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Falls Prevention Awareness Day — September 22, 2016

September 22, 2016, marks the 9th annual observation of Falls Prevention Awareness Day in the United States. Falls are the leading cause of injury, death, and disability for older persons in the United States.* This issue of *MMWR* includes a report describing the epidemiology of falls among older adults, and how health care providers can use CDC's STEADI (Stopping Elderly Accidents, Deaths, and Injuries) initiative† to reduce preventable falls. STEADI provides tools for health care providers to screen older adult patients, assess fall risk, and provide effective interventions.

In 2011, health department and health system partnerships in Oregon and New York used CDC funding to implement STEADI into their primary care practices (*1*). Before implementing STEADI, health care providers in these sites rarely talked to their older adult patients about falls (*1*,*2*). After implementation, participating health care providers in New York screened and assessed 65% of older adult patients for fall risk (*2*), and participating health care providers in Oregon screened and assessed approximately half of all older adult patients (*1*).

To help prevent older adult falls, health care providers are encouraged to take three steps: 1) screen patients for fall risk, 2) review and manage patients' medications that might increase fall risk, and 3) recommend daily vitamin D supplements for improved bone, muscle, and nerve health. Additional information is available at http://www.cdc.gov/steadi.

* http://www.cdc.gov/injury/WISQARS.
† http://www.cdc.gov/steadi.

References

1. Casey CM, Parker EM, Winkler G, Liu X, Lambert GH, Eckstrom E. Lessons learned from implementing CDC's STEADI falls prevention algorithm in primary care. Gerontologist 2016;gnw074. http://dx.doi.org/10.1093/geront/gnw074
2. Parker EM, Lee R, Floyd F, et al. Making older adult fall prevention part of routine care in a large health system in New York state. Gerontologist 2015;55(Suppl 2):320.

Falls and Fall Injuries Among Adults Aged ≥65 Years — United States, 2014

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Falls are the leading cause of fatal and nonfatal injuries among adults aged ≥65 years (older adults). During 2014, approximately 27,000 older adults died because of falls; 2.8 million were treated in emergency departments for fall-related injuries, and approximately 800,000 of these patients were subsequently hospitalized.* To estimate the numbers, percentages, and rates of falls and fall injuries among older adults by selected characteristics and state, CDC analyzed data from the 2014 Behavioral Risk Factor Surveillance System (BRFSS) survey. In 2014, 28.7% of older adults reported falling; the estimated 29.0 million falls resulted in 7.0 million injuries. Known effective strategies for reducing the number

* http://www.cdc.gov/injury/wisqars.

INSIDE

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

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of older adult falls include a multifactorial clinical approach (e.g., gait and balance assessment, strength and balance exercises, and medication review). Health care providers can play an important role in fall prevention by screening older adults for fall risk, reviewing and managing medications linked to falls, and recommending vitamin D supplements to improve bone, muscle, and nerve health and reduce the risk for falls.

BRFSS is an annual, random-digit–dialed telephone survey of the noninstitutionalized U.S. civilian population aged ≥18 years conducted annually in all 50 states, the District of Columbia, Guam, Puerto Rico, and the U.S. Virgin Islands. Detailed information regarding the survey is available online.[†] The median response rate for 2014 was 47.0%.

In 2014, survey respondents were asked, "In the past 12 months, how many times have you fallen?" If the response was one or more times, they were asked, "How many of these falls caused an injury? By an injury, we mean the fall caused you to limit your regular activities for at least a day or to go see a doctor." This analysis was limited to adults aged ≥65 years in all 50 states and the District of Columbia who were asked the questions about falls.

The first question was used to estimate the percentage of older adults who reported one or more falls and the total number of falls; the second question was used to estimate the number of fall injuries. Response options ranged from zero to 76 or more with reported means of 0.67 falls and 0.16 fall injuries. The percentages and numbers of falls and fall injuries included all adults aged ≥65 years in the denominator. Adults with responses of "Don't know/Not sure," "Refused," or "Not asked or missing" for questions about falls, fall injuries, or demographic characteristics were excluded, reducing the sample to 147,319 adults.[§]

The percentages and numbers were compared across the following subgroups: sex, age group, race/ethnicity, marital status, education, annual household income, health status, and state of residence. Orthogonal polynomial contrasts and pairwise t-tests were used to identify significant increases or decreases where appropriate. The 2014 BRFSS data were weighted by iterative proportional fitting (raking) to represent state-level population estimates and aggregated to represent a nationwide estimate.[¶] All results presented are weighted. Analyses were conducted using statistical software to account for the complex sampling design.

In 2014, 28.7% of older adults reported falling at least once in the preceding 12 months, resulting in an estimated 29.0 million falls (Table 1). Of those who fell, 37.5% reported at least one fall that required medical treatment or restricted activity for at least 1 day, resulting in 7.0 million fall injuries. Women (30.3%) were more likely to report falling than men (26.5%) ($p<0.01$) and were more likely to report a fall injury (12.6% compared with 8.3%; $p<0.01$). The percentage of

[†] http://www.cdc.gov/brfss.

[§] http://www.cdc.gov/brfss/annual_data/2014/pdf/codebook14_llcp.pdf.

[¶] http://www.cdc.gov/surveillancepractice/reports/brfss/brfss.html.

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TABLE 1. Percentages and rates* of falls and fall injuries† in the preceding 12 months reported by adults aged ≥65 years (N = 147,319), by selected characteristics — Behavioral Risk Factor Surveillance System, United States, 2014

Characteristic	No. reporting a fall§	% (95% CI)	No. of falls reported (millions)	Rate¶ (95% CI)	No. reporting a fall injury	% (95% CI)	No. of fall injuries reported (millions)	Rate** (95% CI)
Overall	**43,958**	**28.7 (28.2–29.1)**	**29.0**	**672 (648–695)**	**16,083**	**10.7 (10.4–11.0)**	**7.0**	**164 (156–171)**
Sex								
Men	15,668	26.5 (25.8–27.2)	12.4	657 (620–694)	4,731	8.3 (7.9–8.8)	2.4	127 (118–136)
Women	28,290	30.3 (29.7–31.0)	16.5	683 (653–714)	11,352	12.6 (12.1–13.0)	4.6	192 (181–203)
Age group (yrs)								
65–74	23,859	26.7 (26.2–27.3)	16.2	650 (619–680)	8,650	9.9 (9.5–10.3)	3.8	154 (146–163)
75–84	14,379	29.8 (29.0–30.7)	9.5	669 (634–703)	5,267	11.4 (10.8–12.1)	2.4	170 (155–185)
≥85	5,720	36.5 (35.0–38.0)	3.3	820 (705–935)	2,166	13.5 (12.4–14.6)	0.8	199 (172–226)
Race/Ethnicity								
White	38,180	29.6 (29.1–30.0)	23.3	683 (661–706)	13,869	10.9 (10.6–11.2)	5.6	163 (156–170)
Black	2,204	23.1 (21.5–24.8)	1.8	487 (432–542)	795	7.8 (6.9–8.8)	0.4	115 (93–137)
American Indian/Alaska Native	542	34.2 (29.6–39.2)	0.4	1,322 (838–1,805)	234	16.8 (13.0–21.3)	0.1	441 (233–649)
Asian/Pacific Islander	271	19.8 (14.0–27.1)	—††	—	—	—	—	—
Hispanic	1,191	26.4 (23.8–29.2)	1.8	655 (483–827)	489	10.7 (9.0–12.7)	0.4	164 (132–196)
Multiple/Other	844	33.5 (29.5–37.8)	0.5	971 (734–1,208)	340	15.4 (12.5–18.7)	0.2	314 (171–456)
Marital status								
Married	19,241	26.2 (25.6–26.8)	14.2	597 (570–624)	6,491	9.3 (8.9–9.8)	3.3	140 (129–150)
Divorced	6,582	32.7 (31.3–34.1)	4.3	825 (741–908)	2,613	13.3 (12.3–14.4)	1.1	209 (190–229)
Widowed	15,062	31.7 (30.9–32.6)	8.0	703 (669–736)	5,858	12.2 (11.6–12.8)	2.1	182 (169–194)
Separated	491	30.2 (25.5–35.3)	0.5	928 (709–1,148)	208	12.8 (9.8–16.4)	0.1	275 (172–378)
Never married	2,116	29.6 (27.3–31.9)	1.3	813 (641–986)	743	10.7 (9.4–12.3)	0.3	177 (136–218)
Member of unmarried couple	318	32.8 (26.5–39.8)	—	—	—	—	0.1	291 (138–445)
Education								
Less than high school graduate	4,439	30.2 (28.7–31.7)	5.6	810 (724–896)	1,728	11.9 (10.9–12.9)	1.3	193 (172–215)
High school graduate	13,317	27.2 (26.5–28.0)	8.1	600 (572–628)	4,856	9.9 (9.4–10.4)	1.9	143 (134–152)
Some college	11,614	29.9 (29.0–30.9)	8.9	721 (669–772)	4,438	11.9 (11.1–12.6)	2.3	189 (171–207)
College graduate or more	14,460	28.1 (27.3–28.8)	6.2	607 (577–636)	5,005	9.6 (9.1–10.1)	1.4	139 (129–149)
Annual household income ($)								
<15,000	4,832	34.9 (33.1–36.7)	4.0	987 (893–1,080)	2,119	15.1 (13.8–16.5)	1.1	277 (243–312)
15,000–24,999	8,726	30.7 (29.6–31.8)	6.2	802 (746–858)	3,438	12.3 (11.6–13.1)	1.5	198 (181–216)
25,000–34,999	5,480	30.2 (28.9–31.6)	3.5	665 (619–712)	1,920	10.6 (9.8–11.5)	0.8	157 (139–175)
35,000–49,999	6,054	28.0 (26.9–29.2)	3.9	647 (592–702)	2,084	10.0 (9.2–10.9)	0.9	145 (130–160)
50,000–74,999	5,007	26.1 (24.9–27.3)	3.1	587 (511–663)	1,728	9.4 (8.6–10.2)	0.7	129 (116–143)
≥75,000	5,911	24.8 (23.7–25.9)	3.7	532 (461–604)	1,885	8.6 (7.8–9.4)	0.8	119 (104–134)
Health status								
Excellent	3,922	19.2 (18.1–20.3)	1.8	340 (307–374)	1,136	5.9 (5.2–6.6)	0.4	69 (60–77)
Very good	11,089	23.7 (22.9–24.4)	5.7	457 (410–505)	3,479	7.9 (7.4–8.4)	1.2	101 (92–109)
Good	14,481	28.3 (27.4–29.1)	8.3	578 (547–608)	5,055	10.1 (9.5–10.7)	2.0	138 (125–151)
Fair	9,285	36.7 (35.5–37.9)	7.4	979 (918–1,040)	3,883	15.3 (14.4–16.2)	1.9	253 (232–275)
Poor	4,936	47.3 (45.3–49.3)	5.5	1771 (1,619–1,923)	2,440	22.1 (20.6–23.6)	1.5	480 (430–530)

Abbreviation: CI = confidence interval.
* Number of falls in the preceding 12 months.
† An injury caused by a fall in the preceding 12 months that caused respondents to limit their regular activities for ≥1 days or to go see a doctor.
§ Unweighted number of older adults reporting a fall. Because of varying question-specific nonresponse, sample sizes vary among questions.
¶ Number of falls per 1,000 adults aged ≥65 years.
** Number of fall injuries per 1,000 adults aged ≥65 years.
†† Sample size <50 or relative standard error >30%.

older adults who fell increased with age (p<0.01), from 26.7% among persons aged 65–74 years, to 29.8% among persons aged 75–84 years, to 36.5% among persons aged ≥85 years. The percentage of older adults who fell was higher among whites (29.6%) and American Indian/Alaska Natives (AI/ANs) (34.2%) than among blacks (23.1%) and Asian/Pacific Islanders (19.8%). The percentage of older adults who reported a fall injury also increased with age (p<0.01), from 9.9% among persons aged 65–74 years to 11.4% among persons aged 75–84 years, to 13.5% among persons aged ≥85 years. AI/ANs

were more likely to report a fall-related injury (16.8%) than were whites (10.9%), Hispanics (10.7%), and blacks (7.8%). The rate of fall-related injuries was significantly higher in the population reporting poor health (480 per 1,000) than the population reporting excellent health (69 per 1,000).

Among states and the District of Columbia, the percentage of older adults who reported a fall ranged from 20.8% in Hawaii to 34.3% in Arkansas. Several states had either significantly higher or lower percentages of reported falls among older adults compared with the national average (Figure) (Table 2). The percentage of older adults experiencing fall injuries ranged from 7.0% in Hawaii to 12.9% in Missouri.

Discussion

In 2014, 28.7% of older adults in the United States reported an estimated 29.0 million falls in the preceding 12 months. Older adult falls can result in death, serious injury, and loss of independence (*1*,*2*). This analysis found that an estimated 7 million falls required medical treatment or caused restricted activity for at least 1 day. Women and those in older age groups were at higher risk for falling and being injured in a fall. Reduced muscle strength is a risk factor for falls, and aging and female sex are associated with reduced muscle mass (*1*,*2*). Women have been found to be more likely to report falls than men (*3*). Aging also is associated with changes in gait and balance, increased inactivity, more severe chronic conditions, and more prescription medication use, all of which are risk factors for falls (*1*). Limited research exists on the causes for racial/ethnic differences, but these differences might be related to differences in health and behavior (*4*,*5*). Reasons for state differences are unknown; however, even in Hawaii, the state with the lowest incidence, 20.8% of older adults reported a fall.

Annual Medicare costs for older adult falls have been estimated at $31.3 billion (*6*), and the older adult population is expected to increase 55% by 2030.** Applying the number of falls from this analysis to the projected 2030 population would result in an

Summary

What is already known about this topic?

Falls are the leading cause of fatal and nonfatal injuries among persons aged ≥65 years (older adults).

What is added by this report?

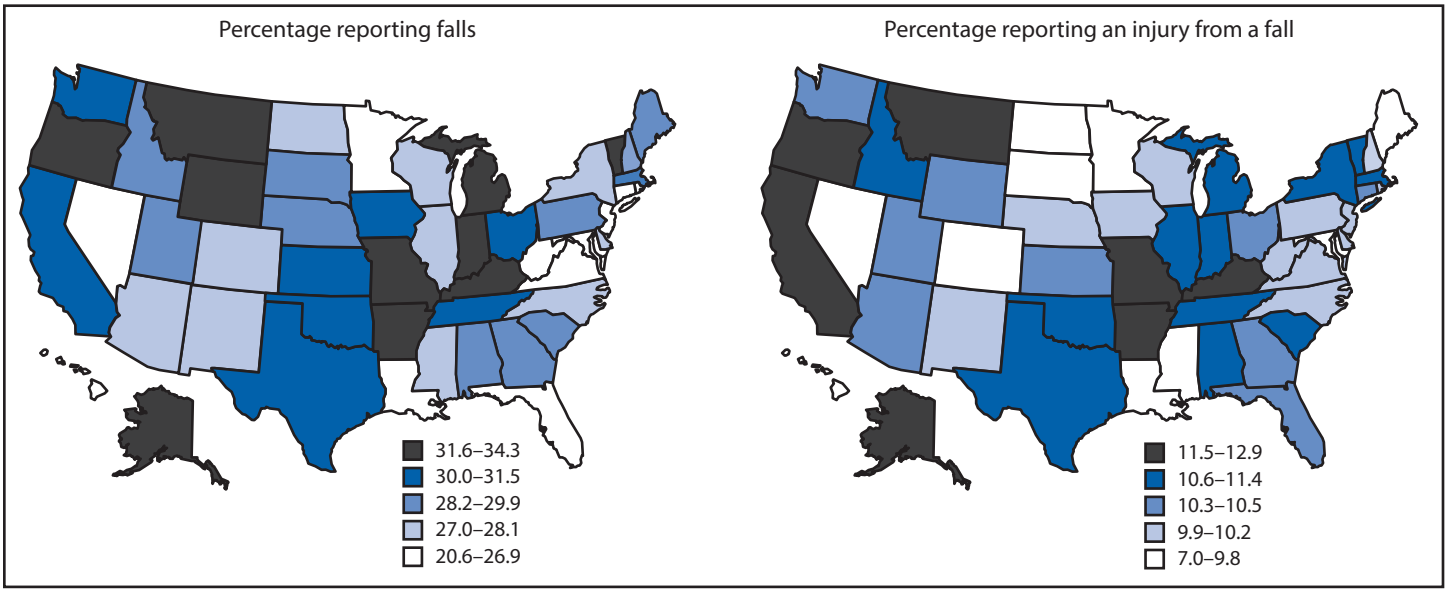
In 2014, 28.7% of older adults reported falling at least once in the preceding 12 months, resulting in an estimated 29.0 million falls. Of those who fell, 37.5% reported at least one fall that required medical treatment or restricted their activity for at least 1 day, resulting in an estimated 7.0 million fall injuries.

What are the implications for public health practice?

Although falls are common, approximately half of older adults who fall do not discuss it with their health care provider. However, older adult falls are largely preventable. Health care providers can play an important role in fall prevention by 1) screening older adults for fall risk, 2) reviewing and managing medications linked to falls, and 3) recommending vitamin D where appropriate for improved bone, muscle, and nerve health.

** http://www.census.gov.

FIGURE. Percentages of falls and fall injuries* in the preceding 12 months reported by adults aged ≥65 years (N = 147,319) — Behavioral Risk Factor Surveillance System, United States, 2014



* Injuries resulting from falls that caused respondents to limit their regular activities for ≥1 days or to go see a doctor.

TABLE 2. Percentages and rates* of falls and fall injuries† in the preceding 12 months reported by adults aged ≥65 years (N = 147,319), by states ranked by percentage of older adults reporting ≥1 fall — Behavioral Risk Factor Surveillance System, United States, 2014

State	No. reporting a fall§	% (95% CI)	No. of falls reported (thousands)	Rate¶ (95% CI)	No. reporting a fall injury	% (95% CI)	No. of fall injuries reported (thousands)	Rate** (95% CI)
Overall	**43,958**	**28.7 (28.2–29.1)**	**29,000**	**672 (648–695)**	**16,083**	**10.7 (10.4–11.0)**	**7,000**	**164 (156–171)**
Arkansas	727	34.3 (31.6–37.0)††	377	868 (725–1011)††	275	11.5 (9.9–13.4)	79	183 (148–218)
Alaska	324	32.9 (29.0–37.0)††	65	940 (683–1197)††	114	11.9 (9.4–15.0)	12	178 (128–227)
Michigan	901	32.6 (30.5–34.8)††	1,216	810 (671–949)	323	11.4 (10.0–13.0)	265	177 (137–217)
Missouri	865	32.4 (29.9–35.0)††	741	823 (639–1008)	326	12.9 (11.2–14.9)††	187	208 (150–266)
Montana	908	32.2 (29.7–34.7)††	137	824 (670–977)	351	12.1 (10.5–13.9)	27	163 (139–187)
Kentucky	1,174	32.1 (29.7–34.6)††	473	770 (660–880)	445	11.9 (10.3–13.6)	108	176 (145–208)
Wyoming	836	32.1 (29.7–34.5)††	65	831 (668–994)	276	10.5 (9.1–12.2)	15	196 (122–270)
Indiana	1,272	31.8 (29.9–33.7) ††	685	762 (659–864)	441	11.0 (9.8–12.3)	156	174 (142–207)
Oregon	626	31.8 (29.4–34.4)††	495	822 (684–960)††	251	12.3 (10.6–14.2)	145	241 (125–357)
Vermont	561	31.7 (29.2–34.3)††	78	777 (646–909)	197	11.1 (9.5–12.9)	15	151 (126–177)
Iowa	887	31.5 (29.5–33.7) ††	322	686 (604–767)	289	9.9 (8.7–11.3)	70	149 (118–179)
Washington	1,120	31.2 (29.3–33.2)††	813	840 (652–1028)	406	10.5 (9.3–11.8)	150	155 (131–179)
Oklahoma	920	30.9 (28.9–32.9)††	488	891 (706–1075)††	322	11.1 (9.9–12.6)	120	219 (122–315)
California	613	30.7 (28.0–33.5)	3,134	801 (631–970)	225	12.4 (10.4–14.8)	807	207 (156–257)
Kansas	1,321	30.5 (28.9–32.0)††	292	735 (619–851)	455	10.4 (9.4–11.4)	76	191 (106–275)
Texas	1,504	30.2 (27.9–32.7)	1,906	654 (563–745)	551	11.4 (9.9–13.2)	476	164 (136–191)
Tennessee	600	30.1 (27.5–32.8)	685	737 (614–860)	213	11.4 (9.6–13.4)	166	179 (131–228)
Ohio	1,209	30.1 (28.0–32.3)	1,210	688 (610–767)	452	10.4 (9.1–11.9)	259	147 (124–171)
District of Columbia	427	30.1 (26.9–33.4)	51	687 (548–826)	155	11.7 (9.5–14.3)	13	175 (121–230)
Maine	1,014	29.9 (27.9–31.9)	195	836 (640–1032)	327	9.3 (8.1–10.5)§§	35	151 (116–185)
Idaho	586	29.9 (27.2–32.8)	154	697 (600–794)	201	10.6 (8.8–12.7)	37	170 (131–209)
Utah	1,049	29.6 (27.8–31.6)	192	668 (591–744)	383	10.5 (9.3–11.8)	43	149 (126–172)
Alabama	925	29.4 (27.3–31.6)	524	733 (630–836)	342	10.7 (9.4–12.3)	121	170 (134–206)
South Carolina	1,097	29.2 (27.4–31.1)	553	749 (623–874)	431	11.4 (10.2–12.8)	155	211 (140–281)
Massachusetts	1,591	28.6 (26.8–30.5)	588	611 (532–689)	613	10.6 (9.5–11.9)	146	152 (127–177)
Pennsylvania	1,083	28.6 (26.7–30.5)	1,208	588 (524–651)§§	380	9.9 (8.7–11.2)	271	132 (114–151)§§
Georgia	615	28.6 (26.2–31.1)	769	649 (560–738)	227	10.5 (8.9–12.2)	190	160 (124–196)
South Dakota	720	28.5 (25.6–31.6)	74	577 (473–681)	242	9.7 (8.0–11.8)	18	143 (103–183)
Nebraska	2,235	28.2 (26.8–29.6)	187	701 (614–789)	751	9.9 (9.0–10.9)	39	146 (120–172)
Delaware	441	28.1 (25.4–31.0)	97	660 (495–826)	160	10.0 (8.3–12.0)	21	143 (112–175)
Mississippi	457	28.1 (25.3–31.0)	282	674 (526–822)	163	8.9 (7.4–10.6)§§	55	133 (98–167)
North Carolina	642	28.0 (25.9–30.2)	868	616 (543–688)	234	10.0 (8.7–11.6)	237	168 (132–205)
New Hampshire	619	28.0 (25.5–30.6)	131	649 (530–768)	228	9.6 (8.2–11.3)	33	162 (108–217)
New Mexico	828	27.8 (25.5–30.2)	190	661 (567–755)	294	10.2 (8.7–11.9)	46	158 (125–192)
Wisconsin	505	27.8 (24.9–30.9)	496	690 (470–911)	192	10.1 (8.3–12.2)	104	145 (111–179)
New York	547	27.7 (25.2–30.3)	1,598	584 (507–661)§§	205	10.7 (9.1–12.6)	422	154 (126–183)
Arizona	1,722	27.5 (26.0–29.1)	676	707 (591–824)	677	10.4 (9.4–11.5)	142	148 (130–167)
Illinois	457	27.4 (24.7–30.3)	1,058	610 (485–736)	178	11.1 (9.3–13.2)	277	160 (125–195)
North Dakota	732	27.2 (24.8–29.7)	71	677 (539–815)	264	9.5 (8.1–11.2)	15	145 (101–188)
Colorado	1,107	27.1 (25.4–28.8)	374	601 (515–688)	395	9.4 (8.4–10.5)§§	85	137 (115–158)§§
Nevada	386	26.9 (23.6–30.5)	233	605 (475–735)	141	9.8 (7.8–12.2)	76	198 (124–272)
Rhode Island	550	26.8 (24.4–29.3)	90	566 (457–674)	219	10.2 (8.6–12.0)	24	150 (113–186)
West Virginia	536	26.6 (24.4–28.9)	208	642 (533–751)	206	9.9 (8.5–11.6)	48	149 (121–177)
Connecticut	661	26.5 (24.2–29.0)	263	496 (425–567)§§	266	10.3 (8.8–12.1)	79	149 (117–182)
Minnesota	1,185	26.1 (24.5–27.6)§§	448	591 (514–669)	415	9.0 (8.0–10.1)§§	105	139 (114–164)
Virginia	700	25.6 (23.5–27.8)§§	602	534 (468–600)§§	265	9.9 (8.5–11.4)	154	137 (112–162)§§
Florida	1,060	25.1 (23.4–26.9)§§	2,087	599 (513–686)	440	10.4 (9.3–11.7)	526	151 (129–174)
Maryland	1,179	25.1 (23.1–27.2)§§	405	506 (437–576)§§	418	8.1 (7.0–9.3)§§	93	116 (98–134)§§
Louisiana	530	24.9 (22.7–27.1)§§	365	591 (511–670)	193	8.6 (7.3–10.1)§§	92	150 (108–191)
New Jersey	937	23.6 (21.6–25.7)§§	653	525 (421–629)§§	397	10.2 (8.9–11.8)	187	151 (111–190)
Hawaii	467	20.8 (18.5–23.4)§§	85	399 (331–467)§§	169	7.0 (5.6–8.6)§§	18	83 (66–101)§§

Abbreviation: CI = confidence interval.

* Number of falls in the preceding 12 months.

† An injury caused by a fall in the preceding 12 months that caused respondents to limit their regular activities for ≥1 days or to go see a doctor.

§ Unweighted number of older adults reporting a fall. Because of varying question-specific nonresponse, sample sizes vary among questions.

¶ Number of falls per 1,000 adults aged ≥65 years.

** Number of fall injuries per 1,000 adults aged ≥65 years.

†† Significantly higher than the overall percentage or rate.

§§ Significantly lower than the overall percentage or rate.

estimated 48.8 million falls and 11.9 million fall injuries, unless effective interventions are implemented nationwide.

The findings in this report are subject to at least four limitations. First, BRFSS data are self-reported and subject to recall bias. Second, BRFSS does not include persons in long-term care facilities who are at higher risk for falls (*7*). Third, the broad definition of fall injury for this analysis might have resulted in a higher estimate of injurious falls compared with other reports. Finally, the response rate (median = 47%) could have resulted in nonresponse bias; however, weighting and survey methodology are used to adjust the estimates and reduce the effect of nonresponse bias.

Older adult falls are largely preventable, and health care providers (e.g., physicians, nurses, nurse practitioners, physician assistants, pharmacists, physical therapists, and occupational therapists) can play an important part by discussing falls with older adult patients and providing appropriate interventions (*8*). The American and British Geriatrics Societies (AGS/BGS) Clinical Practice Guideline recommends that health care providers use a multifactorial approach to prevent falls that includes activities such as asking about falls, assessing gait and balance, reviewing medications, and prescribing interventions such as strength and balance exercises, or taking vitamin D.†† This type of approach has been estimated to be capable of reducing falls by 24% (*8*). Based on the AGS/BGS guidelines, CDC has developed the STEADI (Stopping Elderly Accidents, Deaths, and Injuries) initiative§§ to provide resources to help health care providers incorporate fall prevention into primary care (*3*). STEADI stresses three initial steps that can be completed in one patient visit: 1) ask patients if they have fallen in the past year, feel unsteady, or worry about falling; 2) review medications and stop, switch, or reduce the dosage of drugs that increase fall risk; and 3) recommend daily vitamin D supplementation for improved bone, muscle, and nerve health (with dosage of vitamin D and decision on whether to co-supplement with calcium to be determined based on the patient's history).

Health care providers should discuss fall prevention with their patients because approximately half of older adults who fall do not discuss it with their health care provider, often because they fear this will lead to a loss of independence (*9*). Health care providers cite limited time and cost as barriers to incorporating preventive services, such as those proposed by STEADI, into their clinical practice (*10*). However, the Centers for Medicare & Medicaid Services (CMS) now provides incentives for health care providers to conduct fall prevention activities through payment and delivery reforms (e.g., Welcome to Medicare Visit, Medicare Annual Wellness Visit, and the Medicare Shared Savings Accountable Care Organization Program).¶¶ CMS also links health care provider incentives to fall prevention quality measures through the Physician Quality Reporting System (PQRS) in the Merit-Based Incentive Program. PQRS includes two quality measures for falls: Falls Risk Assessment and Falls Plan of Care.*** Mechanisms such as payment and delivery reforms and quality reporting measures are opportunities to make fall prevention a routine part of clinical practice and reduce the barriers to providing services that can prevent falls among older adults.

†† http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/prevention_of_falls_summary_of_recommendations.

§§ http://www.cdc.gov/steadi/.

¶¶ http://www.medicareinteractive.org/get-answers/medicare-covered-services/preventive-care-services/annual-wellness-visit.

*** https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/PQRS/index.html.

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References

1. Ambrose AF, Paul G, Hausdorff JM. Risk factors for falls among older adults: a review of the literature. Maturitas 2013;75:51–61. http://dx.doi.org/10.1016/j.maturitas.2013.02.009
2. Stevens JA, Sogolow ED. Gender differences for non-fatal unintentional fall related injuries among older adults. Inj Prev 2005;11:115–9. http://dx.doi.org/10.1136/ip.2004.005835
3. Stevens JA, Phelan EA. Development of STEADI: a fall prevention resource for health care providers. Health Promot Pract 2013;14:706–14. http://dx.doi.org/10.1177/1524839912463576
4. Nicklett EJ, Taylor RJ. Racial/Ethnic predictors of falls among older adults: the health and retirement study. J Aging Health 2014;26:1060–75. http://dx.doi.org/10.1177/0898264314541698
5. Cobb N, Espey D, King J. Health behaviors and risk factors among American Indians and Alaska Natives, 2000–2010. Am J Public Health 2014;104(Suppl 3):S481–9. http://dx.doi.org/10.2105/AJPH.2014.301879
6. Burns ER, Stevens JA, Lee R. The direct costs of fatal and non-fatal falls among older adults—United States. J Safety Res 2016;58:99–103. http://dx.doi.org/10.1016/j.jsr.2016.05.001
7. Becker C, Rapp K. Fall prevention in nursing homes. Clin Geriatr Med 2010;26:693–704. http://dx.doi.org/10.1016/j.cger.2010.07.004
8. Gillespie LD, Robertson MC, Gillespie WJ, et al. Interventions for preventing falls in older people living in the community. Cochrane Database Syst Rev 2012;(9):CD007146.
9. Stevens JA, Ballesteros MF, Mack KA, Rudd RA, DeCaro E, Adler G. Gender differences in seeking care for falls in the aged Medicare population. Am J Prev Med 2012;43:59–62. http://dx.doi.org/10.1016/j.amepre.2012.03.008
10. Jones TS, Ghosh TS, Horn K, Smith J, Vogt RL. Primary care physicians perceptions and practices regarding fall prevention in adults 65 years and over. Accid Anal Prev 2011;43:1605–9. http://dx.doi.org/10.1016/j.aap.2011.03.013

HIV Testing Experience Before HIV Diagnosis Among Men Who Have Sex with Men — 21 Jurisdictions, United States, 2007–2013

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Gay, bisexual, and other men who have sex with men (MSM) continue to be the population most affected by human immunodeficiency virus (HIV) in the United States. In 2014, 81% of diagnoses of HIV infection were among adult and adolescent males, and among these, 83% of infections were attributable to male-to-male sexual contact (*1*). Since 2006, CDC has recommended HIV testing at least annually for sexually active MSM to foster early detection of HIV infection and prevent HIV transmission (*2*,*3*). Several initiatives and strategies during the past decade have aimed to expand HIV testing among MSM to increase early diagnosis and treatment and reduce transmission. To better understand HIV testing patterns among MSM with diagnosed HIV infection, CDC analyzed data for 2007–2013 from jurisdictions conducting HIV incidence surveillance as part of CDC's National HIV Surveillance System (NHSS). Findings from this analysis suggest that increasing percentages of MSM have had a negative HIV test during the 12 months before diagnosis (48% in 2007, 56% in 2013, among those with a known date of previous negative HIV test), indicating a trend toward increased HIV testing and earlier HIV diagnosis among persons most at risk for HIV.

Data from the NHSS were used to assess trends in HIV testing patterns among MSM with HIV infection diagnosed during 2007–2013. HIV case surveillance data and supplemental information, including testing history data from patient and provider reports, were collected by 21 jurisdictions participating in HIV incidence surveillance (18 states, two cities, and the District of Columbia)* and reported to NHSS through December 31, 2015 (*4*). This analysis included males aged ≥13 years with HIV infection attributed to male-to-male sexual contact. Testing history data indicative of a negative HIV test, a date of most recent negative HIV test, or the number of negative HIV tests during the 2 years before diagnosis were used to categorize MSM as having a previous negative HIV test before diagnosis. The date of most recent negative HIV test was used to establish the number of months between the last negative HIV test and HIV infection diagnosis. The estimated annual percent change (EAPC) and the associated 95% confidence interval (CI) were used to assess trends from 2007 to 2013 in the proportion of MSM with a previous negative HIV test among those with a testing history, and the proportion of MSM with a negative HIV test ≤12 months before HIV diagnosis among those who had information on the date of last negative HIV test, by age group and race/ethnicity (black/African American [black], Hispanic/Latino [regardless of race], white, or other race).

In the 21 jurisdictions, the number of MSM aged ≥13 years with diagnosed HIV infection attributed to male-to-male sexual contact was 16,788 in 2007 and 15,951 in 2013 (Table 1). The percentage of these MSM who had any testing history data was 51% in 2007 and 69% in 2013. Overall, among MSM with testing history data, the percentage who had a previous negative HIV test increased significantly from 70% in 2007 to 74% in 2013 (EAPC = 1.15, 95% CI = 0.92–1.38). By race/ethnicity, significant increases from 2007 to 2013 occurred for black MSM (from 64% to 73%; EAPC = 2.67, 95% CI = 2.24–3.11), for white MSM (from 75% to 77%; EAPC = 0.68, 95% CI = 0.32–1.05), and MSM of other races (from 73% to 77%; EAPC = 1.34, 95% CI = 0.45–2.24). By age group, significant increases from 2007 to 2013 occurred among MSM of all age groups except those aged ≥55 years. Although the trend from 2007 to 2013 in the percentage with a previous negative HIV test among Hispanic/Latino MSM was not significant overall, there was a significant increase among Hispanic/Latino MSM aged 25–34 years. Among black MSM, significant increases were observed for all age groups. Among white MSM, significant increases were observed among those aged 35–44 and 45–54 years.

Among MSM with a known date of negative HIV test before HIV diagnosis (30% of all MSM in 2007 and 47% in 2013), the trend in the percentage of those with a negative test ≤12 months before diagnosis increased overall from 48% in 2007 to 56% in 2013 (EAPC = 2.34, 95% CI = 1.89–2.78) (Table 2). By race/ethnicity, from 2007 to 2013 the percentage of MSM with a negative test ≤12 months before HIV diagnosis increased among blacks (from 48% to 57%; EAPC = 2.49, 95% CI = 1.73–3.26), Hispanics/Latinos (from 51% to 57%; EAPC = 1.87, 95% CI = 1.03–2.72), and whites (from 46% to 54%; EAPC = 2.69, 95% CI = 1.88–3.51). By age group, the percentage with a negative test ≤12 months before HIV diagnosis increased significantly for MSM among all age groups

* The 21 jurisdictions contributing data to this analysis were the states of Alabama, Arizona, California, Colorado, Connecticut, Florida, Indiana, Louisiana, Massachusetts, Michigan, Mississippi, New Jersey, New York, North Carolina, South Carolina, Texas, Virginia, and Washington; the cities of Chicago, Illinois, and Philadelphia, Pennsylvania; and the District of Columbia.

TABLE 1. Testing history availability and evidence of previous negative HIV test among MSM* with diagnosed HIV infections, by year of diagnosis and selected characteristics — 21 U.S. jurisdictions, 2007–2013

	2007			2013			2007–2013		
		With testing history	Negative test before diagnosis		With testing history	Negative test before diagnosis			
Characteristic	Total no.	No. (%†)	No. (%§)	Total no.	No. (%†)	No. (%§)	EAPC	L95	U95
Age group at diagnosis (yrs)									
13–24	**3,432**	2,187 (64)	1,519 (70)	**4,623**	3,473 (75)	2,560 (74)	1.40	0.96	1.84
25–34	**4,949**	2,738 (55)	2,015 (74)	**5,435**	3,901 (72)	3,053 (78)	1.20	0.84	1.56
35–44	**4,919**	2,224 (45)	1,574 (71)	**2,869**	1,883 (66)	1,391 (74)	0.77	0.28	1.26
45–54	**2,592**	1,025 (40)	621 (61)	**2,127**	1,305 (61)	885 (68)	1.33	0.56	2.10
≥55	**896**	313 (35)	190 (61)	**897**	498 (56)	307 (62)	1.05	-0.56	2.70
Race/Ethnicity									
Black/African American	**5,066**	2,866 (57)	1,820 (64)	**5,525**	3,959 (72)	2,906 (73)	2.67	2.24	3.11
Hispanic/Latino¶	**4,409**	2,084 (47)	1,470 (71)	**4,729**	3,297 (70)	2,364 (72)	0.16	-0.29	0.61
White	**6,317**	3,021 (48)	2,255 (75)	**4,721**	3,123 (66)	2,403 (77)	0.68	0.32	1.05
Other	**996**	516 (52)	374 (73)	**976**	681 (70)	523 (77)	1.34	0.45	2.24
Black/African American, by age group at diagnosis (yrs)									
13–24	**1,777**	1,205 (68)	793 (66)	**2,491**	1,913 (77)	1,403 (73)	2.51	1.89	3.14
25–34	**1,455**	842 (58)	554 (66)	**1,815**	1,309 (72)	1,017 (78)	2.54	1.84	3.25
35–44	**1,092**	529 (48)	339 (64)	**655**	431 (66)	318 (74)	2.24	1.00	3.51
45–54	**548**	226 (41)	115 (51)	**407**	226 (56)	131 (58)	2.48	0.33	4.68
≥55	**194**	64 (33)	19 (30)	**157**	80 (51)	37 (46)	5.47	0.35	10.86
Hispanic/Latino,¶ by age group at diagnosis (yrs)									
13–24	**892**	499 (56)	354 (71)	**1,182**	872 (74)	641 (74)	0.30	-0.57	1.18
25–34	**1,636**	843 (52)	610 (72)	**1,863**	1,350 (73)	1,030 (76)	0.78	0.12	1.45
35–44	**1,292**	524 (41)	382 (73)	**991**	647 (65)	436 (67)	-0.66	-1.59	0.27
45–54	**464**	183 (39)	101 (55)	**536**	340 (63)	215 (63)	0.79	-1.02	2.63
≥55	**125**	35 (28)	23 (66)	**157**	88 (56)	42 (48)	-5.00	-9.48	-0.30
White, by age group at diagnosis (yrs)									
13–24	**570**	358 (63)	278 (78)	**700**	501 (72)	382 (76)	-0.05	-1.07	0.98
25–34	**1,518**	866 (57)	702 (81)	**1,380**	966 (70)	779 (81)	0.55	-0.02	1.12
35–44	**2,233**	1,031 (46)	763 (74)	**1,013**	672 (66)	532 (79)	1.08	0.42	1.74
45–54	**1,450**	560 (39)	370 (66)	**1,080**	669 (62)	493 (74)	1.32	0.42	2.24
≥55	**546**	206 (38)	142 (69)	**548**	315 (58)	217 (69)	0.95	-0.82	2.75
Total	**16,788**	**8,487 (51)**	**5,919 (70)**	**15,951**	**11,060 (69)**	**8,196 (74)**	**1.15**	**0.92**	**1.38**

Abbreviations: EAPC = estimated annual percent change; HIV = human immunodeficiency virus; L95 = lower bound of 95% confidence interval; MSM = men who have sex with men; U95 = upper bound of 95% confidence interval.

* MSM in this analysis were males aged ≥13 years with HIV infection attributable to male-to-male sexual contact.

† Percentage of reported diagnoses.

§ Percentage of cases with testing history information.

¶ Hispanics/Latinos can be of any race.

except for those aged ≥55 years (Figure). Among black MSM, significant increases were observed among those aged 13–24, 25–34, and 35–44 years; among Hispanics/Latinos, increases were only observed among those aged 25–34 and 45–54 years; among whites, increases were observed among those aged 25–34, 35–44, and 45–54 years (Table 2).

Discussion

These results indicate that during 2007–2013, an increasing percentage of MSM with HIV diagnosed in the jurisdictions included in the analysis were tested for HIV before diagnosis. The results also suggest more MSM might be testing annually, as indicated by the increasing percentage of those tested in the 12 months before diagnosis, which could facilitate diagnosis sooner after infection. Although the findings in this report only assess the previous HIV testing pattern among those MSM with diagnosed HIV infections, the trend in HIV testing is consistent with earlier findings of an increase in the percentage of MSM tested in the previous 12 months, from 63% in 2008 to 67% in 2011 (*5*). The findings in this report differ slightly from previous reports from national surveys of the general U.S. population that conducted subgroup analyses of MSM; those analyses found only modest or nonsignificant increases in HIV testing among MSM before and after the 2006 publication of CDC guidelines, although these surveys might have had limited power to detect changes among this subgroup because of small sample sizes of MSM (*6*,*7*).

The findings in this report are subject to at least three limitations. First, results are based on data from only 21 jurisdictions that are not representative of the entire United States; however,

TABLE 2. Number and percentage of MSM* with a negative HIV test in 12 months before diagnosis among those with a known date of negative test,† by year of diagnosis and selected characteristics — 21 U.S. jurisdictions, 2007–2013

	2007		2013		2007–2013		
Characteristic	Date of negative HIV test available No.	Last negative HIV test within 12 months before diagnosis No. (%§)	Date of negative HIV test available No.	Last negative HIV test within 12 months before diagnosis No. (%§)	EAPC	L95	U95
Age group at diagnosis (yrs)							
13–24	1,258	817 (65)	2,332	1,571 (67)	0.88	0.25	1.52
25–34	1,724	816 (47)	2,787	1,556 (56)	2.14	1.40	2.89
35–44	1,320	538 (41)	1,263	588 (47)	2.63	1.50	3.78
45–54	522	177 (34)	789	338 (43)	3.47	1.61	5.36
≥55	158	59 (37)	272	115 (42)	3.07	-0.32	6.59
Race/Ethnicity							
Black/African American	1,487	715 (48)	2,634	1,500 (57)	2.49	1.73	3.26
Hispanic/Latino¶	1,198	614 (51)	2,161	1,222 (57)	1.87	1.03	2.72
White	1,982	910 (46)	2,180	1,187 (54)	2.69	1.88	3.51
Other	315	168 (53)	468	259 (55)	0.20	-1.38	1.80
Black/African American, by age group at diagnosis (yrs)							
13–24	649	406 (63)	1,270	844 (66)	1.28	0.39	2.18
25–34	463	185 (40)	929	479 (52)	2.88	1.41	4.38
35–44	269	90 (34)	287	125 (44)	3.84	1.10	6.65
45–54	90	31 (34)	118	43 (36)	3.53	-1.20	8.49
≥55	16	3 (19)	30	9 (30)	5.72	-5.93	18.82
Hispanic/Latino,¶ by age group at diagnosis (yrs)							
13–24	291	207 (71)	588	405 (69)	0.48	-0.80	1.78
25–34	506	242 (48)	943	531 (56)	1.98	0.70	3.28
35–44	300	132 (44)	399	179 (45)	1.17	-0.92	3.30
45–54	84	28 (33)	194	88 (45)	7.73	3.34	12.30
≥55	17	5 (29)	37	19 (51)	6.43	-2.77	16.50
White, by age group at diagnosis (yrs)							
13–24	246	162 (66)	353	242 (69)	0.73	-0.68	2.15
25–34	623	310 (50)	712	433 (61)	2.65	1.36	3.96
35–44	674	280 (42)	484	242 (50)	3.67	1.99	5.37
45–54	318	107 (34)	436	188 (43)	2.49	0.08	4.95
≥55	121	51 (42)	195	82 (42)	1.77	-2.12	5.81
Total	**4,982**	**2,407 (48)**	**7,443**	**4,168 (56)**	**2.34**	**1.89**	**2.78**

Abbreviations: EAPC = estimated annual percent change; HIV = human immunodeficiency virus; L95 = lower bound of 95% confidence interval; MSM = men who have sex with men; U95 = upper bound of 95% confidence interval.

* MSM in this analysis were males aged ≥13 years with HIV infection attributable to male-to-male sexual contact.

† Refer to figure for graph of trends from 2007–2013 in percentage of HIV-diagnosed MSM with a negative HIV test in 12 months before diagnosis.

§ Percentage of MSM with a known date of previous negative HIV test.

¶ Hispanics/Latinos can be of any race.

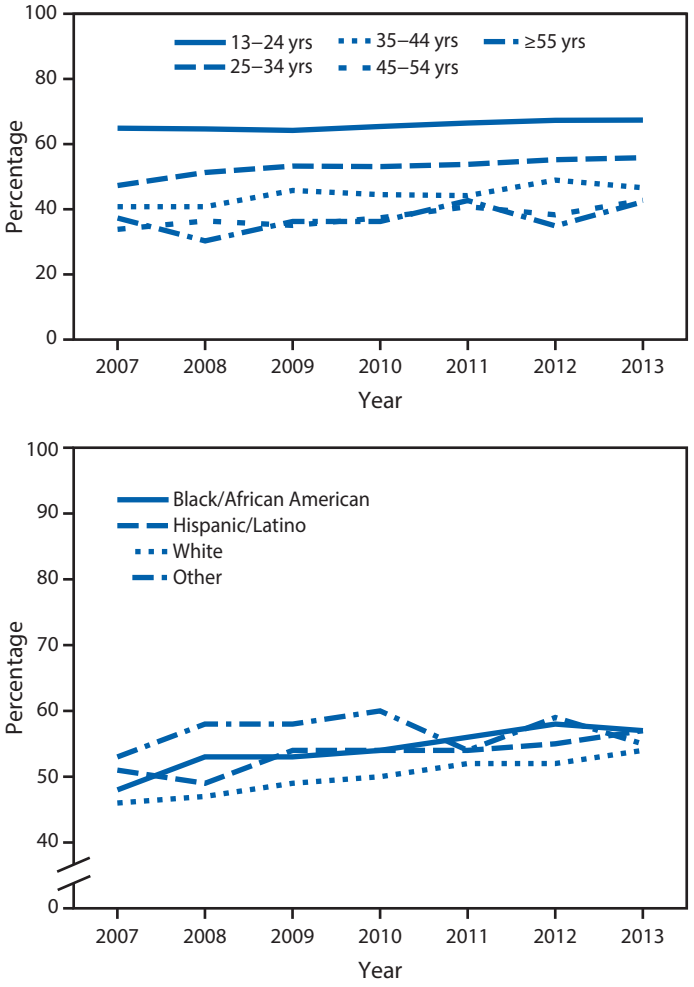
these accounted for 73% of reported HIV cases in the United States during 2013. Second, approximately one half to two thirds of MSM with HIV diagnosed during the analysis period had testing history data available. Finally, testing history data obtained from self-reports or chart abstraction could be biased, but the potential impact of this is unclear.

Since the release of the 2006 CDC HIV testing recommendations, several national initiatives and strategies have aimed to raise general awareness of HIV, increase HIV testing, and strengthen HIV prevention for those most affected. The National HIV/AIDS Strategy, released in 2010,† established a framework for intensified HIV prevention efforts in the communities where HIV is most concentrated (particularly among MSM, persons who are black or Hispanic/Latino, and persons who inject drugs) (*8*). To achieve National HIV/AIDS Strategy goals, CDC funds state and local health departments and community-based organizations across the United States for expanded HIV testing and HIV prevention activities and directs resources to disproportionately affected populations, including MSM.§ CDC has also implemented programs such as the MSM Testing Initiative, which was intended to scale up HIV testing among blacks and Hispanics/Latinos to

† In 2015, The National HIV/AIDS Strategy: Updated to 2020 was released and is available at https://www.aids.gov/federal-resources/national-hiv-aids-strategy/nhas-update.pdf.

§ Additional information about CDC's activities and programs to address the health and well-being of MSM, including programs aimed to expand routine HIV testing, is available at http://www.cdc.gov/msmhealth/msm-programs.htm.

FIGURE. Percentage of MSM* with a negative HIV test ≤12 months before HIV diagnosis, by age at diagnosis and race/ethnicity† — 21 U.S. jurisdictions, 2007–2013



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

* MSM in this analysis were males aged ≥13 years with HIV infection attributable to male-to-male sexual contact.

† Hispanics/Latinos can be of any race.

identify those HIV-infected MSM previously unaware of their infections and link them to care, and the Expanded Testing Initiative, which was implemented to support HIV testing among MSM of all races and ethnicities, as well as persons who inject drugs. Other strategies include the Act Against AIDS campaign, a national campaign launched in 2009 by CDC and the White House that focuses on raising HIV awareness among all persons in the United States and reducing the risk for infection among the most affected populations, including MSM, blacks, Hispanics/Latinos, and other communities at increased risk.¶

Findings from this analysis indicate that these strategies and programs might be reaching the intended groups and leading to increased HIV testing and earlier HIV diagnosis. However, there are still racial/ethnic differences; for example, a lower percentage of black and Hispanic/Latino MSM had prior negative HIV tests than did whites. Although testing facilitates early detection of HIV, given the large numbers of MSM still acquiring HIV (many after having a negative HIV test), enhanced HIV testing efforts might incorporate provision of biomedical prevention interventions such as preexposure prophylaxis for persons testing negative but still at risk for infection to reduce HIV acquisition (*9*). Preexposure prophylaxis, which involves taking antiretroviral medications before becoming exposed to HIV, can substantially reduce the risk for HIV infection in persons at high risk for infection.**

Summary

What is already known about this topic?

Because subgroups of men who have sex with men (MSM) are at high risk for human immunodeficiency virus (HIV) infection, CDC has recommended that sexually active MSM be tested at least annually for HIV to foster early detection of HIV infection and link infected persons to clinical and prevention services to improve health outcomes and prevent HIV transmission.

What is added by this report?

CDC's National HIV Surveillance System data suggest that more MSM with HIV diagnosed in the 21 U.S. jurisdictions included in the analysis might be receiving testing annually, as indicated by the increasing percentage of MSM who had a negative HIV test in the 12 months before diagnosis, from 48% in 2007 to 56% in 2013 (among those with a known date of previous negative HIV test).

What are the implications for public health practice?

Although there is evidence of increased HIV testing among MSM, there is still a need to promote annual HIV testing, particularly among subgroups at high risk, to increase early detection of HIV infection and to provide rapid linkage to care to improve health among infected persons and reduce their risk for transmission.

¶ http://www.cdc.gov/actagainstaids/index.html.

** http://www.cdc.gov/hiv/risk/prep/.

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References

1. CDC. HIV surveillance report, 2014; vol. 26. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. http://www.cdc.gov/hiv/library/reports/surveillance/
2. Branson BM, Handsfield HH, Lampe MA, et al. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR Recomm Rep 2006;55(No. RR-14).
3. Workowski KA, Berman S. Sexually transmitted diseases treatment guidelines, 2010. MMWR Recomm Rep 2010;59(No. RR-12).

4. CDC. Estimated HIV incidence in the United States, 2007–2010. HIV surveillance supplemental report 2012;17(No. 4). Atlanta, GA: US Department of Health and Human Services, CDC; 2012. http://www.cdc.gov/hiv/library/reports/surveillance/index.html
5. Cooley LA, Oster AM, Rose CE, Wejnert C, Le BC, Paz-Bailey G; NHBS Study Group. Increases in HIV testing among men who have sex with men—National HIV Behavioral Surveillance System, 20 U.S. Metropolitan Statistical Areas, 2008 and 2011. PLoS One 2014;9:e104162. http://dx.doi.org/10.1371/journal.pone.0104162
6. Woodring JV, Kruszon-Moran D, Oster AM, McQuillan GM. Did CDC's 2006 revised HIV testing recommendations make a difference? Evaluation of HIV testing in the US household population, 2003–2010. J Acquir Immune Defic Syndr 2014;67:331–40. http://dx.doi.org/10.1097/QAI.0000000000000303
7. Kwan CK, Rose CE, Brooks JT, Marks G, Sionean C. HIV testing among men at risk for acquiring HIV infection before and after the 2006 CDC recommendations. Public Health Rep 2016;131:311–9. http://dx.doi.org/10.1177/003335491613100215
8. Office of National AIDS Policy. National HIV/AIDS strategy. Washington, DC: Office of National AIDS Policy; 2010. https://www.whitehouse.gov/administration/eop/onap/nhas
9. CDC. Preexposure prophylaxis for the prevention of HIV infection in the United States—2014: a clinical practice guideline. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. https://www.cdc.gov/hiv/pdf/guidelines/PrEPguidelines2014.pdf

Unmet Needs for Ancillary Services Among Men Who Have Sex with Men and Who Are Receiving HIV Medical Care — United States, 2013–2014

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Gay, bisexual, and other men who have sex with men (MSM) are disproportionately affected by human immunodeficiency virus (HIV) in the United States (*1*). Ancillary services, defined as services that support retention in HIV medical care and assist with day-to-day living, can improve the health of HIV-infected MSM and help them achieve viral suppression (*2*). To assess the unmet needs for ancillary services among MSM receiving outpatient HIV medical care during 2013–2014, CDC used data from the Medical Monitoring Project (MMP), a surveillance system designed to assess clinical and behavioral characteristics of adults receiving HIV care, to obtain nationally representative estimates of, and identify reasons for, unmet needs (*3*). Based on self-reported needs of persons responding to the MMP survey, the most prevalent unmet needs were for non-HIV medical care services: approximately 23% had an unmet need for dental care, and 19% had an unmet need for eye or vision care. Unmet needs were most prevalent among young, non-Hispanic black, and Hispanic/Latino MSM. State and local health departments, community-based organizations, and health care providers might improve the health of MSM living with HIV by promoting access to ancillary services using strategies that increase patient awareness of how to obtain these services, especially among young, non-Hispanic black, and Hispanic/Latino MSM.

Data from MMP were used to estimate prevalence of unmet needs for ancillary services among MSM receiving outpatient HIV medical care during 2013–2014. MMP used a three-stage sample (states and territories, facilities, and patients) and response rates at each stage were 100% (states and territories), 85% (facilities) and 55% (patients). Data were collected using face-to-face or telephone interviews during June 2013–May 2015. Data were weighted for unequal selection probabilities and nonresponse (*3*).

MSM were defined as men who reported sex with one or more men during the 12 months preceding the interview, or if no sexual activity was reported, men who self-identified as homosexual, gay, or bisexual. Unmet needs were defined as services that participants reported needing, but not receiving, during the 12 months preceding the interview. Unmet needs for MSM overall and, for selected services, stratified by age and race/ethnicity, were estimated using chi-square tests to make statistical comparisons between strata. Services were selected for further analysis based on the frequency that services were reported as unmet needs in this survey and in previous studies. For each of these services, participants' primary reasons for unmet needs were described.

Among MSM receiving outpatient HIV medical care in the United States, the most prevalent unmet needs were for non-HIV medical care services: 23% had an unmet need for dental care, and 19% had an unmet need for eye or vision care. In addition, 6% had an unmet need for mental health care (Figure). Among HIV support services examined, the most prevalent unmet need was for HIV peer group support (8%). Among subsistence services, the most prevalent unmet need was for food or nutrition services (12%). Seven percent had an unmet need for transportation assistance, and 7% had an unmet need for shelter or housing services.

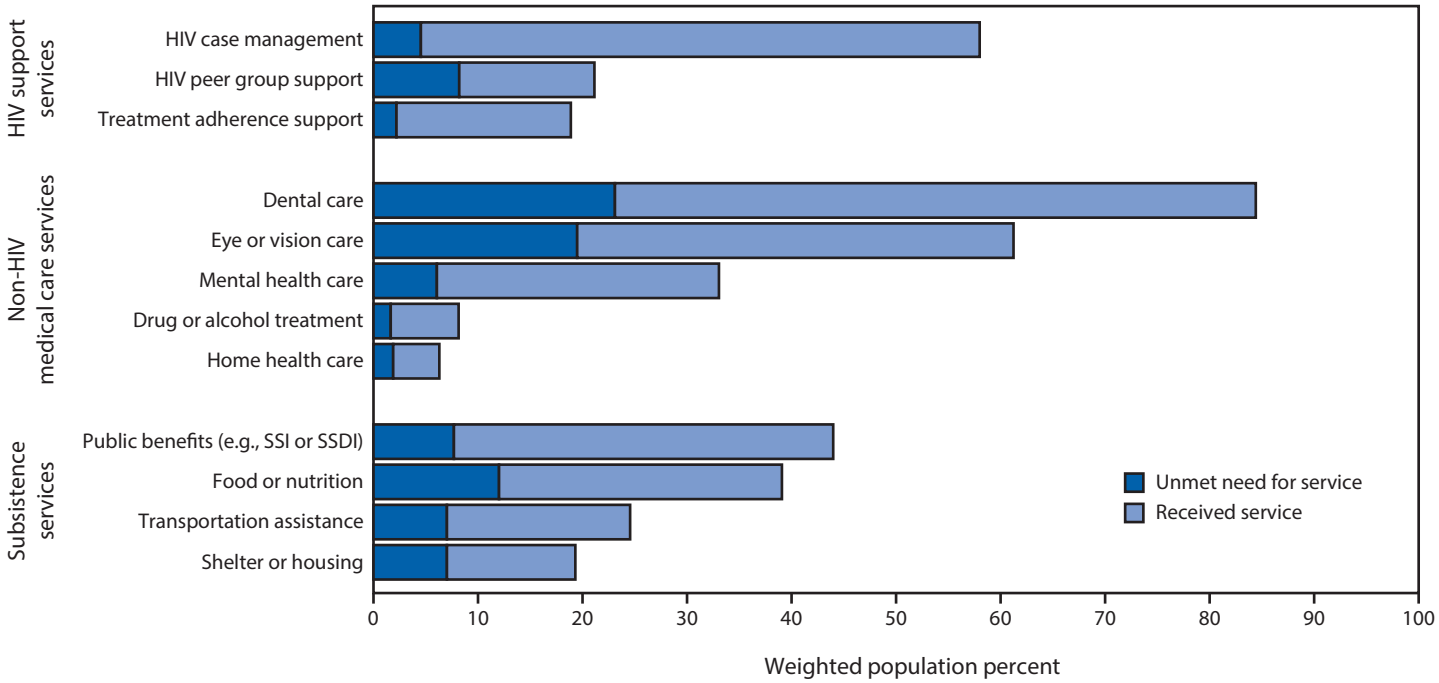
MSM aged 18–29 years, 30–39 years, and 40–49 years had higher prevalences of unmet need for dental care, shelter and housing, and food or nutrition services compared with MSM aged ≥50 years (Table 1). MSM aged 30–39 years and 40–49 years also had higher prevalences of unmet need for eye or vision care and mental health care. Non-Hispanic black MSM had higher prevalences of unmet need for dental care (27%), transportation assistance (9%), shelter or housing (10%), and food or nutrition services (14%) compared with non-Hispanic white MSM (20%, 6%, 5%, and 10%, respectively). Hispanic/Latino MSM had higher prevalences of unmet need for shelter or housing (8%) and food or nutrition services (14%).

Approximately 40% of MSM with an unmet need for HIV peer group support, transportation assistance, or food or nutrition services did not know how to get these services (Table 2). Twenty-two percent of MSM with an unmet need for mental health care did not know how to obtain care, and 25% had psychological barriers preventing them from obtaining care. Approximately one quarter of MSM with an unmet need for either dental care or eye or vision care did not receive these services because of money (25%) or health insurance issues (28%). Twenty percent of MSM with an unmet need for shelter or housing services, 15% with an unmet need for transportation assistance, and 14% with an unmet need for food or nutrition services were ineligible for, perceived themselves to be ineligible for, or were denied these services.

Discussion

MSM in HIV medical care in the United States had substantial unmet needs for ancillary services during 2013–2014.

FIGURE. Unmet and met needs for ancillary services* among men who have sex with men and are receiving outpatient HIV medical care — Medical Monitoring Project, United States, 2013–2014



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

TABLE 1. Percentage of men who have sex with men and who are receiving outpatient HIV medical care with unmet needs for ancillary services,* by demographic characteristics — Medical Monitoring Project, United States, 2013–2014

Demographic characteristic	Total no.	Ancillary service %† (95% CI§)						
		Dental care	Eye or vision care	HIV peer group support	Transportation assistance	Shelter or housing	Food or nutrition	Mental health care
Age group (yrs)								
18–29	**534**	31¶ (25–37)	19 (16–22)	9¶ (7–12)	7 (5–10)	14¶ (10–18)	15¶ (11–19)	6 (4–8)
30–39	**828**	29¶ (24–33)	21¶ (17–25)	9 (7–12)	9¶ (6–11)	10¶ (8–12)	16¶ (12–19)	8¶ (5–10)
40–49	**1,395**	23¶ (20–27)	22¶ (19–25)	9 (6–11)	7 (6–9)	7¶ (5–8)	12¶ (10–15)	7¶ (6–8)
≥50	**2,005**	18 (15–21)	17 (16–19)	7 (6–9)	6 (5–7)	4 (3–5)	9 (8–11)	5 (4–6)
Race/Ethnicity**								
White, non-Hispanic	**2,203**	20 (15–24)	19 (16–22)	8 (6–10)	6 (4–8)	5 (4–5)	10 (7–12)	6 (4–7)
Black, non-Hispanic	**1,247**	27†† (24–30)	19 (16–22)	7 (5–9)	9†† (7–11)	10†† (8–12)	14†† (13–16)	6 (4–8)
Hispanic or Latino	**1,072**	25 (21–28)	22 (19–24)	9 (7–11)	8 (6–9)	8†† (6–11)	14†† (12–17)	7 (5–9)
Other§§	**240**	26†† (22–31)	20 (15–25)	13†† (8–17)	7 (4–10)	9†† (5–12)	11 (6–16)	7 (5–9)
Total		**23 (20–26)**	**19 (18–21)**	**8 (7–10)**	**7 (6–8)**	**7 (6–8)**	**12 (11–14)**	**6 (5–7)**

Abbreviations: CI = confidence interval; HIV = human immunodeficiency virus.
* Ancillary services are defined as services that support retention in primary HIV medical care and assist with day-to-day living.
† Percentages are weighted percentages.
§ CIs incorporate weighted percentages.
¶ p-value <0.05 in comparison to reference group (aged ≥50 years).
** Race/ethnicity groups are mutually exclusive. Hispanics or Latinos could be of any race.
†† p-value <0.05 in comparison to reference group (non-Hispanic white).
§§ Includes American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander, or multiple races.

The most prevalent unmet needs were for dental care and eye or vision care, which are essential because many persons living with HIV have oral or eye conditions (e.g., candidiasis, Kaposi's sarcoma) that require specialized care. Unmet needs were also identified for services that help persons living with HIV stay in medical care and adhere to HIV treatment. Young, non-Hispanic black, and Hispanic/Latino MSM had the most unmet needs for ancillary services. Many of the reasons MSM have unmet needs for ancillary services

TABLE 2. Reasons for unmet needs for ancillary services* among men who have sex with men and who are receiving outpatient HIV medical care — Medical Monitoring Project, United States, 2013–2014

Service	Total no.	Reason for unmet needs %† (95% CI§)				
		Didn't know how to get service	In process of getting service	Not eligible or denied services	Money or insurance issues	Psychological barriers
Dental care	**1,099**	14 (12–16)	26 (22–31)	6 (4–8)	25 (21–29)	12 (8–16)
Eye or vision care	**957**	19 (17–22)	28 (22–33)	5 (3–7)	28 (23–32)	8 (4–12)
HIV peer group support	**387**	41 (35–47)	6 (3–9)	¶ (—)	¶ (—)	14 (10–17)
Transportation assistance	**348**	45 (40–49)	8 (5–11)	15 (11–19)	¶ (—)	¶ (—)
Shelter or housing	**336**	31 23–39	20 (14–26)	20 (16–23)	¶ (—)	¶ (—)
Food or nutrition	**597**	41 (37–45)	13 (9–16)	14 (10–19)	¶ (—)	7 (4–10)
Mental health care	**286**	22 (16–27)	16 (12–20)	5 (2–8)	13 (9–17)	25 (19–32)

Abbreviations: CI = confidence interval; HIV = human immunodeficiency virus.
* Ancillary services are defined as services that support retention in primary HIV medical care and assist with day-to-day living.
† Percentages are weighted percentages.
§ CIs incorporate weighted percentages.
¶ Estimates suppressed because coefficient of variation for the estimate was ≥30%.

resulted from inadequate knowledge or insufficient resources for obtaining services.

Many persons living with HIV in the United States lack basic life necessities (*2*). Among persons in HIV medical care, approximately half have household incomes at or below the poverty threshold (*3*), 18% are uninsured (*4*), and 8% are homeless (*3*). For persons in need, ancillary services, including food or nutrition, transportation assistance, and shelter or housing, are fundamental for accessing medical care, adhering to HIV treatment, and being virally suppressed (*2*).

In 2014, most MSM with newly diagnosed HIV were young, non-Hispanic black, or Hispanic/Latino (*1*). Among MSM with diagnosed HIV, these populations have the lowest levels of antiretroviral therapy use and viral suppression (*5*), as well as substantial unmet needs for ancillary services. Improving access to ancillary services that facilitate HIV care and improved treatment outcomes might help reduce age and racial/ethnic disparities in HIV-related health outcomes and ongoing HIV transmission.

Reducing unmet needs for ancillary services among MSM living with HIV could help accelerate progress toward reaching the National HIV/AIDS Strategy goal of increasing access to care and improving health outcomes for persons living with HIV. This strategy specifies goals for improving health outcomes among persons living with HIV by increasing access to basic needs (*6*) and focuses on increasing stable housing for persons living with HIV, which has consistently been shown to support retention in HIV care and HIV treatment adherence (*7*).

The Ryan White HIV/AIDS Program is the primary funder of ancillary services for persons living with HIV in the United States through grants to states, territories, and community-based organizations that serve approximately half a million persons each year (*8*). A previous study found that 73% of persons in HIV care received services from clinics funded by the Ryan White program; among those, 32% received meal or food services, 29% received transportation assistance, and 18% received shelter or housing services, compared with 21%, 16%, and 10%, respectively, of persons in HIV care in clinics not funded by the program (*9*).

Findings from this analysis indicate some MSM were not accessing ancillary services because they did not know how to get services, were not eligible or were denied services, or had psychological barriers. Co-locating ancillary services with routine HIV medical care using a medical home model is a hallmark of the Ryan White HIV/AIDS Program (*10*). Expansion of the medical home model for HIV care by health departments, health care providers, and community-based organizations would likely increase access to needed ancillary services. When co-locating services is not feasible, proactive linkage via HIV case managers to existing program-funded services is another possible option for increasing access to services.

The findings in this report are subject to at least four limitations. First, these data represent MSM who were in HIV medical care and are not generalizable to MSM not receiving regular medical care or unaware of their HIV infection, among whom unmet needs for services might be more prevalent. Second, service needs were self-reported and not objectively evaluated, and might under- or overestimate unmet needs. Third, prevalence of unmet needs is likely to vary geographically. Local analyses might provide targeted information for resource allocation and policy decisions. Finally, MMP's response rate was suboptimal. Although the data were adjusted to minimize nonresponse bias based on known characteristics of sampled facilities and patients, the possibility of residual nonresponse bias exists.

MSM in HIV medical care have substantial unmet needs for ancillary services, which puts them at risk for health complications and jeopardizes their care and treatment outcomes. The highest prevalences of unmet needs for ancillary services were observed among young MSM and among non-white MSM, the populations with the highest rates of new HIV infection

Summary

What is already known about this topic?

Ancillary services, defined as services that support retention in routine human immunodeficiency virus (HIV) medical care and assist with day-to-day living, can improve the health of men living with HIV who have sex with men (MSM) and help them to achieve viral suppression.

What is added by this report?

MSM receiving outpatient HIV medical care during 2013–2014 in the United States reported many unmet needs for ancillary services. Approximately 23% needed dental care, and 19% needed eye care. Young, non-Hispanic black, and Hispanic/Latino MSM had the most unmet needs for ancillary services. The most common reasons for unmet needs were inadequate knowledge or insufficient resources for obtaining services.

What are the implications for public health practice?

Strategies that increase patient awareness of how to obtain ancillary services might improve access to these services, thereby improving the health of MSM living with HIV and reducing age and racial/ethnic disparities in HIV-related health outcomes.

and poor HIV treatment outcomes. Addressing the ancillary service needs of MSM can improve health outcomes and reduce HIV-related health disparities in the United States.

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References

1. CDC. HIV surveillance report, 2014, vol. 26. Atlanta, GA: US Department of Health and Human Services, CDC; 2015. http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-us.pdf
2. Conviser R, Pounds MB. The role of ancillary services in client-centred systems of care. AIDS Care 2002;14(Suppl 1):S119–31. http://dx.doi.org/10.1080/09540120220150018
3. CDC. Behavioral and clinical characteristics of persons receiving medical care for HIV infection—Medical Monitoring Project, United States, 2013 Cycle (June 2013–May 2014). HIV surveillance special report 16. Atlanta, GA: US Department of Health and Human Services, CDC; 2016. http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-hssr-mmp-2013.pdf
4. Bradley H, Viall AH, Wortley PM, Dempsey A, Hauck H, Skarbinski J. Ryan White HIV/AIDS Program assistance and HIV treatment outcomes. Clin Infect Dis 2016;62:90–8. http://dx.doi.org/10.1093/cid/civ708
5. Singh S, Bradley H, Hu X, Skarbinski J, Hall HI, Lansky A. Men living with diagnosed HIV who have sex with men: progress along the continuum of HIV care—United States, 2010. MMWR Morb Mortal Wkly Rep 2014;63:829–33.
6. The White House Office of National AIDS Policy. National HIV/AIDS Strategy for the United States. Washington DC: The White House Office of National AIDS Policy; 2010. https://www.whitehouse.gov/sites/default/files/uploads/NHAS.pdf
7. Leaver CA, Bargh G, Dunn JR, Hwang SW. The effects of housing status on health-related outcomes in people living with HIV: a systematic review of the literature. AIDS Behav 2007;11(Suppl):85–100. http://dx.doi.org/10.1007/s10461-007-9246-3
8. Health Resources and Services Administration. Ryan White HIV/AIDS Program annual client-level data report 2014. Washington, DC: US Department of Health and Human Services, Health Resources and Services Administration; 2015.
9. Weiser J, Beer L, Frazier EL, et al. Service delivery and patient outcomes in Ryan White HIV/AIDS Program-funded and nonfunded health care facilities in the United States. JAMA Intern Med 2015;175:1650–9. http://dx.doi.org/10.1001/jamainternmed.2015.4095
10. Beane SN, Culyba RJ, DeMayo M, Armstrong W. Exploring the medical home in Ryan White HIV care settings: a pilot study. J Assoc Nurses AIDS Care 2014;25:191–202. http://dx.doi.org/10.1016/j.jana.2013.10.007

Update: Influenza Activity — United States and Worldwide, May 22–September 10, 2016

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During May 22–September 10, 2016,* the United States experienced typical low levels of seasonal influenza activity overall; beginning in late August, clinical laboratories reported a slight increase in influenza positive test results and CDC received reports of a small number of localized influenza outbreaks caused by influenza A (H3N2) viruses. Influenza A (H1N1)pdm09, influenza A (H3N2), and influenza B viruses were detected during May–September in the United States and worldwide. The majority of the influenza viruses collected from the United States and other countries during that time have been characterized antigenically or genetically or both as being similar to the reference viruses representing vaccine components recommended for the 2016–17 Northern Hemisphere vaccine. During May 22–September 10, 2016, 20 influenza variant virus† infections were reported; two were influenza A (H1N2) variant (H1N2v) viruses (Minnesota and Wisconsin) and 18 were influenza A (H3N2) variant (H3N2v) viruses (12 from Michigan and six from Ohio).

United States

The U.S. influenza surveillance system§ is a collaboration between CDC and federal, state, local, and territorial partners and uses nine data sources to collect influenza information, seven of which operate year-round.¶ During May 22–September 10, 2016, laboratories participating in the U.S. World Health Organization (WHO) Collaborating Laboratories System (primarily public health laboratories) tested 5,365 specimens for influenza and 817 were positive for seasonal influenza viruses; 458 (56.1%) were influenza A viruses, and 359 (43.9%) were influenza B viruses (Figure 1). Influenza B viruses were reported more frequently than influenza A viruses during May–June. However, since the beginning of July, influenza A viruses were reported more frequently. Of the 448 influenza A viruses subtyped, 377 (84.2%) were influenza A (H3N2) viruses and 71 (15.8%) were influenza A (H1N1)pdm09 viruses. Lineage was determined for 249 influenza B viruses; 172 (69.1%) were B/Yamagata lineage and 77 (30.9%) were B/Victoria lineage. During the same period, laboratories participating in the National Respiratory and Enteric Virus Surveillance System (NREVSS) (primarily clinical laboratories) tested 110,230 specimens for influenza viruses (Figure 2); 2,126 (1.9%) were positive. Among the positive specimens, 763 (35.9%) were influenza A viruses and 1,363 (64.1%) were influenza B viruses. Influenza viruses were reported from Puerto Rico and 49 states in all 10 U.S. Department of Health and Human Services regions.**

During May 22–September 10, data from the U.S. Outpatient Influenza-Like Illness Surveillance Network (ILINet) indicated that the weekly percentage of outpatient visits to health care providers for influenza-like illness (ILI)†† remained below the national baseline§§ of 2.1% and ranged

* Data as of September 16, 2016.

† Influenza viruses that circulate in swine are called swine influenza viruses when isolated from swine, but are called variant influenza viruses when isolated from humans. Seasonal influenza viruses that circulate worldwide in the human population have important antigenic and genetic differences from influenza viruses circulating in swine.

§ The CDC influenza surveillance system collects information in five categories from nine data sources: 1) viral surveillance (U.S. World Health Organization collaborating laboratories, the National Respiratory and Enteric Virus Surveillance System, and novel influenza A virus case reporting); 2) outpatient illness surveillance (U.S. Outpatient Influenza-Like Illness Surveillance Network [ILINet]); 3) mortality (National Center for Health Statistics Mortality Surveillance System, 122 Cities Mortality Reporting System, and influenza-associated pediatric mortality reports); 4) hospitalizations (Influenza Hospitalization Surveillance Network [FluSurv-NET], which includes the Emerging Infections Program and surveillance in three additional states); and 5) summary of the geographic spread of influenza (state and territorial epidemiologist reports).

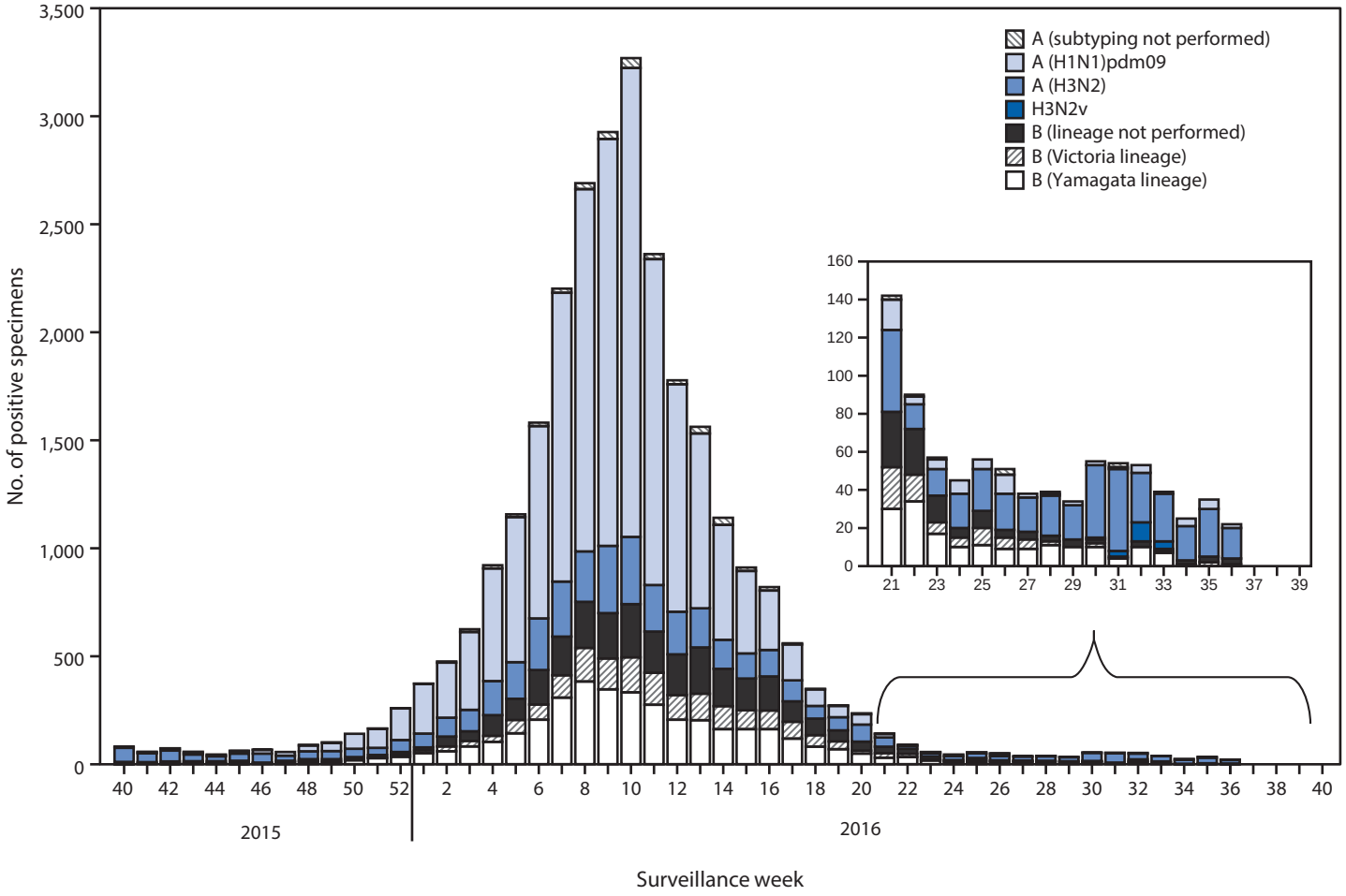
¶ http://www.cdc.gov/flu/weekly/overview.htm.

** The 10 regions include the following jurisdictions: *Region 1*: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont; *Region 2*: New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands; *Region 3*: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia; *Region 4*: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee; *Region 5*: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin; *Region 6*: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas; *Region 7*: Iowa, Kansas, Missouri, and Nebraska; *Region 8*: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming; *Region 9*: Arizona, California, Hawaii, Nevada, American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and Republic of Palau; *Region 10*: Alaska, Idaho, Oregon, and Washington.

†† Defined as a temperature ≥100°F (≥37.8°C), oral or equivalent, and cough and/or sore throat, without a known cause other than influenza.

§§ The national baseline is the mean percentage of visits for ILI during noninfluenza weeks for the previous three seasons plus two standard deviations. Noninfluenza weeks are defined as periods of ≥2 consecutive weeks in which each week accounted for <2% of the season's total number of specimens that tested positive for influenza. The national percentage of patient visits for ILI is weighted based on state population.

FIGURE 1. Number of influenza positive tests* reported to CDC by public health laboratories, by virus subtype/lineage and week — United States, October 4, 2015–September 10, 2016†



* N = 76,293.
† As of September 16, 2016.

from 0.7% to 1.2%. Based on data from CDC's National Center for Health Statistics Mortality Surveillance System and, as reported by the 122 Cities Mortality Reporting System,¶¶ the proportion of deaths attributed to pneumonia and influenza (P&I) remained below the epidemic threshold*** in both systems and ranged from 5.0% to 6.3% and 4.9% to 6.4% in each system, respectively. Five influenza-associated pediatric deaths occurring during May 22–September 10 were reported; three were associated with influenza B viruses and two were associated with influenza A viruses for which no subtyping was performed.

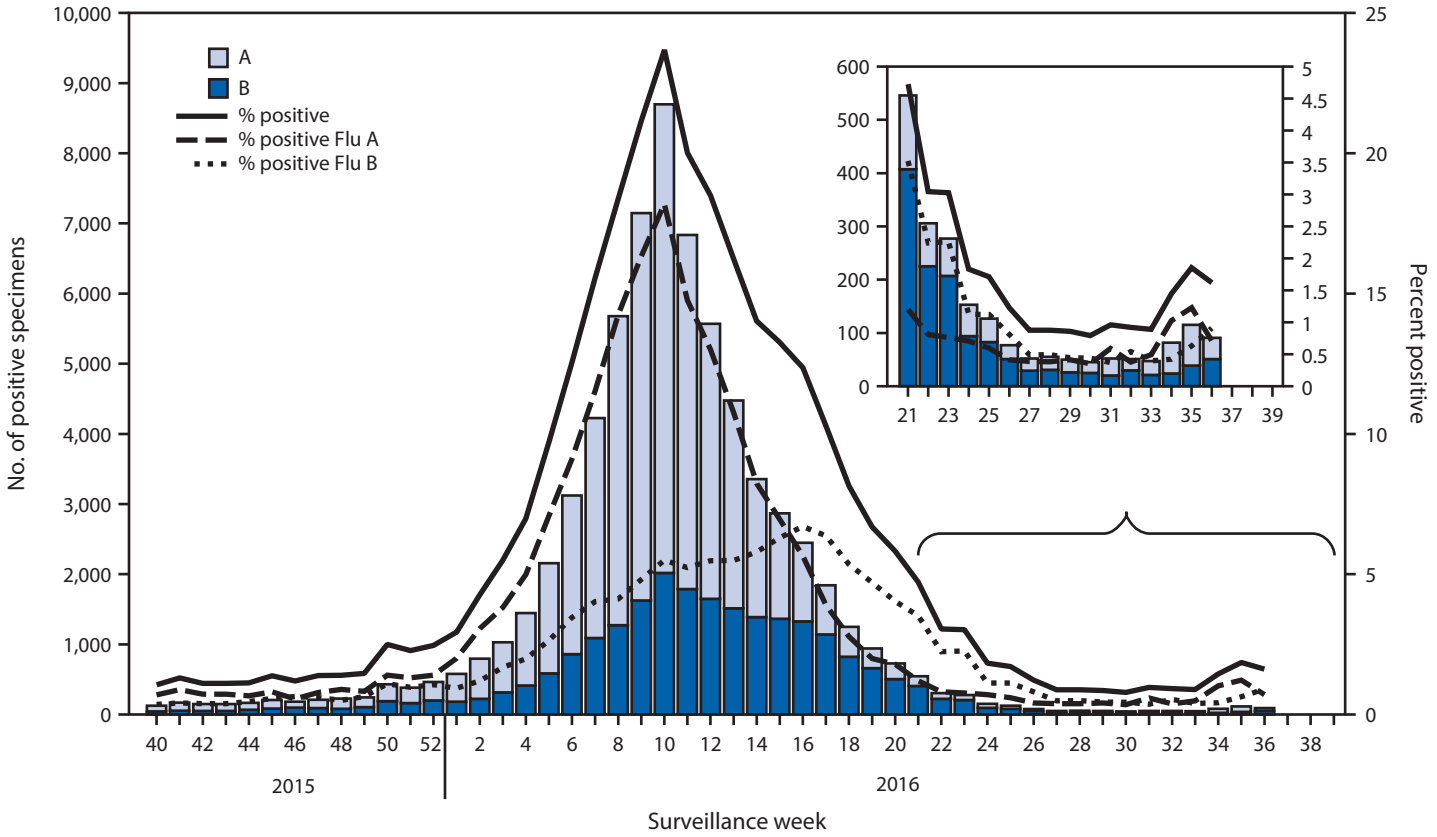
Novel Influenza A Virus Infection

During May 22–September 10, 20 cases of human infection with novel influenza A viruses were reported; two H1N2v virus infections and 18 H3N2v virus infections (reported in FluView weeks 25 and 31–34). The H1N2v viruses were reported by Minnesota (one infection that occurred in April) and Wisconsin (one infection that occurred in June). Both patients reported contact with swine in the week preceding illness onset and no ongoing community transmission of either virus was detected. One of the two patients (the Wisconsin case)

¶¶ Pneumonia and influenza (P&I)-associated deaths are tracked through two systems, the National Center for Health Statistics (NCHS) Mortality Surveillance System, which reports the week the death occurred, and the 122 Cities Mortality Reporting System, which reports the week that the death certificate was registered. Because of these differences in reporting, the two data sources produce different percentages. Beginning with the 2015–16 influenza season, the NCHS Mortality Surveillance System has been the principal component of the U.S. Mortality Surveillance System.

*** The seasonal baseline proportion of P&I deaths is projected using a robust regression procedure, in which a periodic regression model is applied to the observed percentage of deaths caused by P&I that were reported by the NCHS Mortality Surveillance System and the 122 Cities Mortality Reporting System during the preceding 5 years. The epidemic threshold is set at 1.645 standard deviations above the seasonal baseline. Users of the data should not expect the NCHS mortality surveillance data and the 122 Cities Mortality Reporting System to produce the same percentages, and the percent P&I deaths from each system should be compared with the corresponding system specific baselines and thresholds.

FIGURE 2. Number* and percentage of respiratory specimens testing positive for influenza reported by clinical laboratories, by type and week — United States, October 4, 2015–September 10, 2016†



* N = 778,593.
† As of September 16, 2016.

was hospitalized because of the illness and both patients have recovered. The 18 H3N2v virus infections were reported by Michigan (12) and Ohio (six) and are the first reported human infections with H3N2v in the United States during 2016. All 18 H3N2v virus infections were reported in August among persons who had exposure to swine at one or more fairs in the week preceding their illness; the median age was 7 years. One of the 18 persons was hospitalized for H3N2v virus infection. Swine influenza A (H3N2) virus was identified from at least one respiratory sample collected from pigs at each of the associated fairs.

Worldwide

CDC serves as a WHO Collaborating Center for Surveillance, Epidemiology, and Control of Influenza, one of six WHO Collaborating Centers for Influenza in the WHO Global Influenza Surveillance and Response System (GISRS) (*1*). CDC, along with other international public health partners, provides surveillance and virus characterization data to WHO (*2*). The timing of influenza activity around the world varies by region[†††] and areas with similar influenza transmission patterns are grouped by influenza transmission zones (*2*).

During May 22–September 4, typical seasonal patterns of influenza activity occurred in temperate climate Southern Hemisphere countries. In Australia, influenza activity began increasing in mid-July and peaked in August, with influenza A (H3N2) viruses predominating. Activity in New Zealand remained low. In Southern Africa, influenza activity continued to increase during May–August. Influenza B viruses predominated until mid-July; subsequently influenza A (H3N2) viruses were reported more frequently than influenza B viruses. In temperate countries of South America, influenza activity began

[†††] In temperate climates, the onset and peak of influenza activity might vary substantially from one influenza season to the next, but generally begins to increase in the late fall. In the Northern Hemisphere's temperate regions, annual epidemics of influenza typically occur during October–February, but the peak of influenza activity can occur as late as April or May. In temperate regions of the Southern Hemisphere, influenza activity typically peaks during May through August. Although temperate regions of the world experience a seasonal peak in influenza activity, influenza viruses can be isolated year-round. The timing of seasonal peaks in influenza activity in tropical and subtropical countries varies by region. Multiple peaks of activity during the same year have been seen in some areas and influenza infection can occur year-round.

to increase in May, remained elevated in Chile throughout the period, but declined in Argentina, Paraguay, and Uruguay after peaking in June. Influenza A (H1N1)pdm09 viruses were reported more frequently than influenza B viruses in Argentina, Chile, and Paraguay; Uruguay reported only influenza A (H1N1)pdm 09 viruses. In temperate climate countries of Europe, North America, and Asia, influenza activity remained low, with influenza A (H1N1)pdm09, influenza A (H3N2), and influenza B viruses being reported.

In countries with tropical influenza seasonality, influenza activity levels and the predominant virus varied by country. In the Caribbean, activity was low and influenza B viruses were predominant. Influenza activity in eastern and western Africa remained low, with influenza A (H3N2), influenza A (H1N1)pdm09 and influenza B viruses circulating. In Central and tropical South America, influenza A (H1N1)pdm09 viruses were more commonly reported. Activity remained low throughout the period in Brazil, Costa Rica, and Peru, although in El Salvador, Panama, Colombia, Bolivia, and Ecuador, activity peaked in June and declined to low levels in August. In South Asia, activity was low, with influenza A and influenza B viruses co-circulating. Influenza activity in Southeast Asia began to increase during June and peaked in August. Influenza A (H1N1)pdm09, influenza A (H3N2), and influenza B viruses co-circulated in this region.

During May 9–September 10, WHO reported that 34 laboratory-confirmed human cases of avian influenza infection have occurred since March 23, 2016. Egypt reported four influenza A (H5N1) virus infections and China reported 30 human cases of avian influenza infection, including one influenza A (H5N6) infection, 28 influenza A (H7N9) infections, and one influenza A (H9N2) infection.[§§§]

Antigenic and Genetic Characterization of Influenza Viruses

The components for the 2016–17 Northern Hemisphere influenza vaccines were selected in February 2016, during the twice-yearly WHO-sponsored vaccine consultation meeting to review data generated by GISRS laboratories. The recommended Northern Hemisphere 2016–17 trivalent influenza vaccine composition includes an A/California/7/2009 (H1N1) pdm09-like virus, an A/Hong Kong/4801/2014 (H3N2)-like virus, and a B/Brisbane/60/2008-like (B/Victoria lineage) virus (*3*). An additional influenza B virus (B/Phuket/3073/2013-like [B/Yamagata lineage]) was recommended for quadrivalent vaccines (*3*). These are the same vaccine viruses that were recommended for inclusion in the 2016 Southern Hemisphere influenza vaccines. Influenza viruses used to produce most influenza vaccines in the United States are grown in eggs according to current regulatory requirements. However, egg propagation of influenza viruses, particularly influenza A (H3N2) viruses, can lead to genetic changes that might have antigenic implications. The vaccine viruses selected for the Northern Hemisphere 2016–17 vaccine were representative of most, but not all, circulating influenza viruses at that time, and had the fewest and least substantial egg-adapted changes.

Data obtained from antigenic characterization are important in the assessment of the similarity between reference vaccine viruses and circulating viruses. Although vaccine-effectiveness field studies must be conducted to determine how well a vaccine is working, laboratory data are used to evaluate whether changes in circulating wild-type viruses that could affect vaccine effectiveness might have occurred. Beginning with the 2014–15 season, a proportion of influenza A (H3N2) viruses have not yielded sufficient hemagglutination titers for antigenic characterization by the hemagglutination inhibition test. Therefore, CDC selects a subset of influenza A (H3N2) viruses to test using a neutralization focus reduction assay for supplementary antigenic characterization. For nearly all viruses characterized at CDC laboratories, next-generation whole genome sequencing is performed to determine the genetic identity of circulating viruses. For the subset of viruses that do not yield sufficient hemagglutination titers, antigenic properties are inferred using results obtained from viruses within the same genetic group as those that have been characterized antigenically.

CDC has antigenically or genetically characterized 504 influenza viruses collected and submitted by U.S. and international laboratories since May 1, 2016, including 134 influenza A (H1N1)pdm09 viruses, 134 influenza A (H3N2) viruses, and 236 influenza B viruses. Among the 134 influenza A (H1N1) pdm09 viruses characterized (98 international and 36 U.S.), all were antigenically similar to A/California/7/2009, the reference virus representing the influenza A (H1N1) component of the 2016–17 Northern Hemisphere influenza vaccine. All influenza A (H1N1)pdm09 viruses sequenced (91 international and 34 U.S.) belong to hemagglutinin genetic subgroup 6B, 6B.1, or 6B.2, with viruses in the 6B.1 genetic subgroup predominating.

A total of 134 influenza A (H3N2) viruses collected globally since May 1, 2016, were sequenced (59 international and 75 U.S.), and all viruses belonged to genetic subgroups 3C.2a or 3C.3a. A subset of 103 influenza A (H3N2) viruses was antigenically characterized (38 international and 65 U.S.); 86 of 103 (83.5%) were antigenically similar to the A/Hong Kong/4801/2014-like cell-propagated reference

[§§§] The list of WHO monthly risk assessment summaries for human infections with avian influenza viruses is available at http://www.who.int/influenza/human_animal_interface/HAI_Risk_Assessment/en/ and WHO disease outbreak news reports are available at http://www.who.int/csr/don/en/.

virus belonging to genetic subgroup 3C.2a, representing the A (H3N2) component of the 2016–17 Northern Hemisphere vaccines. A smaller proportion of viruses were antigenically similar to the egg-propagated A/Hong Kong/4801/2014 reference virus representing the A (H3N2) vaccine component.

A total of 135 influenza B/Victoria-lineage viruses were characterized (59 international and 76 U.S.), and 133 (98.5%) were found to be similar to B/Brisbane/60/2008, the reference vaccine virus representing the influenza B/Victoria-lineage component of the 2016–17 Northern Hemisphere trivalent and quadrivalent vaccines. Two (1.5%) of the B/Victoria-lineage viruses tested had reduced titers to B/Brisbane/60/2008. All B/Victoria-lineage viruses sequenced (57 international and 73 U.S.) belong to genetic group V1A, the same genetic group as the vaccine reference virus.

A total of 101 influenza B/Yamagata-lineage viruses were characterized (24 international and 77 U.S.), and all were similar to B/Phuket/3073/2013, the reference vaccine virus representing the influenza B/Yamagata-lineage component of the 2016–17 Northern Hemisphere quadrivalent vaccines. All influenza B/Yamagata-lineage viruses sequenced (23 international and 74 U.S.) belong to genetic group Y2 or Y3, with viruses in the Y3 genetic group (the same genetic group as the vaccine reference virus) predominating.

Additional viruses have been characterized by the other Collaborating Centers. That information is presented elsewhere (*2*).

Antiviral Resistance Profiles of Influenza Virus Isolates

The WHO Collaborating Center for Surveillance, Epidemiology, and Control of Influenza at CDC tested 461 influenza virus specimens collected during May 1–September 10 from the United States and worldwide for resistance to the influenza neuraminidase inhibitor antiviral medications currently approved for use against seasonal influenza: oseltamivir, peramivir, and zanamivir. Among 141 influenza A (H1N1)pdm09 viruses (98 international and 43 U.S.) tested for oseltamivir and peramivir susceptibility, two (1.4%) were resistant to both drugs. A total of 137 of the influenza A (H1N1)pdm09 viruses also were tested for zanamivir susceptibility and all were susceptible. All 117 influenza A (H3N2) viruses (24 international and 93 U.S.) and all 203 influenza B viruses (51 international and 152 U.S.) tested for oseltamivir, peramivir, and zanamivir susceptibility were sensitive to all three recommended antiviral medications. High levels of resistance to the adamantanes (amantadine and rimantadine) persist among influenza A (H1N1)pdm09 and influenza A (H3N2) viruses. Adamantane drugs continue to not be recommended for use against influenza at this time.

Discussion

During May 22–September 10, 2016, influenza A (H3N2), influenza A (H1N1)pdm09 and influenza B viruses co-circulated worldwide. In the United States, low levels of influenza activity were reported overall, with influenza B viruses more frequently reported through June and influenza A viruses reported more frequently since the beginning of July. A small number of localized outbreaks caused by influenza A (H3N2) viruses were reported in late August and early September. Although overall influenza activity remains low and below epidemic thresholds, because of recent reports of influenza activity, the possibility of influenza virus infection in persons with influenza-like illness should be considered. The majority of the influenza viruses collected from the United States and other countries during May–September were characterized antigenically or genetically or both as being similar to the reference viruses representing vaccine components recommended for the 2016–17 Northern Hemisphere influenza vaccines. Antigenic and genetic characterization of circulating influenza viruses can give an indication of the influenza vaccine's ability to produce an immune response against circulating influenza viruses, but vaccine effectiveness studies are needed to determine how much protection has been provided to the community by vaccination. It is not possible to predict which influenza virus will predominate, how severe influenza-related disease activity will be, or how effective influenza vaccine will be during the 2016–17 season. However, since February 2016, CDC's laboratory-based studies of approximately 5,000 influenza viruses found that most circulating viruses do not have significant antigenic changes. These findings are in contrast to the 2014–15 season, when influenza A (H3N2) viruses collected in late summer showed significant changes (drift) compared with the recommended vaccine virus. In addition, although many factors can affect the effectiveness of the influenza vaccine, making it impossible to predict how effective this season's influenza vaccine will be, the low level of vaccine effectiveness caused by antigenic drift during the 2014–15 influenza season is not anticipated. CDC will continue to monitor influenza viruses throughout the season and will provide updates as the season progresses.

Annual influenza vaccination is the best method for preventing influenza and its potentially severe complications (*3*). Although vaccine effectiveness can vary, vaccination has been found to reduce influenza illnesses, doctor visits, and influenza-related hospitalizations (*4*). Substantial public health impact can still be attained during seasons when vaccine effectiveness is reduced (*4–6*). In the United States, annual influenza vaccination is recommended for all persons aged ≥6 months. Annual influenza vaccination is recommended regardless of whether the vaccine composition has changed because immunity from

vaccination might wane after one season. For the 2016–17 influenza season, interim supply projections by manufacturers for the U.S. market range from 157 million to 168 million doses of vaccine.

Multiple influenza vaccines are approved and recommended for use and are being distributed during the 2016–17 season, including unadjuvanted, egg-based trivalent and quadrivalent inactivated influenza vaccines (IIV3 and IIV4), adjuvanted trivalent egg-based inactivated influenza vaccines (aIIV3), high-dose trivalent egg-based inactivated influenza vaccines (hd IIV3), quadrivalent cell culture–based inactivated influenza vaccines (ccIIV4), and recombinant trivalent influenza vaccines (RIV3). One IIV4 formulation also is approved for intradermal administration. For the 2016–17 season, the Advisory Committee on Immunization Practices and CDC recommend that quadrivalent live attenuated intranasal influenza vaccine (LAIV4) not be used because of concerns about effectiveness (*3*). For the 2016–17 season, children aged 6 months–8 years who have previously received ≥2 total doses of trivalent or quadrivalent influenza vaccine at any time before July 1, 2016, require only 1 dose for 2016–17 (*3*). The previous 2 doses do not need to have been given during the same or consecutive seasons (*3*). Children in this age group who are being vaccinated for the first time or who have not previously received a total of ≥2 doses before July 1, 2016, require 2 doses of influenza vaccine administered ≥4 weeks apart (*7*).

Although vaccination is the best method for preventing and reducing the impact of influenza, antiviral medications are a valuable adjunct. Treatment with influenza antiviral medications as early as possible in the course of illness is recommended for patients with confirmed or suspected influenza (either seasonal influenza or novel influenza virus infection) who have severe, complicated, or progressive illness; who require hospitalization; or who are at high risk for influenza-related complications[¶¶¶] (*8*). Treatment is most effective when given early in the illness, especially within 48 hours of illness onset; providers should not delay treatment until test results become available and should not rely on insensitive assays such as rapid antigen detection influenza diagnostic tests to determine treatment decisions (*8*).

Testing for seasonal influenza viruses and monitoring for novel influenza A virus infections, including influenza variant virus infections, should continue year-round, as should specimen submission to CDC for further antigenic and genetic analysis and antiviral resistance monitoring. Health care providers should consider novel influenza viruses in ill persons with swine exposure. The illness associated with variant virus infections has been similar to symptoms of uncomplicated seasonal influenza including fever, cough, pharyngitis, rhinorrhea, myalgia, and headache. Vomiting and diarrhea also have been reported in some infections in children. Milder clinical illness is possible, including lack of fever. Public health laboratories should immediately send virus specimens that they

Summary

What is already known about this topic?

CDC collects, compiles, and analyzes data on influenza activity year-round in the United States. The influenza season generally begins in the fall and continues through the winter and spring months; however, the timing and severity of disease and the predominant viral strains can vary by geographic location and season.

What is added by this report?

Worldwide, influenza activity during May 22–September 10, 2016, followed typical seasonality. In the United States, low levels of seasonal influenza activity were detected overall. However, since late August, clinical laboratories have reported a slight increase in positive test results for influenza and CDC has received reports of a small number of localized influenza outbreaks caused by influenza A (H3N2) viruses.

What are the implications for public health practice?

In the United States, an influenza vaccination is recommended for all persons aged ≥6 months, and can reduce the likelihood of becoming ill with influenza and transmitting the virus to others. Annual influenza vaccination is recommended for optimal protection. This season, CDC recommends use of the flu shot (inactivated influenza vaccine or IIV) or the recombinant influenza vaccine (RIV). The live attenuated intranasal vaccine (LAIV4) is not recommended for use during the 2016–2017 influenza season. Although vaccination is the best method for preventing and reducing the effects of influenza, antiviral medications are a valuable adjunct. Treatment with influenza antiviral medications is recommended as early as possible in the course of illness for patients with confirmed or suspected influenza (either seasonal influenza or novel influenza virus infection) who have severe, complicated, or progressive illness; who require hospitalization; or who are at high risk for influenza-related complications. Given recent reports of influenza outbreaks, it is important to consider the possibility of influenza virus infection in persons with influenza-like illness even though influenza activity overall remains low at this time.

¶¶¶ Persons at high risk include 1) children aged <5 years (especially those aged <2 years); 2) adults aged ≥65 years; 3) persons with chronic pulmonary (including asthma), cardiovascular (except hypertension alone), renal, hepatic, hematologic (including sickle cell disease), metabolic disorders (including diabetes mellitus), or neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerves, and muscles, such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury); 4) persons with immunosuppression, including that caused by medications or by human immunodeficiency virus infection; 5) women who are pregnant or postpartum (within 2 weeks after delivery); 6) persons aged ≤18 years who are receiving long-term aspirin therapy; 7) American Indians/Alaska Natives; 8) persons with extreme obesity (i.e., with a body mass index ≥40); and 9) residents of nursing homes and other chronic care facilities.

cannot type or subtype using standard methods to CDC and submit all specimens that are otherwise unusual as soon as possible after identification. Twenty infections with variant influenza viruses were reported from four states in 2016, compared with six viruses from five states in 2015. In 2016, most of these infections occurred in children with direct contact with pigs at agricultural fairs, highlighting the importance of preventive actions, especially for young children or persons at high risk for serious influenza-associated complications.**** Although community transmission of these viruses has not been identified, the potential for these viruses to develop the ability to be efficiently transmitted from person to person remains a concern. Early identification and investigation of human infections with novel influenza A viruses are critical to ensure timely risk assessment so that appropriate public health measures can be taken.

Influenza surveillance reports for the United States are posted online weekly and are available at http://www.cdc.gov/flu/weekly. Additional information regarding influenza viruses, influenza surveillance, influenza vaccines, influenza antiviral medications, and novel influenza A virus infections in humans is available at http://www.cdc.gov/flu.

**** Guidance for preventing the spread of variant influenza viruses is available at http://www.cdc.gov/flu/swineflu/variant-guidance.htm.

Acknowledgments

State, county, city, and territorial health departments and public health laboratories; U.S. World Health Organization collaborating laboratories; National Respiratory and Enteric Virus Surveillance System laboratories; U.S. Outpatient Influenza-Like Illness Surveillance Network sites; National Center for Health Statistics, CDC; 122 Cities Mortality Reporting System; World Health Organization, FluNet; Angie Foust, Elisabeth Blanchard, Priya Budhathoki, Thomas Rowe, Lizheng Guo, Ewelina Lyszkowicz, Shoshona Le, Malania Wilson, Juliana DaSilva, Alma Trujillo, Michael Hillman, Katherine Roguski, Thomas Stark, Samuel Shepard, Sujatha Seenu, Ha Nguyen, Vasiliy Mishin, Erin Hodges, Lori Lollis, Michelle Adamczyk, Juan De la Cruz, Influenza Division, National Center for Immunization and Respiratory Diseases, CDC.

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References

1. World Health Organization. Influenza: WHO Collaborating Centers and Essential Regulatory Laboratories. Geneva, Switzerland: World Health Organization; 2016. http://www.who.int/influenza/gisrs_laboratory/collaborating_centres/en
2. World Health Organization. FluNet. Geneva, Switzerland: World Health Organization; 2016. http://www.who.int/influenza/gisrs_laboratory/flunet/en
3. Grohskopf LA, Sokolow LZ, Broder KR, et al. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2016–17 influenza season. MMWR Recomm Rep 2016;65(No. RR-5). http://dx.doi.org/10.15585/mmwr.rr6505a1
4. Reed C, Kim IK, Singleton JA, et al. Estimated influenza illnesses and hospitalizations averted by vaccination—United States, 2013–14 influenza season. MMWR Morb Mortal Wkly Rep 2014;63:1151–4.
5. Kostova D, Reed C, Finelli L, et al. Influenza illness and hospitalizations averted by influenza vaccination in the United States, 2005–2011. PLoS One 2013;8:e66312. http://dx.doi.org/10.1371/journal.pone.0066312
6. Fry AM, Kim IK, Reed C, et al. Modeling the effect of different vaccine effectiveness estimates on the number of vaccine-prevented influenza-associated hospitalizations in older adults. Clin Infect Dis 2014;59:406–9. http://dx.doi.org/10.1093/cid/ciu328
7. Neuzil KM, Jackson LA, Nelson J, et al. Immunogenicity and reactogenicity of 1 versus 2 doses of trivalent inactivated influenza vaccine in vaccine-naive 5–8-year-old children. J Infect Dis 2006;194:1032–9. http://dx.doi.org/10.1086/507309
8. Fiore AE, Fry A, Shay D, Gubareva L, Bresee JS, Uyeki TM. Antiviral agents for the treatment and chemoprophylaxis of influenza—recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2011;60(No. RR-1).

Notes from the Field

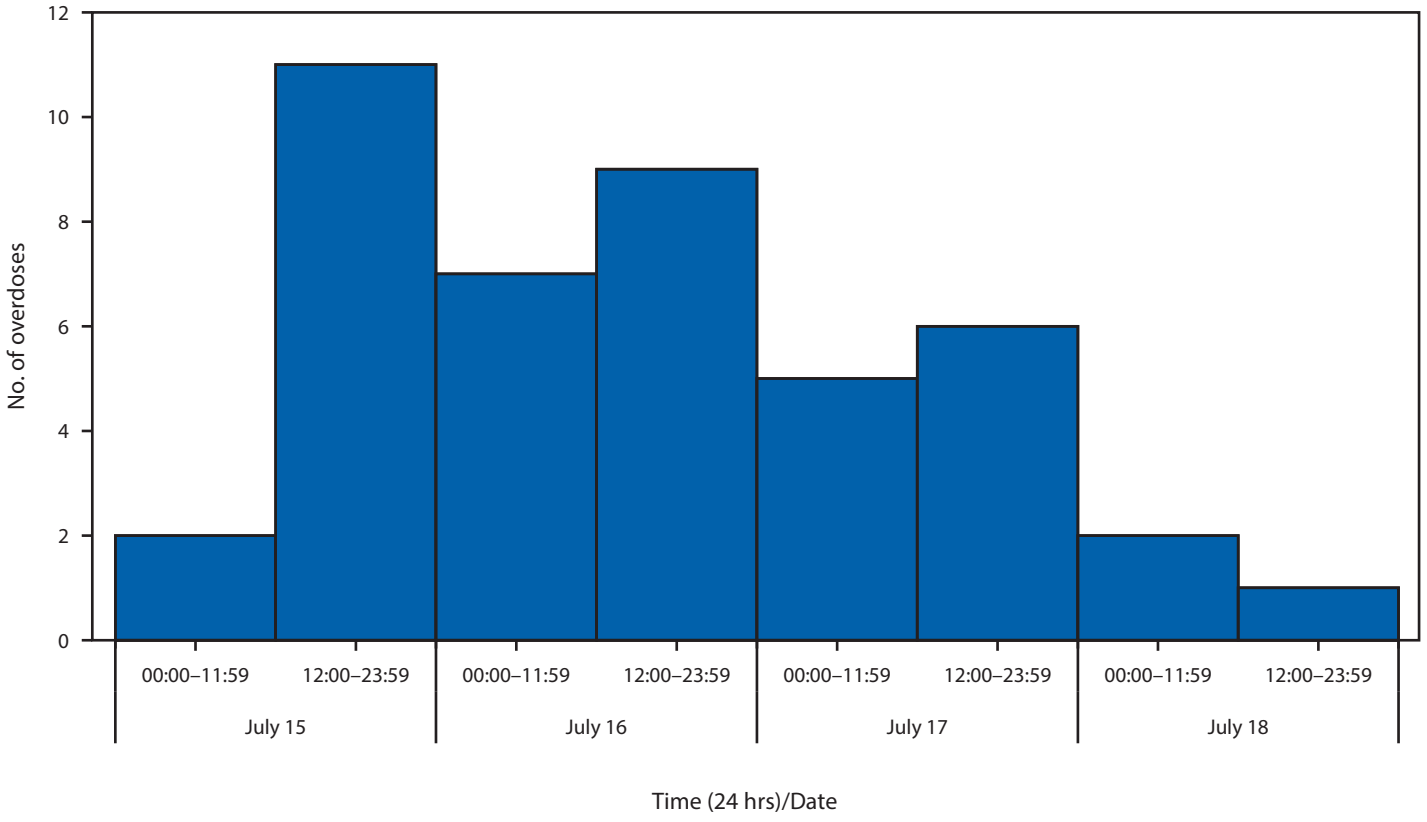
Furanyl-Fentanyl Overdose Events Caused by Smoking Contaminated Crack Cocaine — British Columbia, Canada, July 15–18, 2016

Salman A. Klar, MPH[1]; Elizabeth Brodkin, MD[1]; Erin Gibson[1]; Shovita Padhi, MD[1]; Christine Predy[2]; Corey Green, MHSc[1]; Victoria Lee, MD[1]

On July 15 2016, Surrey Memorial Hospital's emergency department notified the medical health officer on call of a sharp increase in opioid overdose events in Surrey, Fraser Health Authority, in British Columbia, Canada. During July 15–18, the number of persons with suspected opioid overdose evaluated in Surrey Memorial Hospital's emergency department increased approximately 170%, from an average of four suspected cases per day during the period January–June 2016 to 43 (nearly 11 per day) during the 4-day period (Figure). Most patients (22 [51%]) became unconscious after smoking what they believed to be crack cocaine. The majority of overdose events occurred within a small geographic area in Surrey that has a high population of homeless persons and persons who use illicit drugs, including opioids and crack cocaine. Most cases occurred in males (36 cases [84%]); the average age of the patients was 42 years (range = 18–63 years). Forty (93%) patients were brought to the emergency department by ambulance. A total of 37 (86%) patients received injectable naloxone before arriving in the emergency department, including 12 who received it only from community members, 16 who received it only from paramedics, five who received it from both community members and paramedics, one who received it from the fire department and paramedics, and one who received it from the fire department, community, and paramedics; for two patients, the source of naloxone was not known. Reports from first responders, the community, and emergency department staff members indicated that patients required high doses of injectable naloxone, in some cases up to 3.0 mg (usual dose = 0.4 mg). Thirty-five (81%) patients were treated and discharged within a few hours, two patients left without being seen by a health care provider, and six patients were admitted to the hospital; among these, three were transferred to the intensive care unit, one of whom died.

Local laboratories do not always have capacity for quantitative fentanyl testing or detection of new analogs. The immunoassay urinalysis testing kits used at the local hospital laboratory (Sure

FIGURE. Number of suspected opioid overdoses (n = 43) evaluated at Surrey Memorial Hospital, by time of arrival in the emergency department — British Columbia, Canada, July 15–18, 2016



Step [Alere Innovacon]) only detect fentanyl and norfentanyl. Therefore, select samples obtained by local police and the hospital were sent to the Health Canada Drug Analysis Service; these tested positive for a combination of furanyl-fentanyl and cocaine.

During July 15–18, Fraser Health Authority, in collaboration with community partners including police and persons who use illicit drugs, distributed warnings throughout the community and organized training sessions on naloxone administration in the affected area. Approximately 100 persons, many at high risk for overdose, were trained and received naloxone kits through the Take Home Naloxone program.*

British Columbia is currently experiencing a public health emergency related to increases in drug-related overdose deaths, especially associated with opioids such as fentanyl. A similar increase has been reported in the United States (*1*,*2*), where alerts have been issued regarding fentanyl- and fentanyl analog–adulterated pills, and furanyl-fentanyl has been detected during postmortem examinations (*3*,*4*).

Laboratory investigations and community reports at the time of this event indicate that the spike in overdose events likely resulted from a batch of crack cocaine from one dealer, which was adulterated with furanyl-fentanyl, a fentanyl analog that had not previously circulated in this community. Based on reports from patients, community organizations providing services in the area on that weekend, and police, ambulance, and fire services, the substance was consumed by persons who had a longstanding history of drug use but who might not have used opioids regularly. There have been police reports of cocaine contaminated with fentanyl in the neighboring city of Delta (*5*) and of U.S. overdose events from cocaine contaminated with acetylfentanyl in King County, Washington (*6*).

This is the first reported cluster of overdose events caused by crack cocaine contaminated with furanyl-fentanyl in North America. Persons who use illicit drugs, health care providers, first responders, and poison control centers should be alert for symptoms of opioid overdose even when the drug consumed is reported to be a nonopioid, such as crack cocaine. Rapid distribution of naloxone kits with training to community organizations and populations at high risk, and provision of naloxone kits to patients evaluated for suspected opioid overdoses in emergency departments, could help mitigate the impact of opioid overdoses.

* http://www.healthlinkbc.ca/healthfiles/hfile118.stm.

Acknowledgments

Staff of the Emergency Department at Surrey Memorial Hospital; British Columbia Ambulance Services; Surrey Fire Service, British Columbia; Surrey Royal Canadian Mounted Police, British Columbia; Drug Overdose Alert Partnership, British Columbia; British Columbia Centre for Disease Control; Health Canada Drug Analysis Service (Burnaby); British Columbia Drug and Poison Information Centre; community organizations and persons who reversed overdoses, and helped with distribution of naloxone kits and health warnings.

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References

1. Rudd RA, Aleshire N, Zibbell JE, Gladden RM. Increases in drug and opioid overdose deaths—United States, 2000–2014. MMWR Morb Mortal Wkly Rep 2016;64:1378–82. http://dx.doi.org/10.15585/mmwr.mm6450a3
2. BC Gov News. Provincial health officer declares public health emergency. Government of British Columbia; April 14, 2016. https://news.gov.bc.ca/releases/2016HLTH0026-000568
3. Mohr AL, Friscia M, Papsun D, Kacinko SL, Buzby D, Logan BK. Analysis of novel synthetic opioids U-47700, U-50488 and furanyl fentanyl by LC-MS/MS in postmortem casework. J Anal Toxicol 2016. Epub September 1, 2016. http://dx.doi.org/10.1093/jat/bkw086
4. CDC. Health Alert Network: influx of fentanyl-laced counterfeit pills and toxic fentanyl-related compounds further increases risk of fentanyl-related overdose and fatalities. Atlanta, GA: US Department of Health and Human Services, CDC; August 25, 2016. https://emergency.cdc.gov/han/han00395.asp
5. CBC News. Fentanyl-laced cocaine warning issued by Delta Police after overdoses. December 5, 2015. http://www.cbc.ca/news/canada/british-columbia/delta-police-warn-of-possible-fentanyl-laced-cocaine-after-overdoses-1.3352815
6. Public Health—Seattle and King County. Acetylfentanyl-laced cocaine may have killed two in King County. June 3, 2016. http://www.kingcounty.gov/depts/health/news/2016/June/3-acetylfentanyl-laced-cocaine.aspx

Notes from the Field

Pediatric Death from Meningococcal Disease in a Family of Romani Travelers — Sarasota, Florida, 2015

Eboni Crawford, MPH[1]; Michael Drennon, MSPH[2]; Tiffany Winston, MPH[1]

On January 31, 2015, the Sarasota County Office of the Medical Examiner notified the on-call epidemiologist at the Florida Department of Health, Bureau of Epidemiology of a possible death from meningococcal disease in a male child aged 17 months. The child was part of a large non–English-speaking Romani family (whose members self-identified as Gypsies), who arrived in Florida after traveling in Texas and Europe during the previous 2 months. The child had no history of prior meningococcal immunization. The family reported that the child had been sick for at least 7 days with an ear infection; however, this diagnosis was not confirmed by a physician. Because of increasing fever and onset of vomiting, emergency medical service (EMS) staff members were contacted and the child was transported to a local emergency department on January 29, 2015. Although he was reportedly interactive and alert during registration, he developed a rash while in the emergency department, his condition rapidly deteriorated, and he died within four hours. An autopsy was performed on January 30, and on January 31, the medical examiner reported Gram-negative diplococci in the cerebrospinal fluid (CSF). The on-call epidemiologist notified the Sarasota County epidemiologist to initiate investigation of the case and identify contacts at risk and needing chemoprophylaxis.

In partnership with the Sarasota County Sheriff's Office Romani liaison, who provided translation services, the Florida Department of Health in Sarasota County (DOH-Sarasota) identified 26 family members and other contacts. The hospital-infection–control nurse identified 12 staff members and two EMS transporters whom they believed had significant interaction with the patient. This Romani group indicated that many children and young parents in their community had substantial close contact with the child during his illness. Although a translator was present, communication regarding the meaning of possible exposure was unsatisfactory. Because of the challenges of assessing exposure, the DOH-Sarasota epidemiologist and medical director determined that providing chemoprophylaxis to all identified contacts was necessary.

The DOH-Sarasota epidemiology and clinical staff members opened the agency's health clinic on Saturday, January 31, to provide chemoprophylaxis to the family. Based on published recommendations, persons aged ≥12 years received a single 500-mg oral dose of ciprofloxacin, and persons aged <12 years received a single 125-mg intramuscular injection of ceftriaxone (*1*,*2*). Ceftriaxone was chosen because it is administered as a single dose and was easier to administer to children aged <12 years than ciprofloxacin.

DOH-Sarasota also provided quadrivalent meningococcal conjugate vaccine to family members to ensure the greatest protection possible. Although immunization of non-adolescents is not routinely recommended, DOH-Sarasota was concerned that the families would leave the area and be lost to follow-up.

In children, signs of bacterial meningitis include inactivity, irritability, vomiting, or poor reflexes in addition to sudden onset of fever, stiff neck, and headache. Because death can occur within hours, prompt medical attention is critical if meningococcal disease is suspected. Actions taken during this investigation highlight the importance of rapid response systems and community partnerships in responding to an event of public health significance. The transient nature of the population, difficulties in communication, and the substantial health risk for meningococcal disease led DOH-Sarasota to elect to provide chemoprophylaxis to all family members who might have had close contact with the infected child. Collaboration with law enforcement facilitated contacting family members and permitted the health department to quickly provide chemoprophylaxis and immunizations to a highly transient, non–English-speaking population. Although these steps went beyond current recommendations, the consensus was that this conservative approach offered the best protection to a hard-to-reach population. The Bureau of Public Health Laboratories, Jacksonville, Florida, confirmed *Neisseria meningitidis* serogroup C cultured from the patient's CSF on February 26. None of the identified social or hospital contacts developed meningococcal disease.

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References

1. American Academy of Pediatrics. Meningococcal infections. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. Red book: 2012 report of the committee on infectious diseases. Elk Grove Village, IL: American Academy of Pediatrics; 2012.
2. Cohn AC, MacNeil JR, Clark TA, et al. Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep 2013;62(No. RR-2).

Erratum

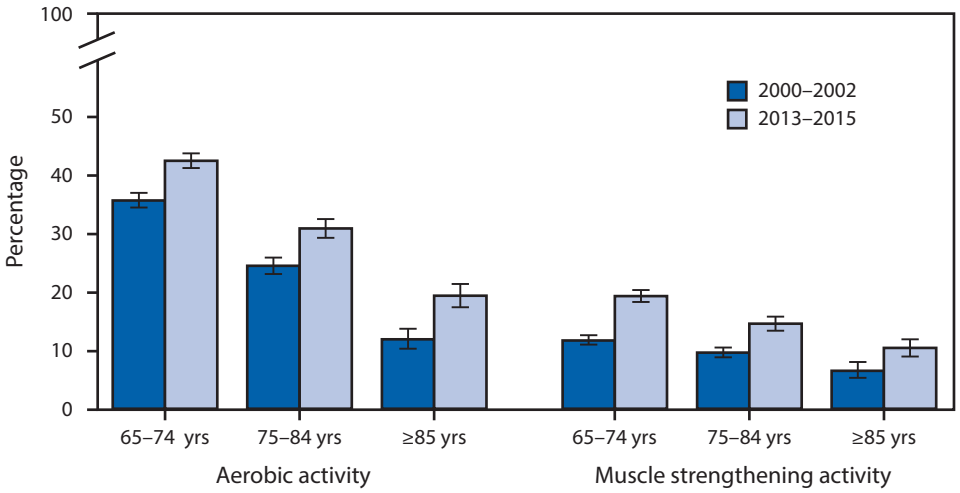
Vol. 65, No. 35

In the report, "Community Needs Assessment After Microcystin Toxin Contamination of a Municipal Water Supply — Lucas County, Ohio, September 2014," the first footnote on page 928 should be, "* **https://www.epa.gov/sites/production/files/2015-06/documents/microcystins-report-2015.pdf**."

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage* of Adults† Aged ≥65 Years Meeting 2008 Federal Guidelines for Leisure-Time Aerobic§ and Muscle-Strengthening¶ Activities, by Age and Type of Activity — United States, 2000–2002 and 2013–2015



* With 95% confidence intervals indicated with error bars.
† Estimates are based on household interviews of a sample of the noninstitutionalized U.S. civilian population and are derived from the National Health Interview Survey sample adult component.
§ Performing at least 150 minutes (2 hours and 30 minutes) per week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) per week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate/vigorous-intensity aerobic activity.
¶ Performing moderate/high intensity muscle-strengthening activities that involve all major muscle groups on ≥2 days per week.

From 2000–2002 to 2013–2015, the percentage of older adults who met the 2008 federal guidelines for aerobic activity increased from 35.7% to 42.5% among persons aged 65–74 years, from 24.5% to 30.9% among persons aged 75–84 years, and from 11.9% to 19.4% among persons aged ≥85 years. The percentage who met the guidelines for muscle strengthening activities increased from 11.7% to 19.3% among those aged 65–74 years, from 9.6% to 14.6% among those aged 75–84 years, and from 6.5% to 10.4% among those aged ≥85 years. In both periods, within each age group participation declined with age and was lower for muscle strengthening activities compared with aerobic activities.

Source: National Health Interview Survey; http://www.cdc.gov/nchs/nhis.htm.

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