# Consumer interest in community pharmacy HIV screening services

**Kristin M. Darin, Kimberly K. Scarsi, Donald G. Klepser, Stephanie A. Klepser, Andrew Reeves, Maria Young, and Michael E. Klepser**

## Abstract

***Objective***: To evaluate consumers' interest in pharmacist-provided human immunodeficiency virus (HIV) screening and to evaluate potential barriers and facilitators to HIV screening in the community pharmacy setting.

***Methods***: Cross-sectional survey of adult patients who presented to one of five community (chain and independent) pharmacies from November 2010 to August 2011.

***Results***: Based on 380 usable surveys, 135 (35.8%) participants were interested in pharmacy-based HIV screening. Independent predictors of interest in HIV screening identified in multivariate analysis (reference groups: ages 30 to 49 years old and white, non–Hispanic race) included younger age (18 to 29 years old) (odds ratio [OR], 2.48; 95% confidence interval [CI], 1.31 to 4.71); black, non-Hispanic race (OR, 2.37; CI, 1.40 to 4.03); and other race (OR, 4.58; CI, 1.63 to 12.87). Lack of perceived risk for HIV was the most commonly cited barrier to HIV screening; and free, rapid, or confidential HIV testing were identified as potential facilitators.

***Conclusion***: Interest in pharmacy-based HIV screening was high among participants representing age and race groups disproportionately affected by HIV. Expansion of HIV screening efforts to community pharmacies warrants further consideration.

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Mathematical modeling suggests that a universal human immunodeficiency virus (HIV) test-and-treat strategy could bring the HIV epidemic to an end.[1] Accordingly, since 2006, the Centers for Disease Control and Prevention (CDC) has recommended routine HIV screening in health care settings for all individuals ages 13–64 years old,[2] and a similar recommendation was issued by the United States Preventive Services Task Force (USPSTF) in 2013.[3] Despite these recommendations, an estimated 45% of adult Americans have never been tested for HIV.[4] Consequently, an estimated 1 in 6 of the nearly 1.2 million HIV-infected persons in the United States (U.S.) remains unaware of their infection.[5]

**Kristin M. Darin, PharmD**, Research Assistant Professor, Division of Infectious Diseases, Feinberg School of Medicine, Northwestern University, Chicago, IL

**Kimberly K. Scarsi, PharmD, MSc**, Associate Professor, Department of Pharmacy Practice, College of Pharmacy, University of Nebraska Medical Center, Omaha, NE; at the time of project completion, Research Assistant Professor, Division of Infectious Diseases, Feinberg School of Medicine, Northwestern University, Chicago, IL

**Donald G. Klepser, PhD, MBA**, Associate Professor, Department of Pharmacy Practice, College of Pharmacy, University of Nebraska Medical Center, Omaha, NE

**Stephanie A. Klepser, PharmD**, Director of Clinical Services and Travel Health, OptiMed Pharmacy, Kalamazoo, MI

**Andrew Reeves, BSPharm**, Director of Pharmacy and Founder, OptiMed Pharmacy, Kalamazoo, MI

**Maria Young, BSPharm**, Pharmacist and Owner, University Pharmacy, Detroit, MI

**Michael E. Klepser, PharmD**, Professor of Pharmacy, College of Pharmacy, Ferris State University, Kalamazoo, MI

**Correspondence:** Kristin M. Darin, PharmD, Northwestern University Feinberg School of Medicine Center for Global Health, 645 N. Michigan Ave. Suite 1058, Chicago, IL 60611; k-hurt@northwestern.edu

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Historically, HIV testing programs targeted persons with high-risk behaviors and were limited to locations such as health departments and specialty outpatient clinics, missing a substantial number of infected individuals.[6] Owing to advances in HIV testing technology, specifically the availability of the Clinical Laboratory Improvement Amendments (CLIA)–waived[7] rapid HIV antibody screening tests,[8] interest in expanding HIV testing to nontraditional settings has developed. These modern HIV tests can be easily performed on oral fluid or whole blood obtained by fingerstick and provide results in less than 20 minutes.[8] Pharmacies are appealing locations for HIV-screening services, as they provide patients with unparalleled access to health care services. More than 60,000 community pharmacies are located across the U.S., and these are visited by an estimated 250 million consumers every week.[9,10] Pharmacists' interest in HIV testing has been demonstrated[11–14]; however, little is known regarding consumers' interest in this service.

## Objective

The objective of this study is to describe consumers' interest in pharmacist-provided HIV screening and identify potential barriers and facilitators to this service in the community pharmacy setting.

## Methods

A cross-sectional survey was conducted at five U.S.-based pharmacies from November 2010 through August 2011, on days and at times convenient for each location. In addition to demographic questions, participants' interest in pharmacy-based HIV screening was assessed; response choices were "yes," "no," or "don't know." For participants responding "no" or "don't know" (herein described as undecided), questions assessing potential barriers and facilitators to HIV screening were posed using 5-point Likert-type responses. Completion of the anonymous survey was voluntary and no protected health information was collected.

The study was exempt from Northwestern University Institutional Review Board purview.

### Study settings

Three of the five locations were chain community pharmacies located in a large urban setting (Chicago, IL), two located in neighborhoods and one within an academic medical center. The other two locations were independent pharmacies in Michigan, one on a college campus in a large urban setting (Detroit, MI) and one within an academic medical center in a smaller urban community (Kalamazoo, MI).

### Study sample

Upon presenting to pharmacy prescription drop-off or pick-up counters, a convenience sample of consumers aged 18 years or older was invited by pharmacy staff to complete the survey and return it to a secure box located on the pharmacy counter. Pharmacy staff explained that the survey aimed to help pharmacists assess the community's interest in pharmacy-based HIV screening, but no additional information about HIV testing was provided.

### Statistical analysis

Participant characteristics and interest in pharmacy-based HIV screening were described by frequencies, and chi-square or Fisher's exact tests were used to identify characteristics associated with interest in HIV screening. Multivariate logistic regression analysis (reported as adjusted odds ratios with 95% confidence intervals) was performed to identify predictors of interest in HIV screening. All variables with a bivariate $P < 0.25$ or plausibility to affect the outcome were considered for inclusion in the multivariate model. For bivariate and multivariate analyses, $P < 0.05$ was considered significant.

Participant responses to Likert-type items were summarized by frequencies.

Data were analyzed using SAS version 9.2 (SAS Institute Inc., Cary, NC).

## Results

Of the 409 surveys received, 380 (92.9%) were included in the analysis; 29 surveys were excluded because of missing responses to the item about interest in HIV screening. Table 1 summarizes participant characteristics overall and by interest in HIV screening. The racially diverse participants were primarily women (73%) and between the ages of 30 and 59 years old (59%). By pharmacy location, 68.2% were visiting a chain pharmacy and 50% were at a medical center–based pharmacy.

### Interest in HIV screening

Of the 380 participants, 135 (35.5%) were interested in pharmacy-based HIV screening, 209 (55%) were not interested, and 36 (9.5%) were undecided. In unadjusted analysis (Table 1), interest in HIV screening varied significantly by age and race/ethnicity. Within these categories, interest was highest among those aged 18 to 29 years old (49.4%) and those whose race/ethnicity was black, non-Hispanic (43.4%) or other race (63.2%).

Participants who were visiting free-standing pharmacies were more likely interested in HIV screening than those at medical center–based locations (43.2% versus 27.9%, $P = 0.002$); however, interest in HIV screening did not differ between respondents at chain versus independent pharmacies (35.9% versus 34.7%, $P = 0.820$).

After adjusting for other factors, younger age and black, non–Hispanic or other race remained significant predictors of interest in HIV screening (Table 1).

### Potential barriers and facilitators to HIV screening

Potential barriers and facilitators to HIV screening, identified by those participants who were undecided or un-

**Table 1.** Participant characteristics and interest in community pharmacy HIV screening

| Characteristics | No. (%) participants (n = 380)[a] | No. (%) interested in HIV screening (n = 135) | No. (%) not interested in HIV screening[b] (n = 245) | Bivariate analysis (P value[c]) | Adjusted analysis[d] (odds ratio [95% CI]) |
|---|---|---|---|---|---|
| **Gender** | **377** | **135** | **242** | 0.840 | |
| Men | 101 (26.8) | 37 (27.4) | 64 (26.5) | | Reference |
| Women | 276 (73.2) | 98 (72.6) | 178 (73.6) | | 0.68 (0.39, 1.18) |
| **Age (years)** | **372** | **133** | **239** | 0.003 | |
| 18–29 | 85 (22.8) | 42 (31.6) | 43 (18.0) | | **2.48 (1.31, 4.71)** |
| 30–49 | 144 (38.7) | 39 (29.3) | 105 (43.9) | | Reference |
| ≥50 | 143 (38.4) | 52 (39.1) | 91 (38.1) | | 1.32 (0.76, 2.30) |
| **Marital status** | **360** | **125** | **235** | 0.114 | |
| Single | 216 (60.0) | 84 (67.2) | 132 (56.2) | | Reference |
| Married | 99 (27.5) | 27 (21.6) | 72 (30.6) | | 0.86 (0.48, 1.55) |
| Divorced | 45 (12.5) | 14 (11.2) | 31 (13.2) | | 1.11 (0.51, 2.42) |
| **Race and ethnicity** | **363** | **128** | **235** | 0.001 | |
| White, non–Hispanic | 170 (46.8) | 45 (35.2) | 125 (53.2) | | Reference |
| Black, non–Hispanic | 145 (39.9) | 63 (49.2) | 82 (35.9) | | **2.37 (1.40, 4.03)** |
| Hispanic | 16 (4.4) | 6 (4.7) | 10 (4.3) | | 1.58 (0.52, 4.86) |
| Asian | 13 (3.6) | 2 (1.6) | 11 (4.7) | | 0.56 (0.11, 2.79) |
| Other | 19 (5.2) | 12 (9.4) | 7 (3.0) | | **4.58 (1.63, 12.87)** |
| **Education** | **374** | **133** | **241** | 0.092 | |
| No college | 107 (28.6) | 31 (23.3) | 76 (31.5) | | 0.68 (0.39, 1.17) |
| Some college or higher | 267 (71.4) | 102 (76.7) | 165 (68.5) | | Reference |
| **Primary reason for visiting pharmacy** | **372** | **132** | **241** | 0.497 | NI |
| Prescription medication | 322 (86.6) | 111 (84.7) | 211 (87.6) | | |
| Nonprescription medication | 14 (3.8) | 4 (3.1) | 10 (4.2) | | |
| Nonmedication purchase | 17 (4.6) | 9 (6.9) | 8 (3.3) | | |
| Question for the pharmacist | 6 (1.6) | 3 (2.3) | 3 (1.2) | | |
| Other | 13 (3.5) | 5 (3.1) | 9 (3.1) | | |
| **Primary prescription payment method** | **361** | **128** | **233** | 0.684 | NI |
| Self-pay, no insurance | 36 (10.0) | 14 (10.9) | 22 (9.4) | | |
| Third-party insurance | 165 (45.7) | 61 (47.7) | 102 (43.8) | | |
| Medicaid | 116 (32.1) | 41 (32.0) | 75 (32.2) | | |
| Medicare | 30 (8.3) | 8 (6.3) | 24 (10.3) | | |
| Other | 14 (3.9) | 4 (3.1) | 10 (4.3) | | |

Abbreviations used: HIV, human immunodeficiency virus; CI, confidence interval; NI, variable was not included in adjusted analysis.
[a] The sum of each category is less than 380 because of missing data.
[b] Includes participants who responded they were undecided or not interested in community pharmacy HIV screening.
[c] *P* values reflect comparison of participants who were versus were not interested in HIV screening between or across categories using chi-square or Fisher's exact tests, as appropriate.
[d] The multivariate analysis included data from 337 (89%) participants; those with missing data for any variable included in the model were excluded from the final model.
**Bolded** results indicate $P<0.05$.

interested in pharmacy-based HIV screening (n = 245), are summarized in Figure 1.

In this subgroup, lack of perceived risk for HIV (69%) and already-known HIV status (68%) were most commonly reported as reasons for disinterest in HIV screening (aggregate responses of strongly agree and agree). More than one-half of these respondents agreed or strongly agreed that a free test, a test that took less than 20 minutes, or certainty of confidentiality were features that could affect their interest in HIV screening. Participants' views on the pharmacy as the testing location or the pharmacist providing the test were variable and did not differ across pharmacy locations.

## Discussion

Findings from this study describe consumers' interest in community pharmacy HIV screening services. More than one-third of participants, representing a diverse population, expressed interest in pharmacy-based HIV screening. Nearly 10% of participants were undecided if HIV screening interested them, which represents an opportunity to improve consumer knowledge on the importance of routine HIV screening.

Our study highlights that interest in HIV screening was 2.5-fold higher among participants aged 18–29 years old compared with those 30–49 years old. There is an emerging HIV epidemic among young adults in the U.S., with approximately 25% of new HIV infections occurring among individuals aged 13–24 years old.[15] Fewer than 40% of persons in this age category have been tested for HIV, and 60% of persons infected with HIV in this age group are unaware of their infection.[15]

We also found that interest in pharmacy-based HIV screening was 2.4-fold higher among study participants of black, non–Hispanic race compared with those of white, non–Hispanic race. This finding is important because persons of black race continue to bear the greatest burden of HIV in the U.S., accounting for 47% of all new infections.[16] Previous studies have shown that persons of black race and Latino ethnicity are often missed by traditional testing locations because of lack of perceived risk for HIV infection or limited access to health care.[17,18] Our findings suggest that if pharmacy-based HIV screening were available, uptake among populations disproportionately affected by HIV may be favorable.

Among participants who were undecided or unin-

**Figure 1.** Potential barriers (1a) and facilitators (1b) to HIV screening among participants who were undecided or uninterested in pharmacy-based HIV screening (n=245)[a,b]

**Fig 1a.** I did not answer 'yes' to HIV screening because:

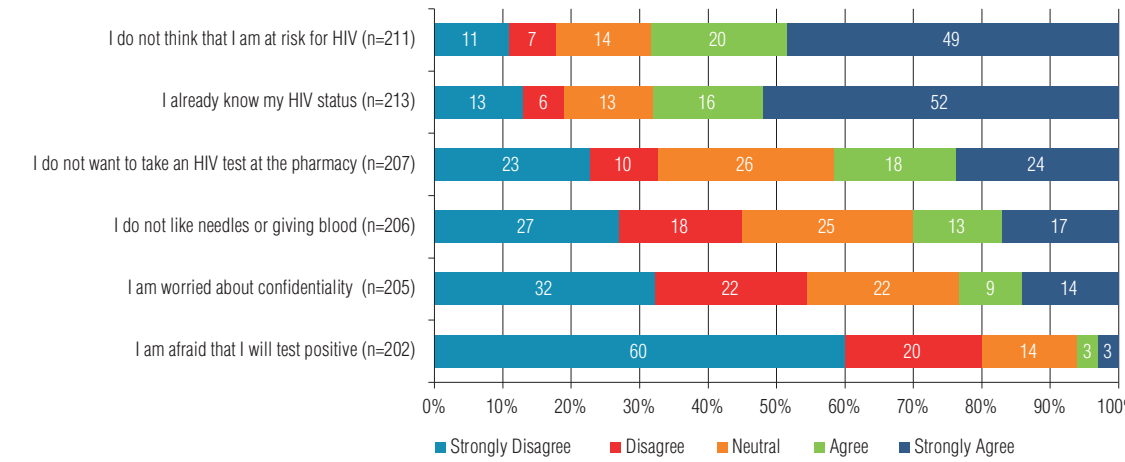
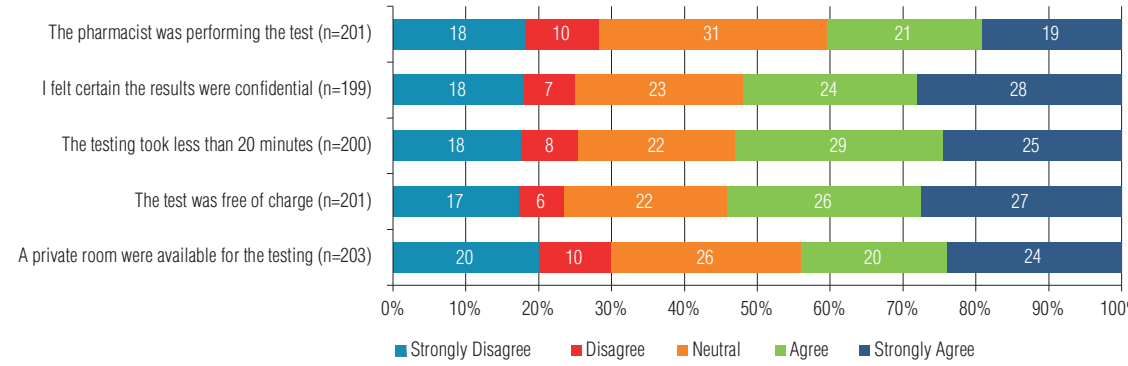



**Fig 1b.** I would consider taking an HIV test at the pharmacy if:




Abbreviation used: HIV, human immunodeficiency virus.
[a]For each item, the number of participants who provided a response is noted in parentheses (out of a possible 245 participants).
[b]For each item, the bar segment represents the percentage of participants who provided a particular categorical response out of the number of participants who provided a response for the corresponding item.

terested in pharmacy-based HIV screening, responses overwhelmingly indicated that lack of perceived risk for HIV infection was the primary reason for disinterest, which is consistent with previous findings.[4] These data highlight the importance of routine rather than risk-based testing, which misses about 25% of newly diagnosed patients.[6] Fear of needles was identified as a potential barrier to HIV testing among 30% of this study subgroup, more commonly among black versus white participants (53% versus 34%, $P = 0.03$), which is also consistent with prior findings.[18] Differences in patient preference may be important to consider when selecting an HIV test (e.g., oral fluid versus fingerstick test) for use within a particular community.[8]

More than one-half of survey respondents who were undecided or uninterested in HIV screening agreed that providing a test at no charge, a short wait time for results, or certainty of confidentiality were potential facilitators, all features that may be possible with pharmacy-based HIV screening. The USPSTF's adoption of routine HIV screening as a Grade A recommendation and Affordable Care Act reimbursement requirement mean that cost should no longer be a barrier for most persons desiring an HIV test.[19] In our study, 87% of participants reported using Medicaid, Medicare, or private insurance for prescription coverage; they are likely eligible for HIV testing without additional out of-pocket costs under these new policies. The use of rapid versus conventional HIV tests has drastically reduced wait times and improved rates of test result receipt.[20] Pharmacy-based HIV screening models would use CLIA-waived[7] rapid HIV tests that all provide results in 20 minutes or less.[8] Pharmacists are highly trusted professionals[21] already accustomed to protecting patients' health information. Encouragingly, 40% of undecided or uninterested respondents indicated that the pharmacist performing the test made HIV screening attractive to them, and most participants did not identify the pharmacy as a significant barrier.

## Limitations

Some limitations should be considered when interpreting our findings.

We used a cross-sectional study design, which is limited to select participants' views at the time of survey completion. In the 4 years that have passed since the survey was conducted, the new USPSTF recommendations and the Affordable Care Act have increased HIV testing awareness,[19] an in-home oral HIV test was introduced to the market,[22] and expansion of HIV testing into community pharmacies has been described.[23,24] All of these elements may increase consumers' interest in HIV screening and lead to our data underestimating consumers' current interest. However, our findings may provide a useful baseline measure from a time when pharmacy-based HIV screening was uncommon.

Second, the views of participants who chose to complete the survey may differ from those of community pharmacy consumers who did not complete the survey. Similarly, since participants were recruited at pharmacies, they may be more interested in pharmacy-based services than individuals who do not frequent pharmacies.

It also remains unclear if similar findings would be reproducible in all geographical regions of the U.S.

## Conclusion

We identified that interest in HIV screening in community pharmacies was high among populations disproportionately affected by HIV. Ongoing evaluation of consumer interest in and potential barriers and facilitators to pharmacy-based HIV screening will be important as these models of care are further developed and implemented nationwide.

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