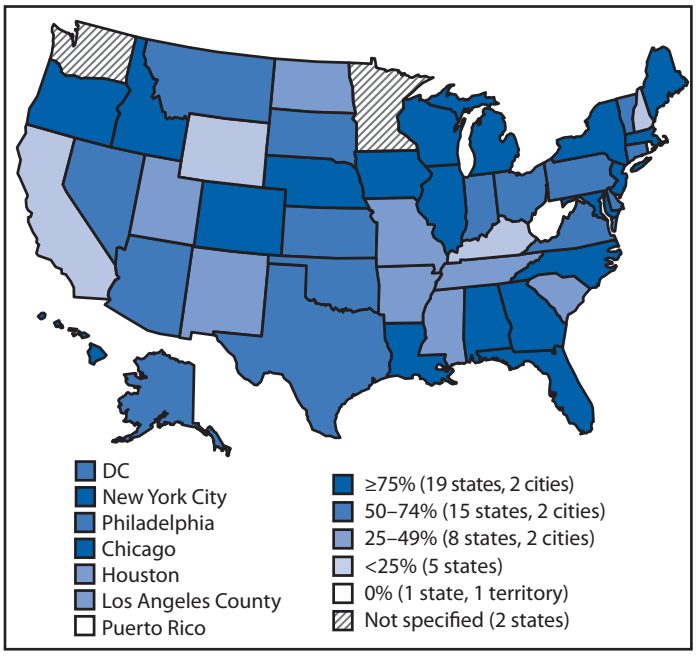
§ HL7 v2.5.1 Implementation Guide: Electronic Laboratory Reporting To Public Health (US Realm), Release 1 with Errata.

FIGURE 1. Number and percentage of laboratories sending electronic laboratory reports (ELRs) and number and percentage of reports that were sent electronically to public health agencies — United States, 2012–2014



Abbreviation: MU = Meaningful Use program of the Centers for Medicaid and Medicare Services.
* As of the third quarter 2012.

FIGURE 2. Percentage of U.S. laboratory reports received electronically, by public health jurisdiction — 57 jurisdictions, 2014



on average 2.7 days sooner than they did on paper faxes (a reduction from 6.0 days to 3.3 days).

California

In October 2013, the California Department of Public Health implemented ELR within a secure, statewide integrated electronic disease reporting and surveillance system. The California Reportable Disease Information Exchange accepts ELR from a growing group of submitters, now including 305 clinical (hospital) laboratories, four health information exchanges, and eight electronic health record system vendors. The California Department of Public Health currently receives approximately 11,000 electronic reports weekly; over 90% of this volume is automatically processed into California Reportable Disease Information Exchange, eliminating the need for local health departments to input those laboratory reports manually.

Discussion

National implementation of ELR continues to progress steadily, as evidenced by increases in both the number of laboratories using ELR and the proportion of reports being sent via ELR. Moreover, the examples from four states illustrate some of the impact ELR is having on public health practice.

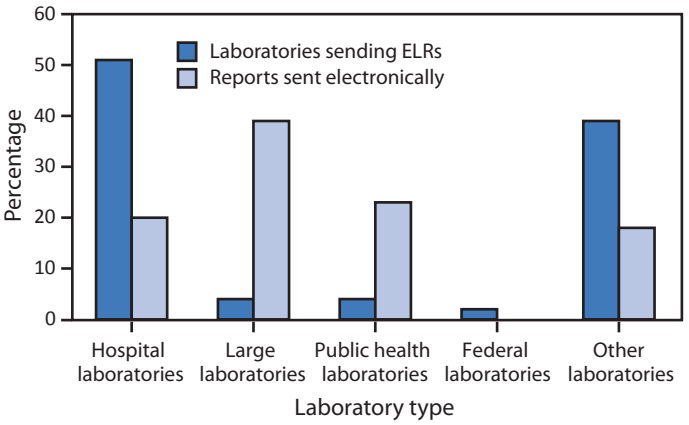
The increases in the number of hospital laboratories using ELR and the proportion of reports sent via ELR by hospital laboratories suggest that the Meaningful Use program might be having an impact on national ELR implementation. The steep increase in the number of hospital laboratories testing ELR feeds bodes well for continued increases in the number of hospital laboratories transitioning to the use of ELR for public health reporting. However, moving new ELR feeds through the testing processes and into routine use can take several months. To help expedite this process, public health agencies can adopt more efficient processes for moving ELR feeds from testing to routine use, hospital laboratories can ensure the acceptability of ELR messages before engaging health departments, and laboratory information system vendors can include or improve ELR functionality in their systems.

Large laboratories continue to make up a substantial proportion of ELR volume, but a renewed focus on completing ELR implementation from these high-volume reporters could have a big impact. Two strategies that might be explored with large laboratories, and potentially others that report to multiple jurisdictions, are adoption of a single message that would be widely acceptable to public health jurisdictions and use of a hub as a single place to send to.

Adoption of a single message that would be widely acceptable to public health jurisdictions and use of a hub as a single place for large laboratories and potentially others who report to multiple jurisdictions are two strategies that might be explored.

ELR funding for public health agencies, coupled with CDC-provided ELR technical assistance appears to be resulting in increased implementation of ELR. The new CDC surveillance

FIGURE 3. Percentage of laboratories sending electronic laboratory reports (ELRs) and percentage of reports sent electronically, by laboratory type — United States, April 2014



strategy also highlights ELR as a priority initiative for the agency (*4*). With sustained effort and funding, ELR implementation in the United States is on track to reach a target of 80% of laboratory reporting volume via ELR in 2016.

[1]North Carolina Department of Health and Human Services; [2]Iowa Department of Health; [3]California Department of Public Health; [4]Kansas Department of Health & Environment; [5]Division of Preparedness and Emerging Infections; [6]National Center for Emerging and Zoonotic Infectious Diseases; [7]Office of Public Health Scientific Services; [8]Division of Health Informatics and Surveillance, Center for Surveillance, Epidemiology and Laboratory Services, CDC. (Corresponding contributor: C. Jason Hall, cjhall@cdc.gov, 404-639-7884)

What is already known on this topic?

Electronic reporting of laboratory results to public health agencies can improve public health surveillance for reportable diseases and conditions.

What is added by this report?

As of July 2014, 67% of the approximately 20 million laboratory reports received annually for notifiable conditions in these jurisdictions were received electronically, compared with 62% in July 2013.

What are the implications for public health practice?

Progress in electronic laboratory reporting has resulted from a new emphasis and improved capacity and preparedness in health departments to address technical and policy issues. National implementation of ELR continues to progress steadily, as evidenced by increases in both the number of laboratories using ELR and the proportion of reports being sent via ELR.

References

1. Office of the Chief Financial Officer. CDC. Prevention and public health fund. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at http://www.cdc.gov/fmo/topic/PPHF/.
2. CDC. Progress in increasing electronic reporting of laboratory results to public health agencies—United States. MMWR Morb Mortal Wkly Rep 2013;62:797–9.
3. Office of Public Health Scientific Services. CDC. Meaningful use. Atlanta, GA: US Department of Health and Human Services, CDC; 2012. Available at http://www.cdc.gov/ehrmeaningfuluse/introduction.html.
4. Office of Public Health Scientific Services. CDC. Surveillance strategy. CDC. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at http://www.cdc.gov/ophss/docs/CDC-Surveillance-Strategy-Final.pdf.

Announcements

National Youth HIV and AIDS Awareness Day — April 10, 2015

National Youth HIV and AIDS Awareness Day on April 10 is the first awareness day to recognize the specific impact of HIV/AIDS epidemic on young persons. A disproportionate number of new HIV infections occurs among youths (*1*). In the United States, young persons aged 13–24 years accounted for an estimated 26% of all new HIV infections in 2010 (*1*). Nearly 60% of new infections in youths occur in blacks/African Americans, approximately 20% in Hispanics/Latinos, and approximately 20% in whites (*1*). However, the percentage of youths tested for HIV is low compared with other age groups (*1*). Among the estimated 34% of U.S. high school students who are sexually experienced, only 22% have ever been tested for HIV (*2*). The Community Preventive Services Task Force recommends risk reduction interventions in school and community settings to prevent HIV among adolescents (*3*). Individual-level and group-level HIV prevention interventions provide knowledge, skill building, and increased motivation to adopt behaviors that protect against HIV infection, specifically for youths at high risk for HIV.

CDC has a multifaceted approach to meet the goals of the National HIV/AIDS Strategy (*4*), with special emphasis on reducing HIV infection by educating young persons about HIV before they begin engaging in behaviors that place them at risk for infection. CDC biennially collects and reports data on health risk behaviors with the national, state, territorial, tribal government, and local school-based surveys of representative samples of students in grades 9–12.* Through its Act Against AIDS campaign,† CDC provides clear messages about HIV prevention and reducing its stigma, especially for high-risk groups, including young persons. Additionally, CDC funds public health departments, education agencies, and community-based organizations to expand HIV prevention education, behavioral interventions, and health services for young persons.

National Youth HIV and AIDS Awareness Day is a component of CDC's efforts to 1) prevent HIV, other STDs, and teen pregnancy and promote lifelong health among young persons, and 2) acknowledge and address the needs of young persons related to HIV/AIDS prevention. Additional information regarding youth and HIV/AIDS prevention is available at http://www.cdc.gov/hiv/ and http://www.cdc.gov/healthyyouth/.

* Available at http://www.cdc.gov/yrbs.
† Available at http://www.cdc.gov/actagainstaids.

References

1. Centers for Disease Control and Prevention (CDC). Vital signs: HIV infection, testing, and risk behaviors among youths - United States. MMWR Morb Mortal Wkly Rep 2012;61:971–6.
2. Kann L, Kinchen S, Shanklin SL, et al.; Centers for Disease Control and Prevention (CDC). Youth risk behavior surveillance—United States, 2013. MMWR Surveill Summ 2014;63(Suppl 4):1–168.
3. CDC. Guide to community preventive services. Prevention of HIV/AIDS, other STIs, and pregnancy: interventions for adolescents. Atlanta, GA: US Department of Health and Human Services, CDC; 2010. Available at http://www.thecommunityguide.org/hiv/riskreduction.html.
4. Office of National AIDS Policy. National HIV/AIDS strategy. Washington, DC: Office of National AIDS Policy; 2010. Available at https://www.whitehouse.gov/administration/eop/onap/nhas.

Announcements

STD Awareness Month—April 2015

April is STD Awareness Month, an annual observance that focuses on ways to prevent some of the nearly 20 million new cases of STDs occurring in the United States each year (*1*). CDC's STD prevention program emphasizes the most effective tools to protect one's health and prevent the spread of all STDs, including HIV: 1) learn the facts about STDs; 2) make lifestyle changes that reduce risk; 3) get regular STD testing, as needed, and 4) seek prompt treatment.

STDs affect persons of all ages, but particularly the young. CDC estimates that half of all new infections are among people aged 15–24 (*1*). STD tests aren't always part of a regular doctor's visit, and many doctors may not offer young patients an HIV or STD test unless the patient asks for one. Patients who get tested for STDs and are aware of their STD status can better protect their own health and the health of their sexual partner(s). If not treated, some STDs can lead to serious health problems. Learning resources for clinicians, patients, and community members about STDs are available from CDC at http://www.cdc.gov/std/sam.

Reference

1. Satterwhite CL, Torrone E, Meites E, et al. Sexually transmitted infections among US women and men: prevalence and incidence estimates, 2008. Sex Transm Dis 2013;40:187–93.

Errata

Vol. 64, No. 1

In the report, "Incidence of Notifiable Diseases Among American Indian/Alaska Natives — United States, 2007–2011," multiple errors occurred in the text and table.

In the third paragraph, the first sentence should read "For 26 notifiable diseases examined for 2007–2011, a total of **9,061,675** cases were recorded (Table)." The third sentence should read, "Missing data on race ranged from 0.8% for tuberculosis to 42% for giardiasis."

In the fourth paragraph, the first sentence should read, "Of the 12 diseases with race information for >70% of records and for which rates were higher among AI/ANs than among whites, the largest difference was for hantavirus pulmonary syndrome, which was reported **10** times more often among AI/ANs than among whites; however, only 20 cases were reported among AI/ANs of a total of 112 cases reported during 2007–2011." The second sentence should read, "The second largest difference was for tularemia, which was reported **7.7** times as often among AI/ANs."

On page 17, the Table should have read as follows:

TABLE. Number and incidence rate per 100,000 population for 26 selected notifiable diseases, by American Indian/Alaska Native (AI/AN), black, or white race — United States, 2007–2011

Disease	AI/ANs		Blacks		Whites		Total		Rate ratio: AI/ANs compared with whites	% with no race identified
	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
Botulism, foodborne	26	0.12	28	**0.01**	339	0.03	672	0.04	4.38	35.42
Chickenpox (varicella)	503	2.45	7,086	**3.41**	78,776 78,776	6.45	110,634	7.22	0.38	17.82
Chlamydia trachomatis	**77,072**	**374.83**	2,189,748	**1,052.68**	1,841,172	150.74	6,283,761	409.90	2.49	**29.84**
Cryptosporidiosis	223	1.08	3,202	**1.54**	29,010	2.38	45,721	2.98	0.46	25.63
Ehrlichiosis, total	219	1.07	167	**0.08**	7,250	0.59	12,348	0.81	1.79	36.46
Gonorrhea	12,764	62.08	894,198	**429.87**	317,271	25.97	**1,625,097**	**106.01**	2.39	**21.70**
Giardiasis	385	1.87	6,875	**3.31**	38,506	3.15	93,164	6.08	0.59	41.55
Haemophilus influenzae	206	1.00	1,822	**0.88**	9,340	0.76	14,990	0.98	1.31	20.69
Hantavirus pulmonary syndrome	20	0.10	1	**0.00**	77	0.01	112	0.01	15.43	10.71
Hepatitis A, viral acute	66	0.32	677	**0.33**	5,607	0.46	10,544	0.69	0.70	28.15
Hepatitis B, viral acute	144	0.70	3,532	**1.70**	9,433	0.77	**18,114**	**1.18**	0.91	2.22
Hepatitis C, viral acute	88	0.43	261	**0.13**	3,220	0.26	4,553	0.30	1.62	19.33
Legionellosis	42	0.20	2,890	**1.39**	10,590	0.87	16,870	1.10	0.24	16.87
Lyme disease	476	2.31	1,649	**0.79**	85,721	7.02	160,209	10.45	0.33	38.68
Meningococcal disease	48	0.23	707	**0.34**	2,899	0.24	4,776	0.31	0.98	18.91
Pertussis	788	3.83	3,709	**1.78**	57,644	4.72	85,723	5.59	0.81	23.48
Salmonellosis	1,783	8.67	21,647	**10.41**	142,495	11.67	252,169	16.45	0.74	28.99
Shiga toxin–producing *Escherichia coli*	161	0.78	1,020	**0.49**	16,749	1.37	26,058	1.70	0.57	27.09
Shigellosis	1,115	5.42	17,822	**8.57**	37,309	3.05	85,172	5.56	1.78	28.71
Spotted fever rickettsiosis	519	2.52	434	**0.21**	7,325	0.60	11,108	0.72	4.21	23.17
Streptococcus pneumoniae, invasive (all ages)	575	2.80	8,652	**4.26**	28,766	2.36	49,548	3.23	1.19	20.76
Streptococcus pneumoniae, invasive (age <5 years)	297	**15.92**	2,249	**13.38**	9,214	**12.04**	16,102	**15.95**	**1.32**	21.96
Syphilis, primary and secondary	367	1.78	31,469	**15.13**	**28,616**	2.30	66,707	4.35	0.78	4.00
Tuberculosis	813	3.95	15,167	**7.29**	25,944	2.12	59,458	3.88	1.86	0.77
Tularemia	47	0.23	15	**0.01**	413	0.03	626	0.04	6.76	21.73
West Nile virus disease	184	0.89	348	**0.17**	5,142	0.42	**7,439**	**0.49**	2.13	**21.86**
Total	**98,931**	—	**3,215,375**	—	**2,798,828**	—	**9,061,675**	—	—	—

Errata

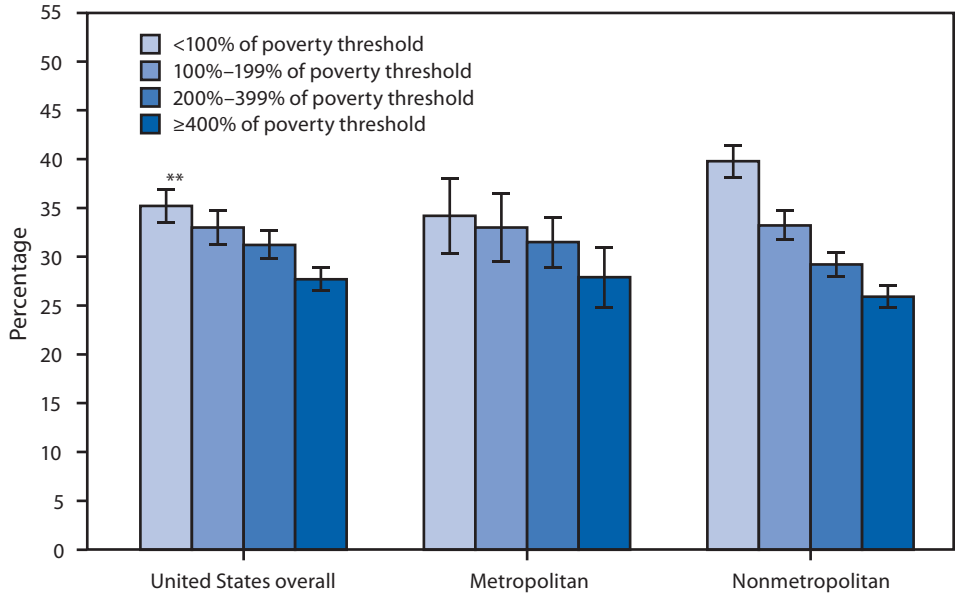
Vol. 64, No. 6

In the report, "Update on Progress in Selected Public Health Programs After the 2010 Earthquake and Cholera Epidemic — Haiti, 2014," in the Figure on page 139, the data shown for "Eligible children receiving measles-rubella vaccination" pertain only to estimated coverage through routine immunization. Additional vaccinations were provided through special campaigns.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Adults Who Average ≤6 Hours of Sleep,* by Family Income Group† and Metropolitan Status of Residence§ — National Health Interview Survey, United States, 2013¶



* Participants were asked, "On average, how many hours of sleep do you get in a 24-hour period?"
† Family income groups were defined based on family income as a percentage of the federal poverty threshold. Poverty thresholds, which are published by the U.S. Census Bureau, vary by family size and the number of children in the family. Family income was imputed when missing using multiple imputation methodology.
§ Based on the household residence location. Metropolitan is located within a metropolitan statistical area, defined as a county or group of contiguous counties that contains at least one urbanized area of ≥50,000 population. Surrounding counties with strong economic ties to the urbanized area also are included. Nonmetropolitan areas do not include a large urbanized area and are generally thought of as more rural.
¶ 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 sample adult component.
** 95% confidence interval.

During 2013, the percentage of adults who slept ≤6 hours in an average 24-hour period declined with family income from 35.2% for those with family incomes <100% of the poverty level to 27.7% for those with family incomes ≥400% of the poverty level. The same pattern was found for those living in metropolitan and nonmetropolitan areas. There were no statistically significant differences between those living in metropolitan and nonmetropolitan areas except among those with family incomes <100% of the poverty level, where 39.8% of adults living in nonmetropolitan areas slept ≤6 hours compared with 34.2% of adults living in metropolitan areas.

Source: National Health Interview Survey, 2013 data. Available at http://www.cdc.gov/nchs/nhis.htm.

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