

# Program Evaluation Branch Update



## Assessment of 2010 CDC-funded Health Department HIV Testing Spending and Outcomes

February 2013

### Key Points

Using CDC HIV prevention funding allocations as a proxy for spending, in 2010, health departments, using CDC funds,

- Spent \$14 per HIV testing event in health care settings and \$129 in non-health care settings.
- Spent \$2,036 per confirmed HIV-positive testing event in health care settings and \$12,478 in non-health care settings.
- Spent \$3,388 per newly identified confirmed HIV-positive testing event in health care settings and \$17,728 in non-health care settings.

At the national level, spending of CDC funds for HIV testing in health care and non-health care settings appears to be cost saving. However, the variability across health departments suggests that improvements in efficiency may be possible.

Progress towards the goals of the National HIV/AIDS Strategy (NHAS)<sup>1</sup> depends upon good stewardship of public health funding. By routinely collecting, critically analyzing, and consistently tracking data on program outcomes and efficiencies, CDC and its funded health departments can help ensure that federally funded activities support CDC's High Impact Prevention (HIP) approach to reduce new HIV infections by maximizing the public health impact of HIV prevention efforts.<sup>2</sup>

HIV testing—both routine screening in health care settings and targeted testing in non-health care settings<sup>a</sup>—is a critical component of any HIP HIV program; consequently, it is one of the four core activities CDC requires health departments to implement under their 12-1201 cooperative agreements. With the recent release of the Program Evaluation Branch (PEB) report, "HIV Prevention Funding Allocations at CDC-Funded State and Local Health Departments, 2010,"<sup>3</sup> we are able to estimate health department spending of CDC funds on 2010 HIV testing activities and outcomes. Viewed over time, this information will enhance our understanding of how—and how well—HIV prevention programs are implementing HIP and making progress toward the goals of the NHAS.

### In this Update

In this edition, we provide estimates of CDC funding spent by health departments to support an HIV test and to diagnose a person in health care and non-health care settings.

### HIV Testing Events and Spending Data

HIV testing data used in this report come from the National HIV Prevention Program Monitoring and Evaluation (NHM&E) System. Test-level NHM&E data from 52 of 59 health departments were taken from the 2010 HIV Testing Report,<sup>4</sup> which shows where testing events were conducted (health care or non-health care

settings). The 2010 HIV Testing Report includes data for HIV testing events conducted by CDC-funded health departments and community-based organizations (CBOs) between January 1, 2010, and

<sup>a</sup>A health care setting is where both medical diagnostic and treatment services are provided. A non-health care setting does not provide these services. Examples of non-health care settings include community-based organizations (CBOs) and outreach venues. For the purposes of this analysis, HIV testing conducted in correctional facilities is included in health care settings.

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December 31, 2010, and reported to CDC through March 2011. Seven health departments did not submit test-level data to CDC for 2010<sup>b</sup>. For those jurisdictions, CDC estimated the proportion of testing events conducted in health care and non-health care settings using information submitted by the health departments in their Annual Progress Reports (APR) and then applied these proportions to their aggregate-level NHM&E testing data.

Budget allocation data from the 2010 HIV Prevention Funding Allocations Report were used as a proxy for spending of CDC funds by health departments. Although actual spending may differ from the budget allocation data, it is likely that higher budget allocations reflect proportionally higher spending outputs, and thus, we expect the overall trends to be similar.

Spending of CDC funds to support an HIV testing event and to diagnose an individual are calculated separately for testing conducted in health care settings and in non-health care settings.<sup>c</sup> The spending estimates are shown, first, for all individuals with a positive diagnosis and, second, for individuals who were newly diagnosed.

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<sup>b</sup> The seven jurisdictions are Alabama, Chicago, Los Angeles, Massachusetts, Mississippi, North Carolina, and the U.S. Virgin Islands. See the 2010 HIV Testing Report for more information.

<sup>c</sup> The budget allocation data for HIV testing in non-health care settings represents HIV testing conducted by health departments, whereas the NHM&E HIV testing data in non-health care settings includes HIV testing conducted by health departments and directly funded CBOs. Changes to the spending estimates when corrected by removing the HIV testing data reported by directly funded CBOs were minimal; therefore the uncorrected estimates were reported.

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## Results: Confirmed HIV-positive Testing Events

As shown in Table 1, health care settings accounted for 76% (2,448,905) of all testing events and 26% of the total spending (\$35,063,165). By contrast, about one-third as many HIV testing events were conducted in non-health care settings (771,718) for almost three times the amount spent (\$99,274,532).

The confirmed HIV positivity in 2010 was 1.5 times as high in non-health care settings as in health care settings (1.03% and 0.70%, respectively). About 6 times as much was spent for each confirmed diagnosis identified in a non-health care setting than in a health care setting (\$12,478 and \$2,036, respectively). Spending per testing event was 9 times as high in non-health care settings as in health care settings (\$129 and \$14, respectively).

The spending per testing event and per confirmed HIV-positive testing event varied widely among health departments. In health care settings, where leveraging other resources and spending support (e.g., third party payer) for HIV testing is more feasible, some health departments reported no CDC funds were spent (i.e., \$0) to achieve reported test numbers while others indicated that they spent as much as \$470 per testing event. Similarly, health departments reported no CDC funds were spent or as much as \$446,116 per confirmed HIV-positive testing event. Spending was even higher in non-health care settings, where it ranged from a low of \$1,524 to a high of \$831,875 per CDC-funded confirmed HIV-positive testing event.

	Testing events <sup>1,2</sup> (% of total)	Confirmed HIV-positive testing events <sup>1,2</sup> (% of total)	Confirmed HIV positivity <sup>1,2</sup>	Spending <sup>3,4,5</sup> (% of total)	Spending/ testing event <sup>3</sup>	Spending/ confirmed HIV-positive testing event <sup>3</sup>
<b>Total</b>	3,220,623	25,179	0.78%	\$134,337,697	\$41	\$5,335
<b>Health care setting (overall)</b>	2,448,905 (76%)	17,223 (68%)	0.70%	\$35,063,165 (26%)	\$14	\$2,036
<b>Range for health departments</b>	303 to 296,602	2 to 2,949	0% to 2.05%	\$0 to \$2,916,338	\$0 to \$470	\$0 to \$446,116
<b>Non-health care setting (overall)</b>	771,718 (24%)	7,956 (32%)	1.03%	\$99,274,532 (74%)	\$129	\$12,478
<b>Range for health departments</b>	161 to 112,844	0 to 1,605	0% to 5.65%	\$56,582 to \$4,992,194	\$15 to \$1,921	\$1,524 to \$831,875

<sup>1</sup>For the 52 health departments with test-level NHM&E data, data are from the PEB 2010 HIV Testing Report. For the 7 health departments without test-level data, setting-specific results were estimated by applying the proportion of testing events conducted in health care and non-health care settings—as reported in their APRs—to their aggregate-level NHM&E data.

<sup>2</sup>Testing events conducted in test settings categorized as “other” or as “invalid/missing” were excluded. Including these test events would not have meaningfully changed the results, as they accounted for 1.3% (42,717) of all testing events and 1.0% (246) of all confirmed HIV-positive testing events.

<sup>3</sup>Based on data from the 2010 HIV Prevention Funding Allocations Report.

<sup>4</sup>Eight health departments did not report funding allocation separately by health care and non-health care settings. For these health departments, we used the overall funding allocation ratio of 3:1 (ratio of allocations in non-health care settings to health care settings) to estimate these 8 health departments’ spending by setting type.

<sup>5</sup>In health care settings, where leveraging other resources and spending support (e.g., third-party payer) for HIV testing is more feasible, it is possible to report no CDC funds spent on HIV testing but submit to CDC testing events that were a direct result of CDC-funded training, education, or technical assistance..

## Results: Newly Identified Confirmed HIV-positive Testing Events

Because newly identified confirmed HIV-positive testing events can only be calculated from test-level NHM&E data, the results presented in Table 2 are limited to the 52 health departments that provided test-level HIV testing data. Across these 52 health departments, the newly identified confirmed HIV positivity in non-health care settings was about 1.7 times as great as in health care settings (0.82% and 0.47%, respectively). By contrast, spending per newly identified confirmed diagnosis was approximately 5 times as great in non-health care settings as it was in health care settings (\$17,728 and \$3,388, respectively). The spending range per newly identified confirmed diagnosis is almost identical to the figures in Table 1.

	Testing events <sup>1,2</sup> (% of total)	Newly identified confirmed HIV-positive testing events (% of total) <sub>1,2,3</sub>	Newly identified confirmed HIV positivity (%) <sup>1,2,3</sup>	Spending <sup>4,5,6</sup> (% of total)	Spending / newly identified confirmed HIV-positive testing event <sup>3,4</sup>
<b>Total</b>	2,418,607	13,463	0.56%	\$113,230,640	\$8,411
<b>Health care setting (overall)</b>	1,843,891	8,748 (65%)	0.47%	\$29,642,015 (26%)	\$3,388
<b>Range for health departments</b>	303 to 296,602	1 to 1,287	0% to 1.52%	\$0 to \$3,247,132	\$0 to \$446,116
<b>Non-health care setting (overall)</b>	574,716	4,715 (35%)	0.82%	\$83,588,625 (74%)	\$17,728
<b>Range for health departments</b>	161 to 112,844	0 to 836	0% to 2.93%	\$56,582 to \$8,749,013	\$1,841 to \$831,875

<sup>1</sup>Based on data from the PEB 2010 HIV Testing Report for the 52 health departments with test-level data. Test-level data were not available from Alabama, Chicago, Los Angeles, Massachusetts, Mississippi, North Carolina, and the U.S. Virgin Islands.

<sup>2</sup>Testing events conducted in test settings categorized as "other" or as "invalid/missing" were excluded. Including these test events would not have meaningfully changed the results, as they accounted for 1.7% (40,815) of all testing events and 1.2% (166) of all confirmed HIV-positive testing events.

<sup>3</sup>Newly identified confirmed HIV-positive testing event is defined as a testing event for which there is a current confirmed HIV-positive test result and no history of a previous HIV-positive test; not available for aggregate-level data.

<sup>4</sup>Based on data from the 2010 HIV Prevention Funding Allocations Report.

<sup>5</sup>Seven health departments with test-level NHM&E data did not report funding allocation separately by health care and non-health care settings. For these health departments, we used the overall funding allocation ratio of 3:1 (ratio of allocations in non-health care settings to health care settings) to estimate these 7 health departments' spending by setting type.

<sup>6</sup>In health care settings, where leveraging other resources and spending support (e.g., third-party payer) for HIV testing is more feasible, it is possible to report no CDC funds spent on HIV testing but submit to CDC testing events that were the direct result of CDC-funded training, guidelines, or technical assistance.

## ***Why is Spending on HIV Testing Higher in Non-health Care Settings?***

HIV testing in non-health care settings is inherently more expensive than in health care settings for many reasons, including greater expenses associated with recruiting people to testing, and establishing and maintaining the infrastructure necessary to provide testing. Health departments, and the community-based organizations they fund, rely on testing in non-health care settings to reach high-risk populations that, for a variety of reasons (e.g., lack of insurance, residence in medically underserved communities, homelessness, or mistrust of health care providers), do not readily access clinical care services. The active recruitment approaches necessary to reach these populations (e.g., outreach and mobile testing on street corners or in bars) is not typically a component of the expense of providing HIV screening in health care settings, where the patient population normally seeks out the provider. In addition, providers can spread expenses over a wider service population.

## ***How does Spending of CDC Funds for HIV Testing Compare to Estimates of Cost-saving and Cost-effectiveness Thresholds?<sup>d</sup>***

Studies of the cost-effectiveness of HIV testing often differ with respect to the types of tests used, the costs included and costing method used in the analysis, the HIV seropositivity rate, and the manner in which cost-effectiveness is expressed.<sup>5-6</sup> Nonetheless, many studies have shown that HIV testing is cost-effective across a wide array of operational and epidemiological contexts.<sup>7-9</sup> A recent threshold analysis of HIV screening in U.S. health care settings by Farnham et al.,<sup>10</sup> which took into account variance in testing costs, HIV seropositivity rates, transmission rates, and receipt of test results, found that HIV testing was cost-saving<sup>e</sup> when the cost per new diagnosis (reported in 2009 U.S. dollars) was less than \$22,909 and was cost-effective<sup>f</sup> when the cost per new diagnosis was less than \$63,053. On average, the spending of CDC funds for HIV testing in health care and non-health care settings appears to be cost saving, meaning that more money is saved at the societal level by identifying new diagnoses than is spent on the programs. However, the range of spending of CDC funds across health departments suggests that some HIV testing programs are not cost-saving, and may not be cost-effective.

At the national-level, spending of CDC funds for HIV testing in health care and non-health care settings appears to be cost saving. However, the variability across health departments suggests that improvements in efficiency may be possible.

## ***Could We Improve Spending of CDC Funds for HIV Testing?***

Published studies of cost-effectiveness thresholds provide estimates of how much programs “can” spend to identify a new case of HIV infection and still be cost-effective; however, “can” is not the same as “should,” particularly if improvements in efficiencies are possible. HIV testing costs will naturally vary by health department and test setting due to many factors, including population characteristics (e.g., rural vs. urban) and HIV burden (low vs. high prevalence areas). Nonetheless, the wide ranges of spending of CDC funds per testing event and per newly identified diagnosis reported by health departments conducting HIV testing in health care and non-health care settings suggest that attaining

<sup>d</sup>Caution should be used in comparing health department spending estimates to results from cost-saving and cost-effectiveness studies. Budget-based estimates may over or understate costs derived from other, more precise, costing approaches.<sup>5</sup>

<sup>e</sup>Defined as a cost per quality adjusted life year (QALY) of zero or less (i.e., negative).

<sup>f</sup>Defined as a cost per QALY between zero and \$100,000.

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greater efficiencies is possible and should be a priority. Strategies including grantee data quality/data management feedback calls, capacity building and peer-to-peer technical assistance will assist in this effort. It is important that CDC and health departments proactively monitor, evaluate, and, where necessary, make program improvements to ensure HIV testing programs are high impact in practice as well as theory, and that they contribute to our achieving the NHAS goals and objectives.

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## Contributors

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