Pediatric primary care providers in Philadelphia: An assessment of HIV testing and prevention education practices, barriers to care delivery, and HIV awareness

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ABSTRACT. Objectives. To determine the extent of HIV prevention education and HIV testing delivered to adolescents (ages 13-21); to determine clinician-identified barriers to their own delivery of HIV care to adolescents; and to determine clinicians' awareness of HIV standards of care, rapid testing technology, and common HIV transmission modes.

Design. A voluntary, confidential, self-report questionnaire was distributed to a convenience sample of 134 pediatric primary care providers (PCPs). Sample design utilized provider contact information from eight Internet-based health care directory websites.

Participants. Pediatric PCPs (MDs, DOs, PAs, and NPs) in Philadelphia.

Results. The 36 respondents discussed HIV prevention with 66% of their patients and offered HIV testing to 45%. Time constraints and Pennsylvania-mandated pre/post-test counseling and separate written consent were commonly identified barriers to HIV care delivery. Provider awareness of CDC recommendations for routine HIV testing was significantly related to more frequent care delivery, yet many clinicians were unaware of current standards of HIV care.

Limitations. The sample was modest in size and convenient in nature. As such, results may not be generally applicable to all pediatric PCPs in Philadelphia.

Conclusions. Numerous opportunities for HIV testing and prevention education are missed by pediatric PCPs. The reconciliation of CDC HIV testing recommendations and Pennsylvania's Confidentiality of HIV-Related Information Act (Act 148) may alleviate several provider-identified barriers to care delivery. Educational initiatives for pediatric PCPs regarding HIV testing and HIV prevention education should be developed and implemented.

ABBREVIATIONS. HIV, human immunodeficiency virus; PCP, primary care provider; S.D., standard deviation.

The annual incidence of 40,000+ new HIV infections in the United States remains steadily and unacceptably high. The demographics of the HIV epidemic in the U.S. demonstrate that young people (ages 13-24) are heavily burdened. In particular, adolescents and young adults who are Black, Hispanic, men who have sex with men, and increasingly females comprise a disproportionately high percentage of youth living with and contracting HIV. Although national epidemiology and surveillance data are sorely incomplete, experts estimate that as many as 220,000 young people (ages 15-24) in the U.S. are currently living with HIV and that more than half of them are unaware of their diagnoses.

Early diagnosis of HIV is crucial because it has the potential to increase the proportion of HIV-infected patients receiving care, to speed access to appropriate care, and to increase the percentage of HIV-infected patients who know their status. Individuals aware of their HIV-positive status are significantly less likely to partake in many risky behaviors through which HIV is spread.

Demand for expanded access to HIV testing and counseling has led to improvements in diagnostic testing techniques. Rapid tests, for example, accurately detect HIV antibodies in whole blood and enable true point-of-care testing. Because rapid test results are available within 20 minutes, traditional testing modalities, characterized by 40% failure-to-notify rates, have become obsolete. Rapid HIV testing is documented as a viable mechanism for screening patients in a variety of health care settings, and is preferred by adolescents.

Despite Centers for Disease Control and Prevention and Institute of Medicine recommendations that routine HIV testing be adopted in all U.S. health-care settings, persons with undiagnosed HIV infection often visit health-care settings without being tested for HIV. And while national organizations such as the American Medical Association and the American Academy of Pediatrics have published primary care guidelines recommending the annual screening of adolescents for sexual activity and its sequelae, primary care providers frequently miss opportunities to discuss HIV infection and prevention with youth.

Nevertheless, the majority of adolescents in the U.S. report that they do have a usual place of health care, typically at their doctor's office. The majority also report an annual primary health-care visit. Primary care visits constitute, by far, the most common interaction youth have with the health care community. As such, primary care clinicians are uniquely positioned to identify youth with HIV.

Existing reports review the feasibility and efficacy of HIV testing techniques and technologies, the cost-analysis of HIV testing and screening in a variety of health care settings, barriers to patient-provider interactions centered on HIV, and the percentage of adults in the U.S. estimated to have been tested for HIV. However, few published studies address the HIV prevention education and HIV testing practices of primary care providers who treat youth in the U.S. or in Philadelphia, a major urban center in the U.S. and home to communities with a high prevalence of diagnosed and undiagnosed HIV.

The primary objectives of this study were to assess (within pediatric primary care settings in Philadelphia) the extent of HIV prevention education and HIV testing delivered to adolescents (ages 13-21), clinician-identified barriers to their own delivery of HIV prevention education and testing to adolescents, and clinicians' awareness of HIV standards of care, rapid testing technology, and common transmission modes. To do so, I analyzed, and report here, the findings of a voluntary self-report questionnaire distributed to a convenient sample of
METHODS

Development of the survey sample

Eight web sites were utilized to procure provider contact information, including: The Children's Hospital of Philadelphia's Primary Care Centers website (www.chop.edu), The Philadelphia College of Osteopathic Medicine's Community Healthcare Centers website (www.pcom.edu), The St. Christopher's Hospital for Children Medical Services Directory website (www.stchristophershospital.com), The University of Pennsylvania Health System's Physician or Provider Directory website (www.pennmedicine.com), The Jefferson Health System website (www.jeffersonhealth.org), The Pizzica Health System website (www.pizzicahealth.com), The Yellowpages.Com website (www.yellowpages.com) and The WebMD Physician Directory (www.webmd.com). The criteria used to identify clinicians through these websites were (1) that clinicians be listed as "pediatric" or "adolescent" primary care providers, (2) that their professional qualifications be physician (MD or DO), physician assistant, or nurse practitioner (3) that they not be listed as infectious diseases or HIV/AIDS specialists, and (4) that their land mail address contain a Philadelphia zip code. For the first six of the eight websites, all providers who matched these criteria were added to the sample. The Yellowpages.Com website was utilized to find providers not listed on the health system websites. However, several of the providers listed on Yellowpages.com were previously identified using the health system websites, and were not added as duplicates. For each provider, a workplace mailing address, a telephone number, first and last names, and a professional title were recorded. The WebMD website was used to search for the missing contact information components of providers on the list whose profile was incomplete.

Ultimately, the breakdown of identified providers from each respective website was:

<table>
<thead>
<tr>
<th>Website Description</th>
<th>Number of Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children's Hospital of Philadelphia’s Primary Care Centers:</td>
<td>55</td>
</tr>
<tr>
<td>Philadelphia College of Osteopathic Medicine's Community Healthcare Centers:</td>
<td>10</td>
</tr>
<tr>
<td>St. Christopher's Hospital for Children Medical Services Directory:</td>
<td>18</td>
</tr>
<tr>
<td>University of Pennsylvania Health System's Physician or Provider Directory:</td>
<td>18</td>
</tr>
<tr>
<td>Jefferson Health System:</td>
<td>18</td>
</tr>
<tr>
<td>Pizzica Health System:</td>
<td>5</td>
</tr>
<tr>
<td>Yellowpages.Com:</td>
<td>42</td>
</tr>
<tr>
<td><strong>Total providers identified:</strong></td>
<td>148</td>
</tr>
</tbody>
</table>

The providers pooled in this list comprised a convenience sample. It cannot be concluded that they accurately represent the distribution of pediatric primary care providers in Philadelphia. Additionally, because of the limited profile data collected per provider, it was not possible to assess demographic characteristics (such as gender ratios or race and ethnicity) of the providers in this sample.

Survey administration

The survey questionnaire was sent to all 148 providers in the sample. Letters were mailed from the study's administrative site at Haverford College, Havertown, PA between March 1, 2008 and March 8, 2008. Returned surveys were collected until April 15, 2008. Thirty-three completed surveys were returned in that time period. On April 15, 2008, follow-up phone calls were made to providers with outstanding surveys as a reminder, and three additional completed surveys were returned within the following two weeks. Overall, fourteen surveys were returned by the U.S. postal service, and were not deliverable as addressed; thirty-six completed surveys were returned; and 98 surveys were not returned by contacted providers. The response rate was 27% for returned surveys. All hard copies of returned surveys and informed consent sheets were stored securely in a private binder at Haverford College, and will be stored in the Haverford College Office of the Provost, beginning May 9, 2008. The database and computerized list of survey participants is stored on a private laptop computer. Respondents will be mailed a copy of the study results, as promised, by summer 2008.

The survey device

The questionnaire was voluntary and self-report in nature. Approval was granted to the survey device by the Haverford College Institutional Review Board. The survey collected data about providers in five categories: (1) Work-Place Health Care Setting, (2) Care Delivery Practices, (3) Provider-Identified Barriers to Delivery of Care, (4) HIV Awareness, and (5) Clinician Characteristics. For convenience, survey packages (including an informed consent form, the questionnaire, and a pre-addressed, pre-postaged envelope) were mailed to clinicians. Survey packages, printing, and postage expenses were financed by a grant from the Howard Hughes Medical Institute.

Data entry and analytical techniques

Surveys were collected by the researcher and data points were entered into a confidential database on a personal laptop. All returned surveys were utilized for data analysis, although several data points were left blank by a number of respondents. In these cases, the denominators are adjusted in relevant calculations. For survey responses that deviated from directions (such as miscellaneous comments), notes were made in the database and marked as such.

Several data-entry complications were common in the Care Delivery portion of the survey. Some providers, for example, listed a range for their answers instead of a single number. For instance, one put "5-7" instead of, say, "6". In those cases, the mean of the range was utilized for the data set. In cases when a provider reported that they saw 10 patients and offered testing to 50%, the number of patients offered testing was recorded as 10 x .5 = 5. In all cases, numbers were rounded up.

Lengthy additional comments were recorded for several data points. These are included in the data analysis section of this report, but not in the data set or regression analysis because they were only reported by one person in each case.

Data were analyzed using summary statistics including means, percentages, ranges, and standard deviations with Stata (Stata Statistical Software: Release 10; StataCorp LP, College Station, TX). Regression models were developed to understand how the different data points, including Care Delivery, perceived Barriers to Care Delivery, HIV Awareness, and Clinician Characteristics were interrelated. Due to the limited sample size, a backwards elimination technique was utilized to define the precise regression models for factors associated with the provision of HIV prevention education and for offering HIV testing to adolescents. Additionally, a two-sample t-test was used to compare the frequency of provider care delivery practices between those aware and unaware of CDC recommendations for routine HIV care delivery.

RESULTS

Characteristics of survey respondents

Survey respondents (n=36) ranged from 20-30 years to over 70 years in age (mean age bracket = 41-50 years old). Of these, 23 (64%) were 20-50 years old and 13 (36%) were 51 years or older (Figure 1). Thirty-four were physicians (allopathic or osteopathic), and two were nurse practitioners. By gender, 11 (31%) were male and 25 (69%) female. Racially and ethnically, 32 (89%) described themselves as White, two as Asian or Pacific Islander, and one as African American or Black and Hispanic or Latino/a.

Respondents' workplace settings were located in 13 different Philadelphia zip codes, with a cluster of 13 respondents representing zip code 19104 and a cluster of five respondents representing zip code 19139 (Figure 2). Thirty-three percent described their work environment as community-based, 31% as hospital-based, and 31% as a private-practice, with the remainder not fitting into one of these categories. On average, clinicians estimated that 33% (range 0-95%) of their patients overall had private health insurance, that 62% (range 0-95%) utilized Medicaid or HMOs, and that five percent (range 0-25%) were uninsured.

Care delivery

Of responding clinicians, 32 (94%) estimated their survey responses for their care delivery practices, two utilized the results of a self-administered tally, and two did not specify the method utilized in filling out the survey.

Responding clinicians personally saw, on average, 16.4 (range 3-63) adolescents (13-21 years) for a primary care visit (including well and sick visits) in a typical week. With regard to the number of adolescents (13-21 years) seen in a typical week, providers thought that, on average, 11.3 (range 3-40) were sexually active; they specifically discussed HIV infection or HIV prevention with 10.8 (range 0-50); and they offered HIV testing to 7.4 (range 0-38).

Respondents reported a variety of HIV testing practices. When they did offer HIV testing to adolescents, four (11%)
referred adolescents to another setting, 29 (81%) obtained a testing sample in the office and sent it out for lab testing, and seven (19%) performed rapid HIV tests in the office. With regard to counseling before and after HIV testing, 29 (81%) clinicians reported that they performed pre-test counseling, and 19 (53%) post-test counseling. Thirty-five (97%) providers did not consult the patient’s parents before offering HIV testing, and the HIV testing process, on average, took respondents 8.3 (range 2-60, S.D.=10.7) minutes to complete.

**Barriers to care delivery**

With regard to the delivery of HIV prevention education to adolescents, time constraints constituted a 'major barrier' for three (9%) clinicians, 'somewhat a barrier' for 17 (52%), and 'no barrier' for 13 (39%). Negotiating patients' parental involvement while delivering HIV prevention education to adolescents was a 'major barrier' for two (6%) providers, 'somewhat a barrier' for seven (21%), and 'no barrier' for 24 (73%). And participant’s own discomfort levels with HIV-related issues posed 'somewhat a barrier' for three (9%), and 'no barrier' for 30 (91%) survey respondents, with respect to the delivery of HIV prevention education.

Clinicians also identified barriers to offering HIV testing at the office. Time constraints posed a 'major barrier' to HIV testing for two (6%) respondents, 'somewhat a barrier' for 17 (52%), and 'no barrier' for 14 (42%). Negotiating patients' parental involvement constituted a 'major barrier' for three (9%), 'somewhat a barrier' for 12 (36%), and 'no barrier' for 18 (55%) of providers. All respondents reported that their own discomfort level with HIV-related issues was 'no barrier', with respect to HIV testing at the office.

Separate informed written consent was a 'major barrier' to offering adolescents HIV testing at the office for four (13%) clinicians, "somewhat a barrier" for 12 (38%), and "no barrier" for 16 (50%). The cost of HIV tests was a reported "major barrier" for one (3%) provider, "somewhat a barrier" for five (15%), and did not pose a barrier to 27 (82%). Thirty (91%) respondents reported that not knowing what steps to take with a newly positive patient was "no barrier", while three (9%) reported that it was "somewhat a barrier."

Alternatively, five (16%) participating clinicians perceived the need for pre- and post-test counseling to be a "major barrier". Respectively, 12 (38%) and 15 (47%) primary care providers reported mandatory pre- and post-test counseling to be "somewhat a barrier" and "no barrier" to offering testing at the office.

Several respondents chose to report additional, self-identified barriers to their own delivery of HIV prevention education and testing to adolescents. One participant explained that written consent documents are often misplaced by laboratories during the testing process, indicating that proper documentation across multiple medical settings may be a barrier to HIV testing. Two clinicians (who did not utilize rapid tests in the office) commented that patients do not typically return, a week or two after their initial visit, for post-test counseling, posing an obvious barrier to clinicians’ delivery of in-person post-test counseling. A fourth provider noted that parents may discover their child received an HIV test while reviewing medical insurance bills. Such breaches in patient confidentiality may constitute a serious, additional barrier to the offering of HIV testing to adolescents. Finally, another respondent cited the frequent, time-intensive, and costly quality control requirements of rapid HIV testing devices as a barrier to offering HIV testing to adolescents at the office.

**HIV awareness**

Half (n=18) of the responding primary care providers were familiar with the CDC recommendation that routine HIV screening be performed for all patients >13 years of age. Alternatively, 14 (39%) clinicians were familiar with the CDC recommendation for HIV testing of all adolescents initiating treatment for tuberculosis. Three-quarters (n=27, 75%) of providers reported that they were aware of the CDC recommendation for the annual HIV testing of all patients seeking treatment for sexually transmitted diseases. And 13 (36%) respondents indicated that they would like more details about the CDC's recommendations regarding HIV testing in primary health care settings.

With regard to HIV testing technology, 26 (72%) responding clinicians reported that they were aware of rapid HIV tests. Only six (17%) providers wanted more details about rapid HIV tests, and one provider clarified that although s/he was aware of rapid-testing technology, details about whether or not insurance companies would cover rapid testing would be helpful.

Respondents also reported their knowledge of common modes of HIV transmission in Philadelphia. The majority (n=22, 61%) correctly ranked heterosexual contact as the most common mode of HIV transmission in Philadelphia. Thirteen (48%) providers correctly ranked male-to-male sexual contact (MSM) as the second-most-common mode of HIV transmission in Philadelphia. Although 12 (43%) responding clinicians correctly ranked injection drug use (IVDU) as the third-most-common transmission mode for HIV in Philadelphia, 10 (36%) incorrectly ranked IVDU to be the most common transmission mode. Finally, 24 (92%) providers correctly ranked blood transfusions as the least common mode of HIV transmission in Philadelphia listed as an option on the survey.

**Factors associated with HIV prevention education**

Regression analysis revealed that respondents who reported that negotiating patients' parental involvement posed "somewhat a barrier" or a "major barrier" to their delivery of HIV prevention education discussed HIV infection or prevention with 30 percentage points (p=0.011, statistically significant) fewer adolescents than those who did not report the barrier.

**Factors associated with offering HIV testing**

According to regression analysis, and holding constant clinician familiarity with the CDC recommendation for annual HIV testing of all patients seeking treatment for STDs, respondents who performed post-test counseling offered HIV testing to 29 percentage points (p=0.009, statistically significant) more adolescents than respondents who did not perform post-test counseling. Holding post-test counseling practices constant, respondents who were aware of the CDC recommendation for annual HIV testing of all patients seeking treatment for STDs offered testing to 43 percentage points (p=0.002, statistically significant)
more adolescents than respondents who were unaware of the recommendation.

Finally, although the relationship was not apparent in the above regression model, a one-sided t-test demonstrated that providers aware of the CDC recommendation that routine HIV testing be performed for all patients older than 13 years of age offered HIV testing to 36% more adolescents than providers who were not aware of this recommendation (p=0.003, statistically significant).

![Figure 1](image)

**Table 1**

<table>
<thead>
<tr>
<th>Extent of HIV care delivery, as reported by primary care providers</th>
<th>Average number of adolescents (13-21 years) personally seen in a typical week . . .</th>
<th>Average percentage of adolescents (13-21 years) personally seen in a typical week . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>For a primary care visit (including well and sick visits)</td>
<td>16.4</td>
<td>Range (3-63) S.D.=14.4</td>
</tr>
<tr>
<td>Thought to be sexually active by clinicians</td>
<td>11.3</td>
<td>Range (3-40)</td>
</tr>
<tr>
<td>With whom, specifically, HIV infection or HIV prevention were discussed</td>
<td>10.8</td>
<td>Range (0-50) S.D.=12.2</td>
</tr>
<tr>
<td>To whom HIV testing was offered by clinicians</td>
<td>7.4</td>
<td>Range (0-38) S.D.=8.5</td>
</tr>
</tbody>
</table>

**Table 2**

<table>
<thead>
<tr>
<th>Barriers to provider delivery of HIV testing and prevention education, by frequency (percentage)</th>
<th>HIV testing (at the office)</th>
<th>HIV Prevention Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinician identified barriers to care delivery</td>
<td>No Barrier</td>
<td>Somewhat or Major Barrier</td>
</tr>
<tr>
<td>Time constraints</td>
<td>14 (42.4%)</td>
<td>19 (57.6%)</td>
</tr>
<tr>
<td>Negotiating patients' parental involvement</td>
<td>18 (54.6%)</td>
<td>15 (45.5%)</td>
</tr>
<tr>
<td>Clinician's (own) discomfort level with HIV-related issues</td>
<td>33 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>Separate informed written consent (PA-mandated)</td>
<td>16 (50.0%)</td>
<td>16 (50.0%)</td>
</tr>
<tr>
<td>Cost of HIV tests</td>
<td>27 (81.8%)</td>
<td>6 (18.2%)</td>
</tr>
<tr>
<td>Need for pre/post-test counseling (PA-mandated)</td>
<td>15 (46.9%)</td>
<td>17 (53.1%)</td>
</tr>
<tr>
<td>Wouldn’t know what steps to take with a newly positive patient</td>
<td>30 (90.9%)</td>
<td>3 (9.1%)</td>
</tr>
</tbody>
</table>

**Table 3**

| Providers' HIV awareness of standards of care, HIV testing technology, and HIV transmission modes, by frequency |
Familiar with the following CDC recommendations regarding HIV testing in pediatric primary care settings
- Routine HIV testing performed for all patients >13 years
- HIV testing of all adolescents initiating TB treatment
- Annual HIV testing of all patients seeking treatment for STDs
Familiar with rapid-HIV testing technology
Would like more details regarding...
- CDC recommendations
- Rapid HIV tests
Knowledge of common HIV transmission modes in Philadelphia
- Correctly ranked heterosexual contact as the #1 transmission mode of HIV in Philadelphia
- Correctly ranked male to male sexual contact as the #2 transmission mode of HIV in Philadelphia
- Correctly ranked injection drug use as the #3 transmission mode of HIV in Philadelphia

<table>
<thead>
<tr>
<th>Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention education regression model</td>
</tr>
<tr>
<td>n = 29</td>
</tr>
<tr>
<td>% of patients with whom HIV was discussed</td>
</tr>
<tr>
<td>Negotiating patients’ parental involvement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offering HIV tests regression model</td>
</tr>
<tr>
<td>n = 33</td>
</tr>
<tr>
<td>% of patients offered HIV testing</td>
</tr>
<tr>
<td>Awareness of the recommendation for annual screening of patients seeking treatment for STDs</td>
</tr>
<tr>
<td>Performs post-test counseling</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison Between the CDC’s Recommendations for HIV Testing and Pennsylvania’s ACT 148.</td>
</tr>
<tr>
<td>Provision</td>
</tr>
<tr>
<td>Consent</td>
</tr>
<tr>
<td>Pre-test counseling</td>
</tr>
<tr>
<td>Post-test counseling</td>
</tr>
</tbody>
</table>
DISCUSSION
In September, 2006, the CDC issued “Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health Care Settings,” calling for the routine HIV screening of all patients ages 13-64, and reversing a decade-old approach to AIDS policy.3, 27 However, the CDC’s shift towards a public health prevention model is inconsistent with Pennsylvania’s Confidentiality of HIV-Related Information Act (Act #148), issued in 1990, regarding informed consent and pre/post-test counseling protocol28 (Table 6).28 Thus tensions due to federalism are relevant in this discussion, alongside the advent of relatively new HIV testing technologies (rapid tests) and the shifting national epidemiology of HIV, which increasingly burdens youth.

Survey respondents thought 68.9% of their patients (ages 13-21) were sexually active — a reasonable figure considering the American Sexual Health Association (ASHA) estimated in 2005 that 62% of 12th graders nationally have had sexual intercourse29 and a national survey recently demonstrated that at least one third of all U. S. adolescents engage in oral sex — with roughly a quarter of sexually active adolescents overall reporting oral sex as a strategy to avoid sexual intercourse.30

Respondents discussed specifically HIV infection or HIV prevention with 65.9% of their adolescent patients — a higher estimate than those found in existing reports, such as a 2006 national survey of young adults which demonstrated that only 45% of 18-25 year-olds in the U. S. had ever talked about HIV/AIDS with their doctor.31

This study’s finding that pediatric PCPs offered HIV tests to 45.1% of adolescents reinforces published data suggesting that the majority of adolescents are not tested for HIV. National surveys demonstrate that 48% of 18-25 year-olds in 200631 and only 10% of teens (15-17 years) in 200032 had ever been tested for HIV. Among youth never tested in the U. S., one quarter report the reason being that their doctor never recommended testing to them.31 (It is important to note that the number of HIV tests offered to adolescents in this study may exceed the number actually provided.)

Thus, respondents did not engage (100% - 65.9% = ) 34.1% of their patients (ages 13-21) in discussions of HIV infection or prevention and they did not offer HIV testing to (100% - 45.1% = ) 54.9%. Although one respondent did not discuss HIV and nine always discussed HIV with adolescents, and although four respondents did not offer HIV testing and six only offered HIV testing to adolescents, no consistent characteristic differences between PCPs who provided care either all or none of the time were found. Nevertheless, care-delivery profiles for individual respondents (Figure 4) demonstrate that a variety of delivery practices exists in pediatric primary care settings.

The specific practices of respondents (Figure 3), when offering and performing HIV testing, reveal several trends. The vast majority (81%) of respondents obtained patient testing samples in the office and sent them out for laboratory testing, while only seven (19%) providers used rapid tests in the office. With 26 (72%) of respondents

Figure 2. Distribution of Philadelphia zip codes represented by respondents. Zip codes shaded in red or blue are represented by respondents.

Figure 3

Figure 4

Provider practices when offering and performing HIV testing

Provider care delivery in a typical week, per provider
reporting familiarity with rapid-HIV testing technology, the heavy ratio of providers who send samples out to those who utilize rapid tests may indicate that barriers exist to the adoption of rapid HIV testing technology in pediatric primary care settings.

Secondly, while four of every five respondents performed pre-test counseling, only half reported performing post-test counseling. The documented logistical barrier of asking patients to return at a later date for post-test counseling (in cases when same-day results are not available) may explain a portion of this differential. It is also likely a reflection of provider confusion about post-test counseling standards of care. For instance, one respondent accurately28 commented that although Pennsylvania’s Act 148 mandates direct, personal post-test counseling between providers and patients, CDC recommendations do not.

Respondents frequently identified pre- and post-test counseling as “somewhat” or a “major” barrier to HIV testing. HIV-prevention counseling, a historically traditional component of HIV counseling, is defined by the CDC as “an interactive process of assessing risk, recognizing specific behaviors that increase the risk for acquiring or transmitting HIV, and developing a plan to take specific steps to reduce risks.”9 It is mandated by Act 148, but is not a recommended component of pre-test counseling according to CDC guidelines. Additionally, Pennsylvania-mandated face-to-face communication of negative test results is not recommended by the CDC, eliminating the requirement for formal post-test counseling for the majority of patients. As such, two characteristics of pre/post-test counseling that pose documented8 difficulty to PCPs may be alleviated through the adoption of CDC recommendations.

The positive and statistically significant relationship between respondents’ performance of post-test counseling and more frequent HIV testing practices is, however, more difficult to interpret. One potential explanation is that providers who perform post-test counseling may also offer testing more frequently as a result of their heightened awareness of HIV standards of care — yet no significant relationships between post-test counseling and HIV awareness were demonstrated in this study.

Providers frequently identified time constraints and Pennsylvania-mandated separate informed written consent and pre/post-test counseling as barriers to their own delivery of care — although, of these, only post-test counseling was found to be significantly associated with HIV care delivery in regression analyses (Table 5). Nevertheless, in a national health care climate where time constraints limit the ability of clinicians to comply with preventive services recommendations29, the finding that the majority of respondents perceived time constraints to be “somewhat” or a “major” barrier to HIV testing and HIV prevention education is, practically speaking, reasonable, and simultaneously troubling. (The average HIV testing process took 8.3 minutes, according to respondents in this study.)

Half (n=16) of responding providers identified Act 148-mandated separate informed written consent to be “somewhat” or a “major” barrier to offering HIV testing. While the CDC’s recommendations emphasize that screening should be voluntary and undertaken only with the patient’s knowledge and understanding that HIV testing is planned, they also assert that oral consent and general consent for medical care are sufficient for HIV testing. This abbreviated consent process may potentially result in the testing of several adolescents without their true permission or knowledge. However, adoption of CDC guidelines will also likely alleviate this commonly reported barrier to care delivery.

Nearly half (n=15, 45.5%) of respondents identified the negotiation of patients’ parental involvement as a barrier to offering HIV testing. Identification of this barrier was significantly associated with less frequent discussions of HIV infection and prevention in regression analyses, indicating that providers’ care delivery was limited by discomfort with such sensitive issues as patient confidentiality and parental objections to care. Although minors may consent to HIV testing in Pennsylvania,30 a variety of complications persist — most notably including complex insurance billing procedures which often become the outlet where the confidentiality of minors is breached.31 Nevertheless, provider discussions with adolescents regarding HIV infection and prevention are critical because they constitute one of few opportunities for youth to receive confidential and sound advice in making healthy behavioral choices.

Respondents did not identify their own discomfort with issues related to HIV/AIDS as a barrier to care delivery, sharply contrasting existing, older studies which suggest that PCPs have low confidence in their ability to discuss prevention topics with patients.34,35 Changes in the culture of health care professionals and in U.S. society, such as decreased stigmatization surrounding HIV/AIDS31 may contribute to this finding. Increased comfort with HIV-related issues may also explain why 91% of respondents reported that uncertainty with handling a newly positive patient was “no barrier” to their care delivery.

The cost of HIV tests in general was not a commonly identified barrier. However, a subset of respondents reported that, with regard to specifically rapid HIV testing in the office, daily quality control expenses (costing upwards of $50,36 and not reimbursable by insurance) constituted a barrier to care delivery, especially for PCPs who only see a few adolescents (>13 years) each week.

Awareness of CDC recommendations for HIV testing was significantly associated with more frequent care delivery. Providers aware of the CDC recommendation that routine testing should be offered to all patients older than 13 years offered HIV testing to 37% more adolescents than those unaware (p=0.002). Those aware of the recommendation for at least an annual screening of patients seeking treatment for STDs offered testing to 43% more adolescents than those unaware (p=0.002). These findings indicate that pediatric PCPs aware of recommendations for testing may be more likely to offer HIV testing to their patients.

However, the lack of HIV awareness among respondents is striking. Half were unaware of the CDC recommendation for the testing of all adolescents; nearly two-thirds were unaware of the recommendation to HIV-
test all patients initiating treatment for TB; and a quarter weren’t familiar with rapid-tests. Numerous respondents were unable to accurately26 identify the major HIV transmission modes in Philadelphia. Pediatric PCPs must become educated about HIV, in order to strengthen HIV prevention efforts.

In 2004 the city of Philadelphia reported that 2.0% of all Philadelphians tested for HIV that year tested positively — one of the highest positive testing rates in the U.S.25 In 2006, according to a draft of the Philadelphia Department of Public Health’s HIV/AIDS Epidemiology Surveillance Report, more than one quarter of the newly identified HIV/AIDS cases in the city that year were among young people (ages 13-29).26 With only a fraction of adolescents and young adults ever having received an HIV test, it is likely that many individuals with undiagnosed HIV infection are currently living in Philadelphia. Yet the results of this study demonstrate that at many pediatric primary care sites, no HIV testing is even offered, and that opportunities to discuss HIV infection and prevention with young people are often missed by providers.

Indeed, what may be necessary, at the institutional level, for the successful HIV screening of adolescents in Philadelphia, is state law reform in favor of the CDC’s streamlined approach to HIV care delivery which, interestingly, offers potential remedies to the three most commonly provider-identified barriers in this study — time constraints, separate written informed consent, and pre/post-test counseling.

There are several limitations of this research. This study utilized a convenience sample of PCPs that was modest in size, and since it cannot be assumed that the sample accurately represented the overall distribution of pediatric PCPs in Philadelphia, the conclusions drawn in this study may not be applicable to pediatric PCPs within Philadelphia in general. Secondly, the voluntary nature of this self-report survey means that it is possible that those providers who did not respond to the survey represent a cohort of providers different in key characteristics from those who chose not to participate.

CONCLUSIONS

Numerous opportunities for HIV prevention education and HIV testing are missed by pediatric PCPs in Philadelphia. Time constraints, and Pennsylvania-mandated pre- and post-testing counseling and mandatory separate written informed consent were commonly perceived barriers to HIV care delivery identified by responding clinicians. The cost of HIV tests, clinicians’ own discomfort levels with HIV-related issues, and insecurity about what steps to take with newly positive patients were not commonly identified by providers as barriers to their delivery of care. Providers’ HIV awareness was inadequate on several indicators, but knowledge of CDC recommendations for routine HIV testing of young people was significantly associated with more frequent HIV care delivery, implying that the education of providers may increase their care delivery practices. Finally, future studies assessing the variety and extent of HIV care delivered to adolescents in Philadelphia and the U.S. will be necessary to better understand the current climate of national HIV/AIDS prevention efforts among youth.

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