Increases in Recent HIV Testing Among Men Who Have Sex With Men Coincide With the Centers for Disease Control and Prevention’s Expanded Testing Initiative

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According to National HIV Behavioral Surveillance system data, human immunodeficiency virus (HIV) testing increased among gay, bisexual, and other men who have sex with men from 2008 to 2011 in cities funded by the Centers for Disease Control and Prevention’s Expanded Testing Initiative, suggesting that focused HIV testing initiatives might have positive effects.

Keywords. MSM; HIV; diagnosis; African Americans; prevention and control.

Achieving awareness of human immunodeficiency virus (HIV) infection through HIV testing, recommended at least annually by the Centers for Disease Control and Prevention (CDC) for sexually active gay, bisexual, and other men who have sex with men (MSM) [1], is an essential first step to linking HIV-infected individuals to medical care and services, including antiretroviral therapy, which can improve clinical outcomes [2]. Moreover, research shows that once diagnosed with HIV, individuals reduce risk behaviors, which, in combination with viral suppression, can reduce the likelihood of transmitting HIV to others [3–5].

A variety of HIV testing initiatives designed to reach populations disproportionately affected by HIV have been developed, including the CDC’s Expanded Testing Initiative (ETI). Initially launched in 2007 to facilitate HIV diagnosis and linkage to medical care among non-Hispanic blacks or African Americans (hereafter referred to as blacks), ETI was a 3-year, $111 million program intended to increase HIV testing in 25 US jurisdictions with a high AIDS burden. Jurisdictions were awarded between $510,000 and $6 million per year, based on estimated AIDS diagnoses among blacks [6]. Nearly 2.8 million tests were provided and >18,000 individuals were newly diagnosed with HIV; 60% of tests and 70% of new diagnoses occurred among blacks [7]. A second ETI was funded in 2010 to expand routine testing services to reach more at-risk populations, including MSM, regardless of race or ethnicity [8].

The National HIV Behavioral Surveillance (NHBS) system is a recurring cross-sectional survey designed to monitor HIV-associated behaviors among populations at increased risk for HIV in 20 US cities with a high AIDS burden [9]. A previous NHBS analysis assessed changes in recent HIV testing (12 months before interview) among MSM participating in NHBS in 2008 and 2011, finding that recent HIV testing increased from 63% in 2008 to 67% in 2011 overall, and that increases were more substantial among certain racial/ethnic groups, specifically black MSM, among whom testing increased from 63% to 71% [10]. Seventeen of the 20 NHBS cities were among the original ETI jurisdictions [7]. For this analysis, we wanted to explore the impact of ETI on recent HIV testing among MSM overall and among black MSM, as this was the racial/ethnic group initially targeted by ETI. Our objective was to examine differences in recent HIV testing, overall and by race/ethnicity, among participants in NHBS cities located in ETI jurisdictions vs those not located in ETI jurisdictions.

METHODS

Methods for NHBS have been described elsewhere [9]. In brief, NHBS staff recruited MSM using venue-based (or time-space) sampling. We analyzed data from NHBS among MSM in 2008 and 2011. We restricted our analysis to men who reported at least 1 male sex partner in the 12 months before interview and who provided answers to the questions regarding history of HIV testing. Of men who reported a positive HIV test result, we included only those who reported that their first positive test result occurred during the 12 months before interview. We created a dichotomous variable, called ETI status, by dividing the 20 NHBS cities into 2 groups based on location relative to ETI
jurisdictions; the first group consisted of the 17 NHBS cities that received ETI funding (Atlanta, Georgia; Baltimore, Maryland; Boston, Massachusetts; Chicago, Illinois; Dallas, Texas; Detroit, Michigan; Houston, Texas; Los Angeles, California; Miami, Florida; Nassau, New York; New Orleans, Louisiana; New York, New York; Newark, New Jersey; Philadelphia, Pennsylvania; San Diego, California; San Francisco, California; Washington, D.C.), and the second group consisted of the remaining 3 NHBS cities not located in ETI jurisdictions (Denver, Colorado; San Juan, Puerto Rico; Seattle, Washington) [7]. Of the 17 NHBS cities that received ETI funding, 6 were directly funded (Chicago, Houston, Los Angeles, New York, Philadelphia, and Washington, D.C.), and 11 were located in states that were funded (Atlanta, Baltimore, Boston, Dallas, Detroit, Miami, Nassau, New Orleans, Newark, San Diego, and San Francisco). Because the state of Texas received 2 years of funding instead of 3, Dallas received 1 less year of funding than the other 16 NHBS cities that received ETI funding [7].

The main outcome for this analysis was recent HIV testing (12 months before interview). Adjusted prevalence ratios (aPRs), P values, and 95% confidence intervals (CIs) were estimated using a Poisson model with a robust standard error via the GENMOD procedure, clustered by recruitment event, in SAS software version 9.3 (SAS Institute, Cary, North Carolina). We controlled for race/ethnicity, age group, education, income, and ETI status. To explore if temporal changes in recent HIV testing differed between ETI cities and non-ETI cities, we included an interaction term for ETI status by interview year in the model. To see if these temporal changes by ETI jurisdiction differed by race/ethnicity, we added a 3-way interaction term for race/ethnicity by ETI status by interview year to the initial model. Using this second model, we performed pairwise comparisons to assess differences in changes in recent HIV testing between black and white MSM and between black and Hispanic/Latino MSM.

**RESULTS**

We found a significant increase in recent HIV testing in the 17 ETI cities (64% to 69%; aPR, 1.08 [95% CI, 1.06–1.11]; P < .001), but not in the 3 non-ETI cities (61% to 59%; aPR, 0.98 [95% CI, .92–1.04]; P = .5); this difference between ETI and non-ETI cities was significant (P = .003 for the interaction interview year by ETI status). Among ETI cities, the percentage of increase in recent HIV testing was greatest for black MSM (14%) and MSM of multiple/other races (19%), followed by Hispanic/Latino (5%) and white (3%) MSM. Results from the second model, created to investigate temporal changes by race/ethnicity and ETI status, demonstrated increases in recent HIV testing among all racial/ethnic groups in ETI cities, although the increase was not statistically significant for Hispanic/Latino MSM (Table 1). Increases in ETI cities were significantly greater for black MSM than for white MSM (P = .009) and for black MSM than for Hispanic/Latino MSM (P = .04).

<table>
<thead>
<tr>
<th>Category</th>
<th>2008</th>
<th>2011</th>
<th>% Change</th>
<th>2011 vs 2008 aPR (95% CI)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETI cities (n = 17)a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. Tested (%)</td>
<td>4346 (64)</td>
<td>4807 (69)</td>
<td>(8)</td>
<td>1.08 (1.06–1.11)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Non-ETI cities (n = 3)a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. Tested (%)</td>
<td>680 (61)</td>
<td>671 (59)</td>
<td>(–3)</td>
<td>0.98 (.92–1.04)</td>
<td>.5</td>
</tr>
<tr>
<td>ETI cities by raceb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>1828 (64)</td>
<td>1804 (66)</td>
<td>(3)</td>
<td>1.05 (1.01–1.09)</td>
<td>.02</td>
</tr>
<tr>
<td>Black</td>
<td>1192 (63)</td>
<td>1463 (72)</td>
<td>(14)</td>
<td>1.13 (1.08–1.19)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>988 (65)</td>
<td>1129 (68)</td>
<td>(5)</td>
<td>1.05 (1.00–1.11)</td>
<td>.05</td>
</tr>
<tr>
<td>Multiple/other races</td>
<td>334 (64)</td>
<td>399 (76)</td>
<td>(19)</td>
<td>1.19 (1.10–1.29)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Non-ETI cities by raceb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>318 (65)</td>
<td>292 (66)</td>
<td>(2)</td>
<td>0.99 (.90–1.08)</td>
<td>.8</td>
</tr>
<tr>
<td>Black</td>
<td>21 (60)</td>
<td>47 (56)</td>
<td>(–7)</td>
<td>0.95 (.68–1.32)</td>
<td>.8</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>287 (57)</td>
<td>273 (52)</td>
<td>(–9)</td>
<td>0.93 (1.04–1.84)</td>
<td>.2</td>
</tr>
<tr>
<td>Multiple/other races</td>
<td>53 (56)</td>
<td>57 (68)</td>
<td>(21)</td>
<td>1.26 (1.02–1.56)</td>
<td>.03</td>
</tr>
</tbody>
</table>

Bolded values are significant at the P < .05 level.
Abbreviations: aPR, adjusted prevalence ratio; CDC, Centers for Disease Control and Prevention; CI, confidence interval; ETI, Expanded Testing Initiative; HIV, human immunodeficiency virus; US, United States.

a Model includes race/ethnicity, age group, education, income, ETI status, and ETI status by interview year.
b Model includes race/ethnicity, age group, education, income, ETI status, ETI status by interview year, race/ethnicity by interview year, ETI status by race/ethnicity, and ETI status by race/ethnicity by interview year.
(results not shown). In non-ETI cities, recent HIV testing did not increase significantly for any racial/ethnic group, except for MSM of multiple/other races, for whom sample size was small (n = 179).

**DISCUSSION**

In summary, we found that recent HIV testing increased among MSM participating in NHBS in ETI cities from 2008 to 2011, and that increases were substantial among black MSM, a population disproportionately affected by HIV. These differential increases in recent HIV testing coincided with ETI implementation, in time, by location, and by population of interest. These data suggest that the CDC’s efforts to increase HIV testing among key populations at high risk for HIV might be having a measurable population-level impact.

This analysis is subject to several limitations. Because this analysis was cross-sectional, it cannot be linked causally to any particular testing initiative, including ETI. Despite a common funding source (CDC) and considerable overlap between NHBS cities and ETI jurisdictions, NHBS and ETI are implemented independently; NHBS was not designed to evaluate ETI. ETI is likely one of many factors contributing to changes in HIV testing. ETI jurisdiction selection was based on AIDS diagnoses among blacks; differences in racial/ethnic composition, as well as other intrinsic sociodemographic differences between jurisdictions, may be contributing to differences in HIV testing. Finally, NHBS sampling methods may result in selection bias; these data were not weighted to account for bias.

Increases in recent HIV testing among populations most affected by HIV are encouraging. Nevertheless, even in 2011 in NHBS cities located in ETI jurisdictions, 31% of the MSM participating in NHBS had not been tested for HIV during the previous 12 months. Continued and expanded efforts are needed to ensure that more people with HIV know their status and are linked to care and treatment in accordance with current CDC recommendations.

**Notes**

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**References**