Published in final edited form as:

Sex Transm Dis. 2018 June ; 45(6): 417–421. doi:10.1097/OLQ.0000000000000769.

Healthcare Provider Perceptions of a Sexually Transmitted Infection Self-testing Program in an HIV Care Clinic

Susana Tat, MPH¹, Shireesha Dhanireddy, MD¹, Jeanne M. Marrazzo, MD, MPH², and Lindley A. Barbee, MD, MPH^{1,3}

¹Department of Medicine, Division of Allergy and Infectious Diseases, University of Washington, Seattle, WA

²Division of Infectious Diseases, University of Alabama, Birmingham, WA

³Public Health – Seattle & King County HIV/STD Program

Abstract

Background—Sexually transmitted infections (STI) disproportionately affect men who have sex with men (MSM). While clinical practice guidelines recommend routine STI screening of MSM who have high-risk behaviors, extragenital STI testing rates have been low in HIV clinics across the nation. The University of Washington STD Prevention Training Center implemented an STI self-testing program at a large HIV primary care clinic in Seattle, WA to facilitate extragenital STI testing.

Methods—We performed a mixed-methods program evaluation to assess healthcare provider acceptability of the program at nine months post implementation. Twenty-eight clinicians were invited to complete an online survey. We conducted one-on-one, semi-structured interviews with six clinicians and a focus group with seven members of the clinic nursing staff. Survey responses were tallied. Conventional content analysis was performed on survey comments and transcripts from the interviews and focus group.

Results—Ninety-one percent of clinicians were either satisfied or very satisfied with the program. Perceived advantages of the program included saving time for clinicians, overcoming patient discomfort, and increasing patient access to testing. Perceived program disadvantages included unclear responsibility of directing patients through the self-testing process and incorrect sample collection and labeling.

Conclusions—Despite perceived disadvantages, the self-testing program was acceptable to clinicians and nursing staff, key population for successful program adoption. Implementation of STI self-testing programs in clinic settings could help to increase extragenital STI testing rates by removing provider and patient barriers to testing.

Keywords

sexually transmitted infections; gonorrhea; chlamydia; screening; HIV

Corresponding Author: Lindley A. Barbee, MD, MPH, 325 9th Ave, Box 359777, Seattle, WA 98104. lbarbee@u.washington.edu. Phone: (206) 744-2595.

Conflicts of Interests: for the remaining authors none were declared.

Introduction

National treatment guidelines recommend routine annual *Neisseria gonorrhoeae* (NG) and *Chlamydia trachomatis* (CT) screening of sexually active men who have sex with men (MSM) at all exposed anatomic sites (urethra, pharynx, and/or rectum).¹ Previous studies have shown high prevalences of extragenital NG/CT among MSM in HIV care.^{2,3,4} Despite high prevalences, extragenital NG/CT screening rates in HIV clinics remain low, ranging from 2.3% to 8.5%.⁴ Increased NG/CT testing may increase case detection among HIV clinic cohorts,⁵ and has the potential to decrease HIV transmission.^{6,7}

There are several barriers to screening for sexually transmitted infections (STIs). Reported HIV care provider barriers to STI screening include lack of time during clinic visits and provider discomfort with performing a comprehensive sexual history.^{8,9} Patient barriers to STI testing include patient reluctance⁸ and lack of knowledge about extragenital screening.¹⁰ One option to increase STI screening and testing rates among MSM is implementation of urine and extragenital specimen self-collection program for STI testing. Results from patient-collected extragenital specimens have been found to be concordant with provider-collected specimens,^{11–14} and self-collection is also highly acceptable to MSM patients.^{10,12,15,16}

In order to overcome some of these barriers, we implemented a STI self-collection screening program, STI self-testing in brief, at the largest HIV care provider in the Pacific Northwest, Madison Clinic in Seattle, WA. We conducted a mixed-methods program evaluation to assess clinician and nursing staff perceptions and acceptability of the program. Understanding the factors that influence acceptability and usage of a STI self-testing program by clinical staff could be instrumental to successful implementation of such a program in another clinical setting.

Methods

STI Self-Testing Program Overview

The STI self-testing program was a multi-step project, which consisted of (1) identification of barriers to STI testing (May-June 2012) and baseline testing frequencies (March 2011 – September 2012); (2) program implementation (January – April 2013); and (3) program effectiveness (April 2013 – March 2014) and acceptability evaluation at Madison Clinic (December 2013 – January 2014). Step one⁸ and parts of step two and three¹⁷ have been previously described. Prior to implementation, we conducted five educational sessions to clinicians and nursing staff to allow all providers the opportunity to attend a session. Each session entailed an in-person, one-hour presentation on prevalence of extragenital STIs, rationale for screening of extragenital STIs, STI screening and treatment guidelines, baseline STI testing rates at Madison Clinic, and an introduction of the STI self-testing program at Madison Clinic.

Patients entered the self-testing program through two pathways: (1) clinicians referred patients to self-testing at the end of a regular visit, or (2) patients requested self-testing

without an appointment (Figure 1). Instructional posters in the restroom included illustrations and English text to guide patients through the self-testing process – labeling collection kits, collecting a urine sample, throat and rectal specimens, and placing samples into a biohazard bag – without the help of a clinician or nursing staff member (Figure 2). In this clinic we use Aptima Combo 2 vaginal specimen kit (Hologic/Gen-Probe, San Diego, California) to collect extragenital specimen.

Data collection

We sent an online questionnaire consisting of 11 multiple-choice questions and one open-ended comment section, to all 28 Madison Clinic HIV care clinicians to assess their usage, perception, and acceptability of the program. Two Madison Clinic physicians who were involved in implementing the self-testing program were excluded from taking the questionnaire. Survey results were reported as percentages of complete responses per question. No more than two clinicians skipped any given question.

Over the first nine-months of program implementation, the study team tracked the number of referrals to the self-testing program by each clinician, which ranged from 1 to 18 referrals (median = 2 and mean = 4). Clinicians were selected based upon their availability and having referred at least one client to the STI self-testing program. Three clinicians who made more than the average four referrals and three clinicians who made fewer than four referrals were interviewed. Those interviewed consisted of a mix of faculty and trainees in each group. The research assistant conducted 15-minute interviews with clinicians on a one-on-one basis either in-person (n=4) or by phone (n=2) to gain insight of their perceptions, observations, and experience of the program. In-person interviews were audio-recorded and phone interviews were recorded through hand-written descriptive notes.

We invited nursing staff to participate in a 30-minute focus group to discuss their views of the self-testing program and the impact it had on their work. Seven (78%) of the nine eligible clinic staff members – three medical assistants, three nurses, and one clinic manager – participated in the focus group. The focus group was audio-recorded and transcribed.

Data analysis

A research assistant conducted conventional content analysis on survey comments and transcripts from clinician interviews and the clinic staff focus group.^{18,19} Data from the three sources were reviewed several times to gain familiarity and understanding with the responses. After creating a preliminary codebook for each data source, codebooks were merged and codes were refined. Data from each source were then iteratively reviewed and coded. Codes were grouped into categories that were then further grouped under the main themes of “advantages” and “disadvantages” which were deduced from the interview question guide. Responses were counted to illustrate the number of times a category was mentioned by clinicians and nursing staff. This evaluation was designed as a quality improvement project and therefore did not require human subjects’ approval.

Results

Twenty-four clinicians consisting of 19 attending physicians, 3 fellows, and 2 residents responded to the questionnaire, and 23 (96%) were aware of the self-testing program and are included in this analysis. Of the 23 clinicians who were aware of the program, 91% (n=21) had referred MSM patients to conduct the self-testing process for STI testing. Of these 21 clinicians, 33% (n=7) guided their patients to the restroom and instructed them on how to perform self-testing while 24% (n=5) did so sometimes. Thirty-eight percent (8 of 21 respondents) referred 61–100% of their MSM patients to conduct self-testing. Eighty-six percent (18 of 21 respondents) indicated that the process for referring patients to self-testing was easy or very easy. Half of the clinicians (11 of 22 respondents) recommended MSM patients at ongoing risk for STI acquisition to return for self-testing in between provider visits.

Of the 23 clinicians, 78% percent (n=18) either agree or strongly agree that the self-testing program increased the likelihood that extragenital STI testing is performed (Figure 3). When asked their level of agreement to the statement, “The self-testing program helps overcome provider discomfort in performing sexual health histories and STI testing,” 39% (n=9) of clinicians either agree or strongly agree; 48% (n=11) were neutral; and 13% (n=3) disagreed. Seventy-four percent (n=17) of clinicians either agree or strongly agree that the self-testing program saved providers time. Overall, 91% (n=21) of the providers were either satisfied or very satisfied with the self-testing program at Madison Clinic, and 9% (n=2) were neither dissatisfied nor satisfied.

Through survey comments, interviews, and the focus group, clinical staff identified main advantages of the program: timesaving benefits, overcoming patient barriers, and increased access to testing. Perceived disadvantages included inadequate communication regarding responsibilities of directing patients and incorrect sample collection/labeling by patients. These results highlighted the programmatic aspects that influenced clinician utilization and nursing staff support of the self-testing program.

Perceived Advantages

Timesaving Benefit for Clinicians—Four interviewed clinicians perceived that the intervention saved them time that would have been spent on filling out paperwork and collecting samples for testing. As one clinician commented, “[The self-testing program] makes a big difference in being able to focus on other things during the visit. [STI testing] becomes a non-issue. It’s a 10-second conversation by having the patient do it at the end. I can manage other problems in a time pressure environment.” Another clinician noted that time is a barrier for providers and that the self-testing program has enabled STI testing at a higher frequency.

Overcoming Patient Discomfort—Four interviewed clinicians and one other clinician in their online survey commented on increased patient privacy as an advantage. According to one clinician, the self-testing program is most useful for overcoming patient discomfort with testing: “I have primarily been using [the self-testing process] for patients who are not comfortable with a provider performing the testing and are more likely to do it on their own

than to have a provider do it.” Another clinician remarked, “I have a transgender patient and she doesn’t want to have that exam with me because the whole idea of doing anal swabs goes against [her] gender image.” Nursing staff also perceived that some patients preferred to collect their own samples.

Increased Patient Access to Testing—Four interviewed clinicians and two other clinicians in their survey comments remarked that the self-testing program increased patient access to STI testing in between regular visits. Clinicians perceived that access to STI testing in between visits was important for patients who were at high risk of infections and for those who had difficulty scheduling appointments with their regular care provider. For example, one clinician stated, “Access is a huge issue. As a resident, it’s hard for people to get an appointment with me. [Patients] don’t always like getting an appointment with other people. So [patients] being able to come in and get it done is helpful.” Nursing staff commented that several patients have conducted self-testing multiple times without an appointment. They also observed that most walk-in patients who request self-testing have done the procedure before through the provider-referral process.

Perceived Disadvantages

Lack of Clarity Regarding Who is Responsible for Directing Patients—Since the instructional posters were intended to guide patients through the entire self-testing process without additional help, our protocol (Figure 1) did not detail whether clinicians and nursing staff were responsible for directing patients to the restroom and providing them with additional instructions to conduct self-testing. Whose responsibility it was to assist first-time testers became the main point of contention between the two groups.

Four interviewed clinicians and one surveyed clinician commented on the burden of responsibility for guiding first-time testers through the self-testing process. Clinicians preferred not to instruct patients for self-testing because it was a burden to explain the self-testing process to patients. One clinician remarked,

“If it were easier on the provider to have the patient do the self-testing, rather than having to go through everything with them, that would increase my interest in referring people to it. I hate to put more on the nurses, but... I don’t know exactly what’s in the bathroom. There’s uncertainty of explaining where things are and what the posters show. If the nurses are comfortable doing it, they would know common problems and it would not be as difficult.”

For several months after introduction of the self-testing program, there was confusion over who should be responsible for guiding patients through the process. Nursing staff asserted that clinicians were responsible for directing patients to the restroom, and they expressed frustrations towards those clinicians who did not do so. One medical assistant stated,

“The providers [are not good] at directing their patients to the restroom still. We have had several conversations about that and it’s still not happening... So I usually just take the patient to the restroom myself... [the providers] just kind of drop it in our hands and walk away and goes to the next patient.”

Nursing staff perceived a slowdown in clinic flow due to them having to figure out which patients were waiting for instructions for self-testing. Despite these frustrations, during the nursing staff focus group, the clinic manager and lead nurse sparked a conversation which concluded with the decision that the nursing staff would take responsibility of directing patient to ensure that the self-testing process runs smoothly.

Incorrect sample collection and labeling—Nursing staff, two interviewed clinicians and one survey comment cited incidents of patients not collecting or labeling samples correctly for testing. One medical assistant stated, “In the past four weeks, I received two calls from the lab for vials by patients who [did self-testing] and the specimens were incorrectly collected. They pierced the foil.” Some nursing staff members perceived that some clinicians gave incorrect instructions to patients, causing patients to make errors in the self-testing process. Another staff member commented, “It could just be patient error because they’re not reading instructions on how to do it.” Nursing staff also recalled incidents of missing labels or incorrect placement of labels when patients turned in the specimens.

Overall, the majority of surveyed clinicians indicated that the self-testing program was easy to use, helped increase the likelihood that STI testing would be completed, and saved time for providers. Most clinicians were either satisfied or very satisfied with the program. Interviewed clinicians perceived that the program was beneficial for clinicians and patients during the clinic visit, and it was also beneficial for patients outside of the clinic visit context. Nursing staff also observed both provider and patient benefits of the program. Despite perceived disadvantages, clinicians and nursing staff supported continuation of the self-testing program at the clinic.

Discussion

Existing literature on STI self-collection programs has mainly focused on patient acceptability of self-testing.^{14–16} This evaluation reports on the perceptions and acceptability of clinicians and nursing staff of a self-testing program that was implemented to increase extragenital STI testing rates in an HIV clinic setting. Overall both clinicians and nurses approve of and support the STI self-testing program, despite a few disadvantages.

As providers experience time constraints during clinic visits, prevention services that save providers’ time by removing them from providers’ direct responsibility are key. Patient self-collection and nurse-led STI screening programs have increased testing and demonstrated high patient acceptability.^{15,20} For our self-testing program, we shifted the responsibility of specimen collection onto patients and our analysis suggests that the intervention helped overcome provider barriers of lack of time and competing priorities.^{8,9} Clinicians perceived that the self-testing program increased the likelihood of STI testing, and our quantitative effectiveness analysis found that STI testing of pharyngeal, rectal, and urethral NG/CT significantly increased post-intervention.¹⁷ The timesaving benefit seemed to facilitate clinician referral to the self-testing process during a clinic visit and contributed to the increase in testing coverage. In a study by Richardson et al., most surveyed physicians reported that they would use vaginal swab self-testing in women for CT testing, but some

providers who did not prefer self-testing were concerned about patients conducting self-testing incorrectly and the time required to instruct patients on self-testing.²¹ These concerns echo the concerns that clinicians expressed in our evaluation.

Our evaluation results showed very few patient sample collection errors: 2 of 297 pharyngeal, 2 of 272 rectal, and 1 of 308 urethral specimens were rejected by the lab.¹⁷ This discrepancy between perceived frequency of self-collection errors and actual number of errors could be a result of nursing staff correcting some of the patients' errors (e.g. mislabeling of tubes) prior to sending specimens to the lab. Evaluation results should be communicated to providers and staff during earlier phases of the intervention to dispel concerns of patient collection errors and encourage providers to refer patients to conduct self-testing.

There was a misunderstanding between clinicians and nursing staff over their roles in guiding patients through the self-testing process due to our oversight and lack of detail in the protocol. In our protocol, we did not anticipate the need for either a clinician or nursing staff member to provide patients with verbal instructions for self-testing, as we expected the posters to be sufficient. However, this oversight was our major lesson learned, and the evaluation process allowed the focus group discussion among nursing staff to come to consensus regarding steps they could take to improve the program. The interaction between the clinic manager and lead nurse during this discussion highlighted the crucial role that clinic leadership has in sustaining implementation changes that help improve clinical practice²² and how program implementation is an iterative process. As demonstrated in implementation of routine HIV testing, researchers have found that organizational and leadership buy-in as necessary factors to successful program implementation.^{23,24}

Due to our small sample size of clinicians and nursing staff from a university-affiliated clinic, data may not be generalizable to other clinical settings. Additionally, our selection of participants may have the potential for bias. However, the evaluation team interviewed clinicians who made referrals that ranged from the least (one) to the most (eighteen) referrals to capture the full range of provider perceptions based on program utilization. Moreover, we believe that because of the diverse positions of clinicians, staff and nursing leads represented, we were able to gather overall insights of the favorable and unfavorable aspects of the intervention. Lastly, our evaluation design and timeline at 9 months post implementation precludes further assessment of sustainability of program and its long-term effects STI testing coverage among HIV-infected MSM. However, we can comment that the program is currently being used as part of routine care still in over 4 years after implementation.

STI self-testing programs have been promoted as a way to increase extragenital STI testing in MSM. However, there is little research on clinician and nursing staff acceptability of these programs. Their acceptability of an STI self-testing program is key to the program's adoption and success. Our findings demonstrate that the self-testing program was acceptable to clinicians and nursing staff as it has helped overcome provider and patient barriers to testing. The contrasting views and experiences of clinicians and nursing staff revealed program design aspects that required modifications of the original protocol. To improve

upon our program, HIV care clinics should consider nursing-led STI screening programs coupled with patient self-testing to address low rates of extragenital STI testing.

Acknowledgments

L.A.B. has received research support from Hologic.

Funding: This project was supported by the Centers for Disease Control and Prevention [University of Washington STD Training Center, PS1-1103] and the National Institutes of Health [grant number T32 AI07140 and K23 AI113185 to L.A.B.].

References

1. Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep*. 2015; 64(Rr-03):1–137.
2. Berry SA, Ghanem KG, Page KR, et al. Increased Gonorrhea and Chlamydia Testing Did Not Increase Case Detection in an HIV Clinical Cohort 1999 – 2007. *Sex Transm Infect*. 2011; 87(6): 469–475. [PubMed: 21745834]
3. Burchell AN, Grewal R, Allen VG, et al. Modest rise in chlamydia and gonorrhoea testing did not increase case detection in a clinical HIV cohort in Ontario, Canada. *Sex Transm Infect*. 2014; 90(8): 608–614. [PubMed: 25178285]
4. Hoover KW, Butler M, Workowski K, et al. STD screening of HIV-infected MSM in HIV clinics. *Sex Transm Dis*. 2010; 37(12):771–776. [PubMed: 20585275]
5. Raifman JR, Gebo KA, Mathews WC, et al. Gonorrhea and Chlamydia Case Detection Increased When Testing Increased in a Multisite US HIV Cohort, 2004–2014. *J Acquir Immune Defic Syndr*. 2017; 76(4):409–416. [PubMed: 28777262]
6. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sex Transm Infect*. 1999; 75(1):3–17. [PubMed: 10448335]
7. Kelley CF, Vaughan AS, Luisi N, et al. The Effect of High Rates of Bacterial Sexually Transmitted Infections on HIV Incidence in a Cohort of Black and White Men Who Have Sex with Men in Atlanta, Georgia. *AIDS Res Hum Retroviruses*. 2015; 31(6):587–592. [PubMed: 25719950]
8. Barbee LA, Dhanireddy S, Tat SA, et al. Barriers to Bacterial Sexually Transmitted Infection Testing of HIV-Infected Men Who Have Sex With Men Engaged in HIV Primary Care. *Sex Transm Dis*. 2015; 42(10):590–594. [PubMed: 26372931]
9. Carter JW Jr, Hart-Cooper GD, Butler MO, et al. Provider barriers prevent recommended sexually transmitted disease screening of HIV-infected men who have sex with men. *Sex Transm Dis*. 2014; 41(2):137–142. [PubMed: 24413496]
10. Dodge B, Van Der Pol B, Rosenberger JG, et al. Field collection of rectal samples for sexually transmitted infection diagnostics among men who have sex with men. *Int J STD AIDS*. 2010; 21(4):260–264. [PubMed: 20378897]
11. Alexander S, Ison C, Parry J, et al. Self-taken pharyngeal and rectal swabs are appropriate for the detection of Chlamydia trachomatis and Neisseria gonorrhoeae in asymptomatic men who have sex with men. *Sex Transm Infect*. 2008; 84(6):488–492. [PubMed: 19028953]
12. Freeman AH, Bernstein KT, Kohn RP, et al. Evaluation of self-collected versus clinician-collected swabs for the detection of Chlamydia trachomatis and Neisseria gonorrhoeae pharyngeal infection among men who have sex with men. *Sex Transm Dis*. 2011; 38(11):1036–1039. [PubMed: 21992980]
13. Sexton ME, Baker JJ, Nakagawa K, et al. How reliable is self-testing for gonorrhea and chlamydia among men who have sex with men? *J Fam Pract*. 2013; 62(2):70–78. [PubMed: 23405376]
14. van der Helm JJ, Hoebe CJ, van Rooijen MS, et al. High performance and acceptability of self-collected rectal swabs for diagnosis of Chlamydia trachomatis and Neisseria gonorrhoeae in men who have sex with men and women. *Sex Transm Dis*. 2009; 36(8):493–497. [PubMed: 19617869]

15. Soni S, White JA. Self-screening for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in the human immunodeficiency virus clinic—high yields and high acceptability. *Sex Transm Dis.* 2011; 38(12):1107–1109. [PubMed: 22082720]
16. Wayal S, Llewellyn C, Smith H, et al. Self-sampling for oropharyngeal and rectal specimens to screen for sexually transmitted infections: acceptability among men who have sex with men. *Sex Transm Infect.* 2009; 85(1):60–64. [PubMed: 18708480]
17. Barbee LA, Tat S, Dhanireddy S, et al. Implementation and Operational Research: Effectiveness and Patient Acceptability of a Sexually Transmitted Infection Self-Testing Program in an HIV Care Setting. *J Acquir Immune Defic Syndr.* 2016; 72(2):e26–31. [PubMed: 26959189]
18. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005; 15(9):1277–1288. [PubMed: 16204405]
19. Massey OT. A proposed model for the analysis and interpretation of focus groups in evaluation research. *Eval Program Plann.* 2011; 34(1):21–28. [PubMed: 20655593]
20. Hamlyn E, Barrett S, Kelsey J, et al. Improvement in screening for sexually transmitted infections in HIV-positive patients following implementation of a nurse-led clinic. *Int J STD AIDS.* 2007; 18(6):424–426. [PubMed: 17609038]
21. Richardson E, Sellors JW, Mackinnon S, et al. Prevalence of *Chlamydia trachomatis* infections and specimen collection preference among women, using self-collected vaginal swabs in community settings. *Sex Transm Dis.* 2003; 30(12):880–885. [PubMed: 14646634]
22. Donahue KE, Halladay JR, Wise A, et al. Facilitators of transforming primary care: a look under the hood at practice leadership. *Ann Fam Med.* 2013; 11(Suppl 1):S27–33. [PubMed: 23690383]
23. Goetz MB, Bowman C, Hoang T, et al. Implementing and evaluating a regional strategy to improve testing rates in VA patients at risk for HIV, utilizing the QUERI process as a guiding framework: QUERI Series. *Implement Sci.* 2008; 3:16. [PubMed: 18353185]
24. Johnson CV, Mimiaga MJ, Reisner SL, et al. Barriers and facilitators to routine HIV testing: perceptions from Massachusetts Community Health Center personnel. *AIDS Patient Care STDS.* 2011; 25(11):647–655. [PubMed: 22023315]

Summary

An evaluation of an STI self-testing program in an HIV clinic in Seattle, Washington found that the program was acceptable among healthcare providers.

Figure 1.
Intended Self-Testing Protocol

Figure 2.
STI Self-Testing Instructional Posters Displayed in the Restroom

Clinician Agreement to Acceptability Statements

Figure 3.
Clinician Agreement to Acceptability Statements