Transgender persons are at high risk for human immunodeficiency virus (HIV) infection; in a recent analysis of the results of over nine million CDC funded HIV tests, transgender women* had the highest percentage of confirmed positive results (2.7%) of any gender category (1). Transgender men,† particularly those who have sex with cisgender men, are also at high risk for infection (2). HIV testing is critical for detecting and treating persons who are infected and delivering preventive services to those who are uninfected. CDC recommends that persons at high risk for HIV infection be screened for HIV at least annually, although transgender persons are not specified in the current recommendations. CDC analyzed data from the Behavioral Risk Factor Surveillance System (BRFSS) to describe HIV testing among transgender women and men and two cisgender comparison groups in 27 states and Guam. After adjusting for demographic characteristics, transgender women and men had a lower prevalence of ever testing and past year testing for HIV (35.6% and 31.6% ever, and 10.0% and 10.2% past year, respectively) compared with cisgender gay and bisexual men (61.8% ever and 21.6% past year) and instead reported testing at levels comparable to cisgender heterosexual women (35.2% ever, and 8.6% past year). This finding suggests that transgender women and men might not be sufficiently reached by current HIV testing measures. Tailoring HIV testing activities to overcome the unique barriers faced by transgender women and men might increase rates of testing among these populations.

BRFSS is an annual, state-based, random-digit–dialed cellular and landline telephone survey of the noninstitutionalized U.S. adult population. Gender identity was uniformly assessed in an optional module used by 20 jurisdictions** in 2014 and 22 jurisdictions†† in 2015. Fourteen jurisdictions participated in the module during both years, six participated only in 2014, and eight participated only in 2015, for a total of 28. Jurisdiction-specific response rates ranged from 33.0% to 59.2%§§ and 34.4% to 57.6%¶¶ in 2014 and 2015, respectively. Transgender respondents were defined as those who answered affirmative to the question if they considered themselves to be transgender. Those who answered affirmative were asked to identify as male-to-female (defined as transgender women in this report), female-to-male (defined as transgender men in this report), or gender nonconforming. Because of small sample size, responses from gender nonconforming persons (n = 272) were not included in this analysis.

Poooled data collected in 2014 and 2015 were used to compare demographic characteristics and HIV testing among transgender and cisgender respondents. Cisgender men who reported sexual orientations of gay or bisexual represent a group at high risk for HIV infection (3). Cisgender men and women who reported an orientation of straight (hereafter referred to as cisgender heterosexual men and women) represent a group at lower risk for infection (4). The proportion of respondents who reported ever and past year HIV testing was calculated, and unadjusted prevalence ratios and 95% confidence intervals were estimated to identify characteristics associated with ever testing among transgender women and men. Multivariable logistic regression models compared self-reported prevalence of ever and past year testing among transgender women and men with cisgender gay and bisexual men while adjusting for characteristics associated with testing in univariate models (p<0.10). All estimates were weighted to account for the complex multistage sampling design; because only 14 of 28 jurisdictions participated in the optional module during both years of data collection, weights for these 14 jurisdictions were averaged across the 2-year period to account for varying levels of participation over time. Estimates with relative standard error ≥30% were not reported.

During 2014–2015, 28 jurisdictions collected data on gender identity, resulting in a total sample of 732 transgender women, 451 transgender men, 3,798 cisgender gay and bisexual men, and 301,524 cisgender heterosexual men and women (Table 1). The unadjusted prevalence of ever testing for HIV was 37.5% among transgender women, 36.6% among transgender men, 66.2% among cisgender gay and bisexual men, and 35.2% among cisgender men.
| Characteristic                                      | Transgender women | Transgender men | Cisgender gay and bisexual men* | Cisgender heterosexual men and women§ |
|----------------------------------------------------|-------------------|----------------|---------------------------------|---------------------------------------|
| No.                                                | %** (95% CI)      | No.            | %** (95% CI)                    | No.                                   |
| Total                                              | 732               | 451            | 3,798                           | 301,524                               |
| Race/Ethnicity                                     |                   |                |                                 |                                        |
| White, non-Hispanic                                | 527               | 309            | 2,929                           | 242,370                               |
| Black, non-Hispanic                                | 67                | 43             | 233                             | 21,166                                |
| Hispanic or Latino                                 | 46                | 48             | 250                             | 14,320                                |
| Other, non-Hispanic                                | 77                | 42             | 338                             | 19,890                                |
| Age group (yrs)                                    |                   |                |                                 |                                        |
| 18–24                                              | 55                | 30             | 434                             | 14,166                                |
| 25–44                                              | 146               | 98             | 893                             | 60,098                                |
| 45–64                                              | 322               | 185            | 1,582                           | 122,321                               |
| ≥65                                                | 209               | 138            | 889                             | 104,939                                |
| Education                                          |                   |                |                                 |                                        |
| <High school                                       | 90                | 72             | 180                             | 19,081                                |
| High school                                        | 292               | 169            | 813                             | 86,020                                |
| Some college                                       | 205               | 116            | 996                             | 82,460                                |
| College or above                                   | 142               | 92             | 1,801                           | 113,289                                |
| Annual household income                            |                   |                |                                 |                                        |
| <$25,000                                           | 240               | 149            | 950                             | 64,039                                 |
| $25,000–$49,999                                    | 169               | 118            | 886                             | 66,938                                 |
| ≥$50,000                                           | 232               | 120            | 1,604                           | 128,546                                |
| Missing                                            | 91                | 64             | 358                             | 42,001                                 |
| Has health insurance                               |                   |                |                                 |                                        |
| Yes                                                | 649               | 394            | 3,446                           | 280,774                                |
| No                                                 | 73                | 54             | 338                             | 19,804                                 |
| Marital status                                     |                   |                |                                 |                                        |
| Married or unmarried couple                         | 383               | 219            | 1,302                           | 172,305                                |
| Separated/widowed/ divorced                         | 184               | 138            | 551                             | 85,996                                 |
| Never married                                      | 161               | 90             | 1,918                           | 41,852                                 |
| Geographic region                                  |                   |                |                                 |                                        |
| Northeast                                          | 111               | 48             | 904                             | 50,129                                 |
| Midwest                                            | 309               | 206            | 1,358                           | 122,255                                |
| South                                              | 186               | 133            | 907                             | 77,703                                 |
| West                                               | 114               | 58             | 595                             | 49,389                                 |
| County of residence                                |                   |                |                                 |                                        |
| Metropolitan                                       | 484               | 304            | 3,020                           | 210,875                                |
| Nonmetropolitan                                    | 236               | 141            | 744                             | 88,601                                 |
| Ever received diagnosis of depressive disorder      |                   |                |                                 |                                        |
| Yes                                                | 149               | 116            | 1,156                           | 56,693                                 |
| No                                                 | 577               | 331            | 2,619                           | 243,693                                |
| Ever tested for HIV                                |                   |                |                                 |                                        |
| Yes                                                | 225               | 137            | 2,506                           | 80,241                                 |
| No                                                 | 499               | 302            | 1,247                           | 211,990                                |
| Tested for HIV in past 12 months                   |                   |                |                                 |                                        |
| Yes                                                | 65                | 29             | 895                             | 15,118                                 |
| No                                                 | 667               | 422            | 2,903                           | 184,865                                |
| Setting of last HIV test                           |                   |                |                                 |                                        |
| Private doctor/HMO/clinic                          | 136               | 91             | 1,651                           | 53,626                                 |
| Hospital (inpatient and ED)                         | 34                | 25             | 222                             | 9,498                                  |
| Other§§                                            | 51                | 20             | 605                             | 15,606                                 |

**Abbreviations:** CI = confidence interval; ED = emergency department; HIV = human immunodeficiency virus; HMO = health maintenance organization.

* Chi-square tests were conducted to assess differences in demographic characteristics and HIV testing behaviors between gender identity categories; all p ≤ 0.01 (data not shown).

† Data were collected in the following jurisdictions: Colorado (2015), Connecticut (2015), Delaware, Georgia (2015), Guam (2014), Hawaii, Idaho, Illinois (2015), Indiana, Iowa, Kansas, Kentucky (2014), Louisiana (2014), Maryland, Massachusetts (2015), Minnesota, Missouri (2015), Montana (2014), Nevada, New York, Ohio, Pennsylvania, Texas (2015), Vermont (2014), Virginia, West Virginia (2015), Wisconsin, and Wyoming (2014).

‡ Includes cisgender men and women who reported a sexual orientation of straight.

** Weighted column percent excludes missing values and responses of don’t know, not sure, or not asked unless otherwise noted.

†† Estimate suppressed because relative standard error of the estimate was ≥30%.

§§ Includes counseling and testing sites, correctional facilities, drug treatment facilities, at home, or somewhere else.
heterosexual men and women. The unadjusted prevalence of past year testing was 11.7% among transgender women, 12.4% among transgender men, 27.5% among cisgender gay and bisexual men, and 8.6% among cisgender heterosexual men and women.

Black transgender women (62.6%) and men (66.9%) had a higher prevalence of ever testing than their white counterparts (33.2% and 30.7%, respectively). Among transgender women, the highest prevalence of ever testing (68.5%) was reported by those who had ever received a diagnosis of a depressive disorder (Table 2). After adjusting for demographic characteristics, transgender women and men had a lower prevalence of ever testing and past year testing for HIV (35.6% and 31.6% ever, and 10.0% and 10.2% past year, respectively) compared with cisgender gay and bisexual men (61.8% ever, and 21.6% past year) and reported testing at levels comparable with those of cisgender heterosexual men and women (35.2% ever, and 8.6% past year) (Table 3).

**TABLE 2. Prevalence of ever testing for HIV by demographic characteristics among transgender women and men — Behavioral Risk Factor Surveillance System, 27 states and Guam,* 2014–2015**

| Characteristic                        | Transgender women | Transgender men |
|---------------------------------------|-------------------|-----------------|
|                                       | % Ever tested †    | PR              | % Ever tested †    | PR              |
|                                       | (95% CI)          | (95% CI)        | (95% CI)          | (95% CI)        |
| **Race/Ethnicity**                   |                   |                 |                   |                 |
| White, non-Hispanic                   | 33.2 (25.7–41.6)  | Ref             | 30.7 (21.9–41.2)  | Ref             |
| Black, non-Hispanic                   | 62.6 (45.2–77.3)  | 1.9 (1.3–2.7)   | 66.9 (42.8–84.6)  | 2.2 (1.4–3.4)   |
| Hispanic or Latino                    | —§                | 1.0 (0.5–2.0)   | —§                | 1.3 (0.7–2.6)   |
| Other, non-Hispanic                   | 0.9 (0.4–1.9)     | —§              | 0.5 (0.1–2.2)     | —§              |
| **Age group (yrs)**                   |                   |                 |                   |                 |
| 18–24                                 | 34.7 (19.9–53.2)  | 0.6 (0.4–1.1)   | 53.6 (25.6–79.6)  | 1.3 (0.6–2.8)   |
| 25–44                                 | 54.4 (38.1–69.9)  | Ref             | 40.2 (23.4–59.6)  | Ref             |
| 45–64                                 | 35.1 (25.8–45.7)  | 0.6 (0.4–1.0)   | 36.2 (23.9–50.6)  | 0.9 (0.5–1.7)   |
| ≥65                                   | 14.7 (8.1–25.2)   | 0.3 (0.1–0.5)   | —§                | 0.2 (0.1–0.4)   |
| **Education**                         |                   |                 |                   |                 |
| <High school                          | 36.4 (21.4–54.6)  | 1.0 (0.6–1.7)   |                   |                 |
| High school                           | 37.6 (27.5–49.0)  | Ref             | 38.0 (23.0–55.8)  | Ref             |
| Some college                          | 39.3 (26.9–53.2)  | 1.0 (0.7–1.6)   | 28.4 (17.4–42.7)  | 0.8 (0.4–1.4)   |
| College or above                      | 35.1 (22.1–50.9)  | 0.9 (0.6–1.6)   | 58.9 (40.9–74.8)  | 1.6 (0.9–2.7)   |
| **Annual household income**           |                   |                 |                   |                 |
| <$25,000                              | 41.8 (30.4–54.1)  | 1.2 (0.7–2.0)   | 51.5 (34.4–68.2)  | 1.6 (0.8–3.0)   |
| $25,000–$49,999                       | 35.4 (21.8–51.9)  | Ref             | 32.8 (17.3–53.1)  | Ref             |
| ≥$50,000                              | 32.1 (21.8–44.5)  | 0.9 (0.5–1.6)   | —§                | 0.7 (0.3–1.7)   |
| **Has health insurance**              |                   |                 |                   |                 |
| Yes                                   | 36.4 (29.5–43.9)  | Ref             | 39.1 (28.7–50.7)  | Ref             |
| No                                    | 40.2 (22.3–61.1)  | 1.1 (0.6–1.9)   | —§                | 0.8 (0.4–1.7)   |
| **Marital status**                    |                   |                 |                   |                 |
| Married or unmarried couple            | 31.3 (22.4–41.8)  | Ref             | 25.0 (15.1–38.5)  | Ref             |
| Separated/widowed/divorced            | 44.0 (30.6–58.4)  | 1.4 (0.9–2.2)   | 47.8 (28.2–68.1)  | 1.9 (1.0–3.7)   |
| Never married                         | 44.5 (32.5–57.2)  | 1.4 (0.9–2.2)   | 49.9 (31.6–68.3)  | 2.0 (1.1–3.7)   |
| **Geographic region**                 |                   |                 |                   |                 |
| Northeast                             | 33.4 (22.3–46.6)  | Ref             | 38.5 (20.9–59.8)  | Ref             |
| Midwest                               | 35.7 (25.9–46.8)  | 1.1 (0.7–1.7)   | 36.6 (21.1–55.5)  | 1.0 (0.5–2.0)   |
| South                                 | 41.2 (28.3–55.6)  | 1.2 (0.8–2.0)   | 35.5 (20.6–53.8)  | 0.9 (0.5–1.9)   |
| West                                  | 39.8 (27.0–54.1)  | 1.2 (0.7–2.0)   | 39.9 (20.7–62.8)  | 1.0 (0.5–2.2)   |
| **County of residence**               |                   |                 |                   |                 |
| Metropolitan                          | 35.9 (28.5–44.1)  | Ref             | 40.4 (28.6–53.4)  | Ref             |
| Nonmetropolitan                       | 42.7 (29.7–56.8)  | 1.2 (0.8–1.8)   | —§                | 0.5 (0.3–1.1)   |
| **Ever received diagnosis of depressive disorder** | |                      |                   |                 |
| Yes                                   | 68.5 (54.7–79.6)  | 2.4 (1.8–3.3)   | 40.4 (23.9–59.4)  | 1.2 (0.7–2.1)   |
| No                                    | 28.5 (21.8–36.4)  | Ref             | 34.9 (23.8–47.9)  | Ref             |

Abbreviations: CI = confidence interval; HIV = human immunodeficiency virus; PR = prevalence ratio; Ref = reference category.
* Data were collected in the following jurisdictions: Colorado (2015), Connecticut (2015), Delaware, Georgia (2015), Guam (2014), Hawaii, Idaho, Illinois (2015), Indiana, Iowa, Kansas, Kentucky (2014), Louisiana (2014), Maryland, Massachusetts (2015), Minnesota, Missouri (2015), Montana (2014), Nevada, New York, Ohio, Pennsylvania, Texas (2015), Vermont (2014), Virginia, West Virginia (2015), Wisconsin, and Wyoming (2014).
† Percentage is weighted and excludes missing values and responses of don’t know, not sure, not asked.
§ Estimate suppressed because relative standard error of the estimate was ≥30%.
TABLE 3. Prevalence of ever testing and testing in past 12 months for HIV, by gender identity category — Behavioral Risk Factor Surveillance System, 27 states and Guam, * 2014–2015

| Gender identity category | Ever tested for HIV | Adjusted prevalence‡ (95% CI) | aPR† (95% CI) | Tested in past 12 months for HIV | Adjusted prevalence‡ (95% CI) | aPR† (95% CI) |
|--------------------------|---------------------|------------------------------|---------------|---------------------------------|------------------------------|---------------|
| Transgender women        | 35.6 (29.2–42.6)    | 0.6 (0.5–0.7)               |               | 10.0 (6.5–15.0)                | 0.5 (0.3–0.7)               |
| Transgender men          | 31.6 (22.5–42.4)    | 0.5 (0.4–0.7)               |               | 10.2 (5.8–17.5)                | 0.5 (0.3–0.8)               |
| Cisgender gay and bisexual men† | 61.8 (59.0–64.6) | Ref                         |               | 21.6 (19.4–24.0)               | Ref                         |
| Cisgender heterosexual men and women‡ | 35.2 (34.8–35.6) | 0.6 (0.5–0.6)               |               | 8.6 (8.4–8.9)                  | 0.4 (0.4–0.5)               |

Abbreviations: aPR = adjusted prevalence ratio; CI = confidence interval; HIV = human immunodeficiency virus; Ref = reference category.

* Data were collected in the following jurisdictions: Colorado (2015), Connecticut (2015), Delaware, Georgia (2015), Guam (2014), Hawaii, Idaho, Illinois (2015), Indiana, Iowa, Kansas, Kentucky (2014), Louisiana (2014), Maryland, Massachusetts (2015), Minnesota, Missouri (2015), Montana (2014), Nevada, New York, Ohio, Pennsylvania, Texas (2015), Vermont (2014), Virginia, West Virginia (2015), Wisconsin, and Wyoming (2014).
† Includes cisgender men who reported a sexual orientation of gay or bisexual.
‡ Includes cisgender men and women who reported a sexual orientation of straight.
¶ Adjusted for: race/ethnicity, age, education, annual household income, health insurance, marital status, geographic region, metropolitan county of residence, ever diagnosed with depressive disorder.

Discussion

Despite the high risk for HIV infection previously reported among transgender populations, nearly two thirds of transgender women and men in the sample reported never testing for HIV, which is consistent with evidence suggesting that many HIV-infected transgender women are not aware of their status (5). The prevalences of ever and past year testing among transgender women and men were comparable to those among cisgender heterosexual men and women, a group at much lower risk for infection. Transgender women and men reported a substantially lower prevalence of ever and past year testing than did cisgender gay and bisexual men. These findings indicate that current self-reported HIV testing levels among transgender women and men are inconsistent with their HIV risk profiles. Innovative, tailored approaches might be needed to reach transgender persons who are not being reached by existing HIV prevention strategies that focus on other key populations, such as gay, bisexual, and other men who have sex with men.***

Black transgender women and men were more likely than their white counterparts to report ever testing, which might reflect success of expanded testing measures focused among black communities (6) or might be a response to racial/ethnic disparities in HIV infection reported among transgender women (1,5). Transgender women who ever received a diagnosis of depressive disorder were more likely than those who had not to report ever testing; this is consistent with previous findings in the U.S. general population (7). However, few other differences in testing prevalence across demographic subgroups were identified, indicating widespread opportunities for improvement of testing measures aimed toward all transgender women and men who are at risk for HIV infection. Such measures should account for the unique barriers to testing that many transgender persons might face, such as HIV stigma within the transgender community (8), gender identity stigma in health care settings (9), and socioeconomic marginalization (10).

The findings in this report are subject to at least four limitations. First, the proportion of transgender respondents was small (<1%), which reduced the precision of HIV testing estimates. Second, BRFSS transgender data are only representative of transgender persons in the 28 jurisdictions that participated in the optional module and therefore cannot be generalized to the entire U.S. transgender population. Third, the measure of gender identity might incorrectly classify transgender respondents who self-identify simply as man or woman rather than transgender man or woman, which would potentially underestimate the number of transgender persons in the sample. Finally, because BRFSS does not ask questions about HIV status or sexual risk behaviors, the analytic sample might have included respondents who are already living with HIV infection or who are not at risk for HIV infection and therefore would be less likely to have tested for HIV in the past year or at all.

The findings of this analysis indicate suboptimal rates of HIV testing among transgender women and men. The population-based estimates in this report can serve as a baseline for future monitoring of testing trends among transgender persons. Intensified and expanded use of culturally appropriate recruitment methods by public health officials might enhance activities to reach transgender women and men and increase the rates of testing. CDC is currently working to enhance the capacity of community-based organizations to provide targeted HIV testing in addition to other prevention and support services to transgender persons who are at risk for or have newly diagnosed HIV. These programs and other innovative approaches are needed to improve delivery of HIV testing and other prevention services to transgender persons.
Summary
What is already known about this topic?
Transgender persons are at high risk for HIV infection. CDC recommends that persons at high risk for HIV infection be screened for HIV at least annually, but transgender persons are not specified in the current recommendations, and current nationwide HIV testing rates for transgender persons are unknown.

What is added by this report?
This analysis of 2014 and 2015 Behavioral Risk Factor Surveillance System data showed that transgender women and men self-reported a lower prevalence of HIV testing (both ever and in the past year) compared with gay and bisexual men whose gender identities match their sex assignments at birth (cisgender). Transgender women and men self-reported testing at levels similar to cisgender heterosexual men and women.

What are the implications for public health practice?
Transgender women and men reported current HIV testing levels that were inconsistent with their HIV risk profiles. Innovative, tailored approaches might be needed to reach transgender persons who are not being reached by existing HIV prevention strategies that focus on other key populations, such as gay, bisexual, and other men who have sex with men.

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Conflict of Interest
No conflicts of interest were reported.

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