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## In the Routine HIV-Testing Era, Primary Care Physicians in Community Health Centers Remain Unaware of HIV-Testing Recommendations

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### Abstract

**Background**—Despite the 2006 US Centers for Disease Control and Prevention (CDC) recommendations for routine HIV testing in health care settings, many persons remain untested.

**Purpose**—To determine physician barriers to HIV testing, we surveyed primary care physicians in community health centers in a high HIV prevalence city.

**Methods**—Primary care physicians were invited via e-mail to participate in a Web-based survey. One hundred and thirty-seven physicians participated (response rate: 43.9%).

**Results**—Fifty-five physicians (41.0%) were unaware of updated CDC HIV-testing recommendations. Physicians were unaware that testing should be routinely offered in primary care settings caring for adolescents (62 physicians, 45.6%) and primary care settings caring for

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adults (33, 24.3%). Physicians were also unaware that teenage years patients aged 13 to 17 years (68, 49.6%) and adult patients aged 18 to 64 years (40, 29.2%) should be routinely HIV tested.

**Conclusion**—With the new 2013 US Preventive Services Task Force recommendations to support routine HIV testing, it is critical to address ongoing physician HIV-testing barriers to mitigate the HIV epidemic.

### Keywords

HIV testing; primary care physicians; guidelines; community health centers

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## Introduction

In the United States today, there are more than 1.1 million people living with HIV.<sup>1</sup> HIV testing is a vital intervention to curb the ongoing HIV epidemic. When people learn they are HIV positive, they can prevent further spread of HIV in the community by changing their risk behaviors<sup>2</sup> and by beginning antiretroviral therapy, the latter of which is an intervention directly responsible for lowering community viral load.<sup>3</sup> Unfortunately, in the United States, 1 in 6 people do not know their HIV positive status.<sup>1</sup>

Many persons with HIV remain unaware of their infection because physicians are not routinely offering HIV testing. To improve HIV testing, in 2006 the US Centers for Disease Control and Prevention (CDC) issued recommendations for clinicians to perform routine, opt-out HIV testing of all patients aged 13 to 64 years.<sup>4</sup> Many professional medical societies subsequently released policy statements in support of the CDC's recommendations.<sup>5-8</sup> Despite CDC and professional medical society recommendations, a 2012 Kaiser Family Foundation survey found that 36% of adults had not been tested for HIV because their doctor had never recommended testing.<sup>9</sup> Studies to date have found that many physicians are not routinely offering HIV tests as advised by the 2006 CDC HIV-testing guidelines.<sup>10-15</sup> The objective of this study was to assess primary care physician awareness and knowledge of the 2006 CDC HIV-testing recommendations.

## Methods

This study took place in publicly funded community health centers in Harris County, Houston, Texas. Houston is the nation's fourth most populous city<sup>16</sup> and a high HIV prevalence area in the United States.<sup>16,17</sup> Approximately 95% of the patients with HIV/AIDS in the Houston metropolitan area are in Harris county.<sup>18</sup> In 2011, there were 30 new HIV diagnoses per 100 000 population in Harris county, Houston,<sup>19</sup> compared to 15.8 new HIV diagnoses per 100 000 population in the United States.<sup>20</sup> An anonymous Web-based survey on HIV-testing knowledge was created from published questionnaires and also developed consistent with Cabana's model on why physicians do not follow guidelines.<sup>21</sup> According to the Cabana model, knowledge, attitudes, and behavioral skills are individual and interacting factors that affect physicians' behaviors. The purpose of this study was to focus on knowledge factors that affect physician HIV-testing behaviors. Responses of *No* and *I don't know* were combined to reflect an *unaware* response category. The survey was e-mailed to 312 primary care physicians in these community health centers. These community

health centers have more than 1 million patient visits per year and care for predominantly Hispanic (57.4%) and African American (26.3%) patients<sup>22</sup>—the populations hardest hit by the HIV epidemic in the United States.<sup>1</sup> Recruitment was done via e-mail, postcards in mailboxes, and announcements at medical conferences. Nominal incentives of a US\$10 gift card and entry into a US\$100 raffle were offered. The institutional review board of Baylor College of Medicine approved this study.

## Results

From January to March 2013, a total of 312 primary care physicians in the specialties of internal medicine, family medicine, and medicine-pediatrics were contacted for study participation. A total of 137 physicians participated (response rate 43.9%). Of 130 physicians who reported their specialty, 63 (48.5%) represent internal medicine, 49 (37.7%) family medicine, and 18 (13.8%) medicine-pediatrics. Of 134 physicians who reported gender, 81 (60.5%) were female. The average age of participants was 34.5 years (range, 25–63; median, 31 years). On average, participants graduated from medical school in 2005 (range, 1973–2012; median, 2009).

Fifty-five (41.0%) physicians were unaware that the CDC issued updated recommendations for routine HIV testing in 2006. Despite 114 (84.4%) physicians knowing that routine testing for HIV means testing patients regardless of their risk factors, many physicians were unaware in what settings and for whom this testing should be done. Physicians were unaware that testing should be routinely offered in primary care settings caring for adolescents (62 physicians, 45.6%) and primary care settings caring for adults (33 physicians, 24.3%). Physicians were also unaware that teenage patients aged 13 to 17 years (68, 49.6%) and adult patients aged 18 to 64 years (40 physicians, 29.2%) should be routinely HIV tested. Survey questions and results are presented in Table 1. After correcting for alpha inflation, chi-square ( $\chi^2$ ) tests and independent samples *t* tests revealed no significant differences between knowledge of settings tested by gender, specialty, age, or graduation year (all *P*s > the Bonferroni-corrected *P* value of .008). Similarly, there were no significant differences between knowledge of populations tested by gender, specialty, or graduation year (all *P*s > .008). However, those who were aware that adult patients should be tested were older (mean = 35.9 years, standard deviation [SD] = 9.6 years) than those who were not aware that adult patients should be tested (mean = 31.1, SD = 5.3),  $t_{103.09} = -3.36$ , *P* = .0011.

## Discussion

Using Cabana's theoretical framework, which highlights knowledge as a critical barrier to physicians adopting guidelines, our study elucidated several knowledge barriers that contribute to missed opportunities for HIV testing in the routine HIV-testing era. Notably, a large proportion of primary care physicians surveyed were unaware that the CDC issued updated recommendations for routine HIV testing in 2006. Nearly one-quarter to one-half of physicians were unaware of the HIV-testing recommendations specific for primary care settings. Nearly one-third to one-half of physicians were also unaware that patients aged 13 to 64 years should be routinely HIV tested.

A limitation of our study is that nonrespondents may differ significantly from those who completed the survey. Our survey sample may not be representative of a larger or different population of physicians in differing specialties. Additionally, our results may not be applicable to physicians practicing in other settings or in cities with differing HIV prevalences. Physicians practicing in cities with even higher HIV prevalence may be more aware of CDC HIV-testing recommendations.

Although patient factors impact the decision to test for HIV, physician recommendation to test is a chief reason patients do get tested for HIV.<sup>9,23,24</sup> HIV-testing campaigns targeting physicians are critically needed to improve HIV-testing rates and help mitigate the ongoing HIV epidemic in the United States. Improving HIV testing specifically in community health centers is essential because they serve patient populations disproportionately impacted by HIV.<sup>25</sup>

Our study's findings highlight the importance of promoting awareness of HIV-testing recommendations among physicians. This awareness may be the critical step now needed for increasing HIV-testing rates, aiding earlier diagnosis of HIV, and improving overall public health. Given that knowledge is not the sole indicator of behavior, research is also needed to assess attitudes and other barriers that are impacting provider HIV-testing behaviors. Notably, the US Preventive Services Task Force released recommendations in April 2013 to support routine HIV testing of all patients aged 15 to 65 years. As such, it is critical to understand and address ongoing physician HIV-testing barriers in order to mitigate the current HIV epidemic.

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## References

1. Centers for Disease Control and Prevention. [Accessed December 23, 2013.] HIV in the United States: At a glance. Dec 6. 2013 <http://www.cdc.gov/hiv/statistics/basics/ataglance.html>
2. Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: Implications for HIV prevention programs. *J Acquir-Immune Defic Syndr*. 2005; 39(4):446–453. [PubMed: 16010168]
3. Das M, Chu PL, Santos GM, Scheer S, et al. Decreases in community viral load are accompanied by reductions in new HIV infections in San Francisco. *PLoS One*. 2010; 5(6):e11068. [PubMed: 20548786]
4. 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(RR-14):1, 17. [PubMed: 16988643]
5. American College of Obstetricians and Gynecologists. ACOG committee opinion. Routine human immunodeficiency virus screening. *Obstet Gynecol*. 2008; 112(2 pt 1):401–403. [PubMed: 18669743]

6. Emmanuel PJ, Martinez J. Committee on Pediatric AIDS. Adolescents and HIV infection: the pediatrician's role in promoting routine testing. *Pediatrics*. 2011; 128(5):1023–1029. [PubMed: 22042816]
7. Qaseem A, Snow V, Shekelle P, Hopkins R Jr, Owens DK. Clinical efficacy assessment subcommittee, American college of physicians. screening for HIV in health care settings: a guidance statement from the American college of physicians and HIV medicine association. *Ann Intern Med*. 2009; 150(2):125–131. [PubMed: 19047022]
8. Society of General Internal Medicine. [Accessed June 18, 2013.] Routine HIV/AIDS testing. 2012. <http://www.sgim.org/communities/clinical-practice/hiv-aids>
9. Kaiser Family Foundation, The Washington Post. [Accessed June 18, 2013.] Survey of Americans on HIV/AIDS: Summary and Chartpack. 2012. <http://kaiserfamilyfoundation.files.wordpress.com/2013/01/8334-f.pdf>
10. Department of Health and Human Services. [Accessed June 18, 2013.] HIV testing in HRSA-funded health center sites. 2013. Report No.: OEI-06-10-00290. <https://oig.hhs.gov/oei/reports/oei-06-10-00290.pdf>
11. Jain CL, Wyatt CM, Burke R, Sepkowitz K, Begier EM. Knowledge of the Centers for Disease Control and Prevention's 2006 Routine HIV testing recommendations among New York City internal medicine residents. *AIDS Patient Care STDS*. 2009; 23(3):167–176. [PubMed: 19866534]
12. Korthuis PT, Berkenblit GV, Sullivan LE, et al. General internists' beliefs, behaviors, and perceived barriers to routine HIV screening in primary care. *AIDS Educ Prev*. 2011; 23(3 suppl): 70–83. [PubMed: 21689038]
13. Mohajer MA, Lyons M, King E, Pratt J, Fichtenbaum CJ. Internal medicine and emergency medicine physicians lack accurate knowledge of current CDC HIV testing recommendations and infrequently offer HIV testing. *J Int Assoc Physicians AIDS Care (Chic)*. 2012; 11(2):101–108. [PubMed: 22337704]
14. Myers JJ, Koester KA, Dufour MS. Barriers and facilitators to enhancing HIV testing in publicly funded primary care clinics: Findings from San Francisco. *AIDS Educ Prev*. 2011; 23(3 suppl): 84–95. [PubMed: 21689039]
15. Reilley B, Redd JT, Giberson S, Lee JK, Haverkamp D, Cheek J. Physician and nurse perspectives on implementation of universal adult HIV screening guidelines in the Indian health service: results of a randomized survey. *J Public Health Manag Pract*. 2010; 16(5):450–456. [PubMed: 20689395]
16. The city of Houston. [Accessed June 18, 2013.] Houston facts and figures. 2013. <http://www.houstontx.gov/about/houston/houstonfacts.html>
17. Centers for Disease Control and Prevention. [Accessed June 18, 2013.] Enhanced comprehensive HIV prevention planning and implementation for metropolitan statistical areas most affected by HIV/AIDS. Dec. 2012 <http://www.cdc.gov/hiv/strategy/echpp/index.htm>
18. Houston HSDA, EMA. [Accessed June 18, 2013.] Integrated epidemiological profile for HIV/AIDS prevention and care planning. 2011 Apr. [http://www.houstontx.gov/health/HIV-STD/RWPC\\_2011\\_Epi\\_Profile.pdf](http://www.houstontx.gov/health/HIV-STD/RWPC_2011_Epi_Profile.pdf)
19. [Accessed June 18, 2013.] Houston Area Integrated Epidemiologic Profile for HIV/AIDS Prevention and Care Services Planning. HIV/AIDS in the Houston area. 2013. Reporting period: January 1 to December 31, 2011. <http://www.rwphouston.org/Publications/2013%20Epi%20Profile%20-%20APPROVED%20-%202005-09-13.pdf>
20. Centers for Disease Control and Prevention. [Accessed June 18, 2013.] HIV surveillance report, 2011. 2013. p. 23 [http://www.cdc.gov/hiv/pdf/statistics\\_2011\\_HIV\\_Surveillance\\_Report\\_vol\\_23.pdf#Page=17](http://www.cdc.gov/hiv/pdf/statistics_2011_HIV_Surveillance_Report_vol_23.pdf#Page=17)
21. Cabana MD, Rand CS, Powe NR, et al. Why don't physicians follow clinical practice guidelines? a framework for improvement. *JAMA*. 1999; 282(15):1458–1465. [PubMed: 10535437]
22. Harris Health System. [Accessed June 18, 2013.] Fact sheet. 2012. <http://www.harriscountytiresponds.com/external/content/document/2036/1756987/1/harris-health-fact-sheet-2012.pdf>
23. Fernandez MI, Bowen GS, Perrino T, et al. Promoting HIV testing among never-tested hispanic men: A doctor's recommendation may suffice. *AIDS Behav*. 2003; 7(3):253–262. [PubMed: 14586188]

24. Stefan MS, Blackwell JM, Crawford KM, et al. Patients' attitudes toward and factors predictive of human immunodeficiency virus testing of academic medical clinics. *Am J Med Sci.* 2010; 340(4): 264–267. [PubMed: 20881755]
25. Centers for Disease Control and Prevention. [Accessed June 18, 2013.] Implementation of routine HIV testing in health care settings: Issues for community health centers. 2011. <http://www.cdc.gov/hiv/topics/testing/resources/guidelines/pdf/routinehivtesting.pdf>

**Table 1**Awareness of CDC HIV-Testing Recommendations.<sup>a,b</sup>

Before this survey, I was _____ that the CDC issued updated recommendations for routine HIV testing in 2006		
Aware, n (%)	79 (59.0)	
Unaware, n (%)	55 (41.0)	
What is the definition of routine testing?		
<b>HIV testing all patients regardless of risk, n (%)</b>	<b>114 (84.4)</b>	
HIV testing all patients with slight risk, n (%)	2 (1.5)	
Asking all patients about level of risk before testing, n (%)	5 (3.7)	
HIV testing patients at every single visit, n (%)	0 (0.0)	
I'm not sure, n (%)	14 (10.4)	
	<b>Aware, n (%)</b>	<b>Unaware, n (%)</b>
All patients in the following settings (in areas of high undiagnosed HIV prevalence) should be routinely tested <sup>c</sup>		
<b>Prenatal care settings</b>	<b>126 (92.6)</b>	<b>10 (7.4)</b>
<b>Primary care practices caring for adolescents (aged 13–17 years)</b>	<b>74 (54.4)</b>	<b>62 (45.6)</b>
<b>Primary care practices caring for adults (aged 18 years and older)</b>	<b>103 (75.7)</b>	<b>33 (24.3)</b>
<b>Emergency departments</b>	<b>109 (80.1)</b>	<b>27 (19.9)</b>
<b>Hospital inpatient wards</b>	<b>90 (66.2)</b>	<b>46 (33.8)</b>
<b>Sexually transmitted infection clinics</b>	<b>132 (97.1)</b>	<b>4 (2.9)</b>
All patients in the following populations (in areas of high undiagnosed HIV prevalence) should be routinely tested <sup>c</sup>		
<b>Teenage patients (aged 13–17 years)</b>	<b>69 (50.4)</b>	<b>68 (49.6)</b>
<b>Adult patients (aged 18–64 years)</b>	<b>97 (70.8)</b>	<b>40 (29.2)</b>
<b>Elderly adults (aged 65 years and older)</b>	<b>46 (33.6)</b>	<b>91 (66.4)</b>
<b>Pregnant women</b>	<b>124 (90.5)</b>	<b>13 (9.5)</b>
<b>Patients who display signs or symptoms of AIDS</b>	<b>129 (94.2)</b>	<b>8 (5.8)</b>
<b>Patients who are at high risk for HIV</b>	<b>131 (95.6)</b>	<b>6 (4.4)</b>
CDC does not recommend any patients to be routinely tested for HIV	2 (1.5)	135 (98.5)

Abbreviation: CDC, US Centers for Disease Control and Prevention.

<sup>a</sup>N = 137. Not all respondents completed each survey question.

<sup>b</sup>Responses in boldface are consistent with 2006 CDC recommendations.

<sup>c</sup>Respondents could select more than one answer.