

HIV testing in nonhealthcare facilities among adolescent MSM

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Objectives: To describe the extent to which Centers for Disease Control and Prevention (CDC)-funded HIV testing in nonhealthcare facilities reaches adolescent MSM, identifies new HIV infections, and links those newly diagnosed to medical care.

Methods/design: We describe HIV testing, newly diagnosed positivity, and linkage to medical care for adolescent MSM who received a CDC-funded HIV test in a nonhealthcare facility in 2015. We assess outcomes by race/ethnicity, HIV-related risk behaviors, and US geographical region.

Results: Of the 703 890 CDC-funded HIV testing events conducted in nonhealthcare facilities in 2015, 6848 (0.9%) were provided to adolescent MSM aged 13–19 years. Among those tested, 1.8% were newly diagnosed with HIV, compared with 0.7% among total tests provided in nonhealthcare facilities regardless of age and sex. The odds of testing positive among black adolescent MSM were nearly four times that of white adolescent MSM in multivariable analysis (odds ratio = 3.97, $P < 0.001$). Among adolescent MSM newly diagnosed with HIV, 67% were linked to HIV medical care. Linkage was lower among black (59%) and Hispanic/Latino adolescent MSM (71%) compared with white adolescent MSM (88%).

Conclusion: CDC-funded nonhealthcare facilities can reach and provide HIV tests to adolescent MSM and identify new HIV infections; however, given the low rate of HIV testing overall and high engagement in HIV-related risk behaviors, there are opportunities to increase access to HIV testing and linkage to care for HIV-positive adolescent MSM. Efforts are needed to identify and address the barriers that prevent black and Hispanic/Latino adolescent MSM from being linked to HIV medical care in a timely manner.

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Introduction

In 2014, there were over 1.1 million people living with HIV in the United States, including 60 900 young people (aged 13–24 years) [1,2]. HIV disproportionately impacts gay, bisexual, and other men who have sex with men

(collectively referred to as MSM), with HIV surveillance reporting that 67% of all new HIV diagnoses in 2015 were among MSM [3]. It is estimated that just over half (51%) of young people (aged 13–24 years) were not aware of their HIV-positive status compared with 13% unaware for all persons living with HIV infection [2]. Although

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HIV diagnoses are higher among older persons, HIV surveillance data reported for 2015 show that adolescent MSM (aged 13–19 years) accounted for 5% of all HIV diagnoses among MSM [3].

Adolescent MSM (aged 13–19 years) are engaging in behaviors that put them at risk for HIV. Data from the 2015 National Youth Risk Behavior Survey (YRBS), which includes students in grades 9–12, show that among male students who reported sexual contact with same-sex partners, 59% reported sex (which may include anal, vaginal, or oral sex with male or female partners) in the 3 months prior to the survey, and 49% did not report condom use during last sexual intercourse [4]. A third (33%) of male students with same-sex partners reported having sexual intercourse with four or more persons during their life.

Early diagnosis and linkage to HIV medical care are important for HIV-positive persons to achieve sustained viral suppression, which significantly reduces transmission (by 93%) and ensure improved health outcomes [5]. The US Preventive Services Task Force (USPSTF) recommends annual screening of adolescents and adults who are at risk for HIV [6]. MSM are considered to be at very high risk for new HIV infection by the USPSTF [6]. Despite this recommendation for routine testing, YRBS data indicate that only 21% of male students with any same-sex sexual contact had ever been tested for HIV [4]. Research shows that compared with adults, adolescents have both a lower perception of their risk and are inaccurate when estimating risk [7]. This lack of knowledge coupled with the high-risk behaviors support the need for them to receive HIV testing.

Although the Centers for Disease Control and Prevention (CDC) has funded local health departments and community-based organizations (CBOs) to provide HIV prevention services for decades, data about CDC-funded HIV testing among adolescent MSM specifically has never been reported in detail in the peer-reviewed literature. This report assesses CDC's contribution to HIV testing among adolescent MSM in nonhealthcare facilities. Unlike routine HIV testing offered in healthcare facilities, nonhealthcare facilities offer targeted HIV testing.

During 2015, CDC funded 61 state and local health department jurisdictions and 123 CBOs to deliver HIV prevention services in both healthcare and nonhealthcare facilities. In this report, we examine the extent to which CDC-funded testing programs in nonhealthcare facilities reached adolescent MSM, identified new HIV infections among this population, and linked HIV-positive adolescent MSM to HIV medical care. Adolescent MSM in the context of CDC's HIV testing program are defined as persons whose assigned sex at birth was male, whose current sex identity is male, between the ages of 13 and 19

years, and reported having anal sex with a man in the past 12 months. Key outcomes are assessed by race/ethnicity, HIV-related risk behaviors, and US geographical region. Findings will help to identify gaps in HIV testing for adolescent MSM and inform the focus of future HIV prevention programs.

Methods

Data on CDC-funded HIV testing events are collected through CDC's National HIV Prevention Program Monitoring and Evaluation (NHM&E) system. These data are reported by grantees without personal identifiers through a secure, online, CDC-supported system and used by CDC to monitor and evaluate CDC-funded HIV testing activities at the national and jurisdiction level. CDC-funded HIV testing events conducted in 2015 in nonhealthcare facilities (e.g., HIV testing sites and community settings) with adolescent MSM aged 13–19 years in the United States, Puerto Rico, and the U.S. Virgin Islands were analyzed. HIV testing events in healthcare facilities (e.g., emergency rooms and inpatient facilities) were excluded because data to categorize HIV risk (e.g., MSM) are not collected in healthcare facilities from HIV-negative persons. Data for the period 1 January 2015 through 31 December 2015 submitted to CDC by 15 March 2016 were analyzed.

An HIV testing event is defined as an HIV testing record for which a test result was reported. One testing event could include more than one test administered to the same person to make a final determination of the test result. Regions are geographic and based on U.S. Census categories: Northeast, South, Midwest, and West [Northeast (including Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont), South (including Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia), Midwest (including Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin), and West (including Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming)]. Each health department jurisdiction was assigned to one of these regions. *Demographics* are collected at each HIV testing event. This includes self-reported data on assigned sex at birth, current sex identity, race/ethnicity, and age. Inclusion criteria for this analysis include those who reported their assigned sex at birth as male, current sex as male, aged 13–19 years, and anal sex with a man in the past 12 months. *Persons with newly diagnosed HIV infection* were defined as those who tested HIV-positive and did not report a previous positive HIV test result, and

Table 1. Characteristics of adolescent MSM (13–19 years) who received a Centers for Disease Control and Prevention-funded HIV test at a nonhealthcare facility, 2015^a.

	HIV test events		Persons with newly diagnosed HIV infection		Linkage ^b to HIV medical care within 90 days
	N	%	N (%)	OR ^c (95%)	N (%)
Race/ethnicity					
White	1824	27	17 (0.9)	Referent	15 (88.2)
Black/African-American	2410	36	76 (3.2)	3.97 (2.16–7.29)*	45 (59.2)
Hispanic or Latino	1935	29	24 (1.2)	1.77 (0.89–3.55)	17 (70.8)
Others ^d	563	8	4 (0.7)	0.72 (0.20–2.55)	4 (100.0)
Region ^e					
Northeast	1003	15	14 (1.4)	0.46 (0.22–0.98)**	9 (64.3)
Midwest	1330	20	11 (0.8)	0.27 (0.14–0.53)*	8 (72.7)
South	2737	41	76 (2.8)	Referent	50 (65.8)
West	1615	24	20 (1.2)	0.73 (0.42–1.27)	14 (70.0)
Reported HIV-related risk behaviors ^f					
Yes	5103	85	97 (1.9)	2.05 (0.99–4.26)	67 (69.1)
No	876	15	8 (0.9)	Referent	3 (37.5)
Total tests provided to adolescent MSM	6848		121 (1.8)		81 (66.9)
Total tests provided in nonhealthcare facilities	703 890		4860 (0.7)		3157 (65.0)

^aMissing/invalid values aren't shown in the analysis.

^bLinkage assumes that all missing data are 'not linked to care'.

^cadjOR = odds ratio from the multivariable logistic model (* $P < 0.001$, ** $P < 0.05$).

^dOthers include Native Hawaiian/Pacific Islander, Asian, American Indian/Alaskan Native, and multiple races.

^eHIV testing events from Puerto Rico and Virgin Islands aren't included in region result.

^fRisk behaviors include engaging in at least one of the following behaviors in the past 12 months: sex without a condom, sex with an HIV-positive person, sex with a person who injects drugs, and injection drug use.

an HIV-positive test result had not been previously reported to the state HIV surveillance system. In jurisdictions in which grantees were unable to verify prior test results due to their jurisdictions' policies, self-reported data were used. *Linkage to HIV medical care within 90 days* is defined as the person attending his first HIV medical care appointment within 90 days of HIV diagnosis. Although the 2020 National HIV/AIDS Strategy (NHAS) sets the goal of linking people to HIV medical care within 30 days of diagnosis, the 2015 NHM&E HIV testing data reflect the original 2015 NHAS goal of linkage within 90 days [8]. For this analysis, we assume that all persons with missing data pertaining to linkage are 'not linked'. This is likely an underestimate of the linkage rate among adolescent MSM because 27.2% of linkage data are missing. *HIV-related risk behaviors* include engaging in at least one of the following behaviors in the past 12 months: sex without a condom, sex with a person living with HIV/AIDS, sex with a person who injects drugs (PWID), and/or injection drug use. A dichotomous variable was constructed to indicate the presence of any (one or more) of these risk behaviors. Participants who did not respond 'yes' to engaging in any of the risk behaviors but had some (not all) missing were counted as not having any risk behaviors.

Descriptive statistics were used to examine HIV testing and linkage to HIV medical care for adolescent MSM by age, race/ethnicity, region, and report of one or more HIV-related risk behaviors. The associations between

those factors and newly diagnosed HIV infection were assessed in a multivariable logistic regression model. Results from the full model are reported including the following covariates: age group, race/ethnicity, region, and reporting one or more risk behaviors in the last 12 months (sex without a condom, sex with an HIV-positive person, sex with a person who injects drugs, and/or injection drug use). Because HIV surveillance has shown that the South has the highest incidence of HIV, it was selected as a referent to compare outcomes in other regions with the South [3]. Linkage to HIV medical care was not analyzed in statistical models due to small sample sizes. All analyses were conducted using SAS 9.3 (Cary, North Carolina, USA).

Results

Results of analyses of HIV testing, positivity, and linkage are provided in Table 1. Of the 703 890 CDC-funded testing events conducted in nonhealthcare facilities in 2015, 6848 (0.9%) were provided to adolescent MSM aged 13–19 years. The majority of those HIV tests were among MSM aged 18 and 19 years (81%) as compared with those aged 13–17 years (19%) (result not reported in table). Black adolescent MSM accounted for 36% of the total HIV tests among adolescent MSM. Hispanic/Latino adolescent MSM accounted for 29% of the total HIV tests, and white adolescent MSM accounted for 27% of

the total HIV tests among adolescent MSM. Of all HIV tests provided to adolescent MSM, 41% were conducted in the South.

Among adolescent MSM who received an HIV test, 85% reported one or more HIV-related risk behaviors in the past year. Among those who reported at least one risk behavior, the most commonly reported risk behavior was sex without a condom (85%, result not reported in table). Ten percent reported sex with a person living with HIV/AIDS, 5% reported sex with a PWID, and less than 2% reported using injection drugs.

Among adolescent MSM tested in nonhealthcare facilities, 1.8% were newly diagnosed with HIV, compared with 0.7% among total CDC-funded tests provided in nonhealthcare facilities. New diagnoses were highest among black adolescent MSM (3.2%). The odds of testing positive among black adolescent MSM were nearly four times that of white adolescent MSM in multivariable analysis [odds ratio (OR) = 3.97, $P < 0.001$]. The odds of testing positive among Hispanic/Latino adolescent MSM were not significantly higher than among white adolescent MSM [OR = 1.77 (0.89–3.55)]. Descriptive data show that the rate of new diagnoses among adolescent MSM in the South (2.8%) was at least double the rate in any other region. Positivity was significantly lower in the Northeast (OR = 0.46, $P < 0.05$) and the Midwest (OR = 0.27, $P < 0.001$) as compared with the South in the multivariable analysis.

Among adolescent MSM newly diagnosed with HIV, 67% were linked to HIV medical care within 90 days. Although small numbers prevented the testing of significant differences in subgroup percentages, the descriptive data indicate that linkage to HIV medical care within 90 days was lower among black adolescent MSM (59%) and Hispanic/Latino adolescent MSM (71%) compared with white adolescent MSM (88%).

Discussion

In 2015, less than 1% ($N = 6848$) of CDC-funded HIV testing events in nonhealthcare facilities were provided to adolescent MSM aged 13–19 years. Of adolescent MSM reached, testing was provided to those at high risk of HIV, including black adolescent MSM and adolescent MSM in the South. Moreover, CDC-funded nonhealthcare facilities identified new HIV infections in adolescent MSM. The new positivity was 1.8% for adolescent MSM, which is the same rate as for MSM of all ages, even though HIV prevalence is lower for adolescent than adult MSM [9]. HIV positivity was considerably higher in the South and among blacks, similar to the pattern of HIV prevalence in the United States [2].

Among newly identified HIV-positive adolescent MSM, linkage to HIV medical care within 90 days was 67%. The NHAS (updated to 2020) goal aims to link 90% of persons with newly diagnosed HIV infection within 30 days [8]. Linkage rates for black and Hispanic/Latino adolescent MSM were lower than the linkage rate for whites (59 and 71% compared with 88%). Efforts are needed to identify and address barriers to linking all adolescent MSM, but especially black and Hispanic/Latino adolescent MSM, to HIV medical care in a timely manner because early linkage to HIV medical care and sustained viral suppression significantly reduce transmission (by 93%) and ensure improved health outcomes [5].

Existing literature suggests that the majority of adolescent MSM are not being routinely tested for HIV even though they are engaging in HIV-related risk behaviors [4]. There is limited information as to why more adolescent MSM are not accessing HIV testing. Possible barriers include low awareness of HIV risk or where to get tested, lack of transportation to HIV testing sites, uncertainty about their sexual orientation, and perceived stigma of receiving an HIV test or being gay or bisexual. Efforts are needed to identify and address the key obstacles that prevent adolescent MSM from routinely accessing HIV testing and other prevention services. Findings from this analysis indicate that when CDC-funded HIV testing is provided to adolescent MSM, it is reaching those at high risk of HIV and identifying a relatively high percentage of new HIV infections. Efforts need to be expanded to reach a larger percentage of adolescent MSM who are at risk for HIV and are not being tested.

In response to the disproportionate impact of HIV on young MSM, since 2001, CDC funds CBOs to provide HIV prevention and support services specifically to reach young MSM of color and young transgender persons of color (aged 13–29 years). CBOs are uniquely positioned in communities to provide HIV prevention services to young MSM of color because of their culturally competent services tailored to this population. The findings in this report suggest that there is a need for CDC to increase focus on the youngest among this population, adolescent MSM. This includes identifying unique barriers that prevent adolescent MSM from accessing HIV testing and implementing strategies to reach those who may benefit the most. There is a need for CBOs to have a clear and concentrated focus on adolescents and take actions to ensure that their services, staff, and environment are designed to be welcoming and friendly for teens specifically. This may involve developing and strengthening relationships with schools to promote access to HIV testing and prevention services.

For adolescent MSM living with HIV, retention in HIV medical care and viral suppression are critically important. Providers may increase engagement in HIV medical care and viral suppression by using a youth-friendly approach.

A recent study offered several factors that promote engagement and retention in care among young persons living with HIV: including clinic waiting rooms with materials and décor that is youth focused, evening clinic hours, and staff trained to work with adolescent clients [10]. Young persons living with HIV were more likely to be retained in care at clinics implementing these strategies [10].

There are several limitations to this analysis. First, only testing events conducted in nonhealthcare facilities were included because risk data were not collected in healthcare facilities from HIV-negative persons. Including CDC-funded HIV testing events among adolescent MSM in healthcare facilities would provide a more complete understanding of CDC's HIV testing efforts. Second, we are only able to describe the number of testing events but not able to describe the number of adolescent MSM who received CDC-funded tests in nonhealthcare facilities.

In summary, findings show that CDC-funded non-healthcare facilities can reach and provide HIV tests to adolescent MSM and identify new HIV infections. However, considering their low rate of HIV testing overall and high engagement in HIV-related risk behaviors, there are opportunities to increase access to HIV testing and linkage to care for HIV-positive adolescent MSM. Equally important, efforts are needed to identify and overcome the unique barriers faced by black and Hispanic/Latino adolescent MSM that keep them from being linked to HIV medical care in a timely manner.

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Conflicts of interest

There are no conflicts of interest.

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