HIV Testing for At-Risk Adolescents at Rhode Island Hospital

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ABSTRACT
Early detection of HIV has great potential to reduce transmission, especially when newly diagnosed individuals are treated early. Early treatment and suppression of viral loads is known to effectively attenuate HIV transmission. However, little is known about whether persons at high risk for HIV are being appropriately tested during healthcare encounters according to national guidelines. Specifically, the at-risk adolescent population may be under tested and are not routinely monitored by state-level surveillance system. This study reviewed HIV testing rates for at-risk adolescents from 2005–2012 at the main tertiary care and pediatric center in Rhode Island. While the absolute number of HIV tests for at-risk adolescents continued to increase, the HIV testing rates for this population decreased during the seven year period. Increasing awareness of HIV testing for patients, their families, and physicians may improve the HIV testing rate among at-risk adolescents in Rhode Island.

KEYWORDS: HIV; adolescents; testing

INTRODUCTION
Early detection and treatment of human immunodeficiency virus (HIV) infection can reduce the viral load in a person living with HIV and, in turn, the risk of transmission to uninfected individuals. Knowing one’s serostatus has also been shown to decrease an HIV infected individual’s likelihood of engaging in unprotected intercourse with uninfected partners by 68%. High-risk HIV negative individuals can benefit from routine testing, education and counseling, and other prevention interventions such as pre-exposure prophylaxis (PrEP). Routine screening is critical to achieve early diagnosis of HIV. At-risk adolescents, in particular, have unique barriers to testing and are less likely to be tested and to benefit from early diagnosis of HIV.

In the past decade, several national and local movements have advocated for improved screening of HIV. In 2006, the Centers for Disease Control and Prevention (CDC) revised its guidelines to include routine HIV testing of all patients aged 13 to 64 years regardless of risk factors. The National HIV/AIDS Strategy [NHAS] issued by the White House in 2010 also prioritized increasing the proportion of people aware of their serostatus from 79% to 90% by 2015. In Rhode Island [RI], the Department of Health [HEALTH] launched a campaign in 2013 titled “Getting to Zero,” which set out to “end the epidemic of HIV in RI by 2018.” HEALTH also created a website, “Just Get Tested,” to help and encourage patients to find HIV testing sites. The collaboration among The Miriam Hospital, HEALTH, AIDS Project Rhode Island, and Rhode Island Public Health Institute launched its campaign “Do It Right: Get Tested for HIV and STDs” at the RI PrideFest on June 21, 2014.

Adolescents themselves have low perceived risk of acquiring infection and engage in unprotected sexual intercourse and other risky behaviors, putting them at significant risk for contracting HIV infections. According to the 2013 Youth Risk Behavior Survey (YRBS), 47% of high school students reported having sexual intercourse. Ninety-one percent of these students did not use condoms and 87% reported never being tested for HIV. In 2012, the CDC estimated 60% of youths (ages 13–24 yrs) living with HIV did not know their seropositive status. Past studies have shown that adolescents were 2–7 times less likely to have HIV testing than adults aged 35–44 years. Risk factors associated with lower HIV testing rates among adolescents include younger age, presence of a guardian, and being Hispanic/Latino. Adolescents have higher rates of testing when they are offered rapid oral tests compared to venipuncture tests. Adolescents with access to confidential testing centers, are recommended by a physician to get tested, have opt-out and routine testing options, and have HIV test counselors available. Lack of these resources can lead to lower rates of HIV testing among adolescents.

Given the barriers to testing among adolescents, proactive screening for HIV infection is critical in this population. While the CDC division of the National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention [NCHHSTP] monitors HIV testing rates nationwide, this system does not provide stratification of the data based on age. Moreover, there was no complete standardized reporting until 2008, and thus, data from earlier years are missing in the NCHHSTP database. The YRBS has incomplete reporting of HIV testing rates nationwide and no reporting from RI. Few studies in the past decade have measured testing rates for adolescents. Reported testing rates ranged from 29% to 93% across various healthcare settings, time periods, and geographic regions. The purpose of this study was to...
investigate HIV testing rates for sexually experienced adolescents presenting to the Rhode Island Hospital (RIH) system which includes Hasbro Children’s Hospital and several outpatient centers in RI. Given that RIH is the only major pediatric medical center in RI, this study probably reflects statewide adolescent HIV testing rates.

METHODS
A retrospective cross-sectional review was performed of all patient encounters in the RIH system involving 13-18 year old patients from January 1, 2005 to December 31, 2012. We defined at-risk adolescents as patients with high clinical index of suspicion for history of sexual encounters or sexually transmitted infections (STIs) or illicit drug use, which has been shown to correlate with risky sexual behaviors and infection through intravenous drug use. Tests for syphilis, chlamydia, gonorrhea, herpes, trichomonas, and illicit drug use were used as surrogate markers for clinician suspicion for risky behavior. Similar identification methods were used in a previous study. To reduce potential sampling bias, patients presenting to subspecialty clinics such as Infectious Diseases and HIV clinics were excluded. The data were queried to identify encounters with HIV testing. The lab reports from HIV testing were reviewed and excluded if invalid.

The HIV testing rate was calculated for each calendar year as a percentage of all pediatric encounters with labs involving STI testing or toxicity screen tests. The total number of encounters, absolute number of HIV tests, and testing rates were graphically displayed to demonstrate the time trend. Chi-square analysis was performed on testing rates between 2005 and 2012 to determine significance ($p < 0.05$).

RESULTS
Between 2005 and 2012, there were 21,897 unique encounters with 13,504 at-risk adolescents. Of these encounters with high-risk adolescents, 3,596 (16.4%) encounters had an HIV test performed during the encounter. Forty-two of the 3,596 tests performed demonstrated a seropositive result.

The absolute number of encounters during which an HIV test was performed for at-risk adolescents steadily increased between 2005 and 2012 [See Figure 1]. However, the increase in the number of encounters with at-risk adolescents outpaced the rate of increase in HIV tests – particularly between 2007 and 2009. The total encounters with the at-risk adolescent population increased by 253%, but HIV testing encounters increased by 192% between 2005 and 2012. Consequently, HIV testing rate declined from 21.8% to 16.6% ($p < 0.0001$).

DISCUSSION
HIV testing rates in the RIH system during the 7-year study period was very low at 16.4% compared to previously reported rates of 28.7% to 93.4% for adolescents across various locations and healthcare settings. Moreover, time trends demonstrate that HIV testing rates remained low from 2005 and 2012, despite 2006 CDC recommendations and the 2010 National HIV/AIDS Strategy issued by the White House. The impact of more recent statewide efforts by RI HEALTH and the collaboration among The Miriam Hospital and community partners were not captured by this analysis.

Between 2005 and 2012, the HIV testing rate among sexually-experienced adolescents declined. This decline is the consequence of an increase in the number of encounters with STI testing and toxicity screens for adolescents that outpaced the increase in the encounters with HIV testing. On one hand, increased STI testing rates among adolescents can be commended and should be reinforced. However, improvements should be made to include HIV testing as a routine part of the STI screen.

One potential barrier to HIV testing is the stigmatized perception of HIV held by patients, their families, and physicians. The onerous informed consent process and lack of HIV counselors can also discourage patients and their families to seek HIV testing and the physicians to offer one. Of note, RI did change written consent for HIV testing to...
verbal consent in 2010 which may have reduced this barrier to testing. Patients are also more likely to decline the venipuncture HIV tests compared to less invasive urinary testing for other STIs. Finally, lack of clinical guidelines and lack of physicians’ awareness that adolescents may receive HIV testing without parent consent and notification can deter routine HIV testing. Overcoming these barriers to HIV testing is critical to reduce transmission of HIV particularly among at-risk adolescents.

Due to the retrospective nature of this study, we were unable to account for all variables that may influence HIV testing rates. For example, the low HIV testing rates found in this study may be due to patient refusal or physician-related and other testing process-related variables. Patient refusal, however, could not have entirely accounted for the low testing rate found in this study. Retrospective analysis of billing data may be incomplete data due to inaccurate reporting. However, the retrospective nature also allowed us to avoid potential observation bias of physicians changing HIV testing practices due to awareness of being observed. Reporting bias was minimized by using laboratory data rather than the provider-based billing data. Because the data is limited to RIH system, it did not capture HIV screening efforts by other clinics and community organizations. Our study population was those with access to RIH, and thus generalizability to RI population may be limited. However, as the only pediatric medical center, RIH serves the majority of the pediatric population in the area and can serve as a model for nearby healthcare facilities.

As the current CDC guidelines recommend, all patients of all ages, regardless of risk factors, should receive annual HIV tests as routine screening. However, even if a patient had an HIV test in the past year, clinical suspicion for STI should warrant HIV testing as part of the STI workup. Our study shows that more than four out of five at-risk adolescents do not receive HIV testing during a healthcare encounter. Future studies can explore barriers to HIV testing and assess interventions to help reduce these barriers. Continuation and intensification of efforts to raise awareness and increase HIV testing rates for at-risk adolescents should be recognized as a public health priority.

References


2015 RHODE ISLAND MEDICAL JOURNAL 27
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