Title

Direct Questioning Is More Effective Than Patient-Initiated Report for the Detection of Sexually Transmitted Infections in a Primary Care HIV Clinic in Western Kenya

Journal

Sexually Transmitted Diseases, 40(2)

ISSN

0148-5717

Authors

Woo, Victoria Gah Hay
Cohen, Craig R
Bukusi, Elizabeth A
et al.

Publication Date

2013-02-01

DOI

10.1097/olq.0b013e318278bf97

Peer reviewed

Published in final edited form as:
Sex Transm Dis. 2013 February ; 40(2): 158–161. doi:10.1097/OLQ.0b013e318278bf97.

Direct Questioning Is More Effective Than Patient-Initiated Report for the Detection of Sexually Transmitted Infections in a Primary Care HIV Clinic in Western Kenya

Victoria Gah Hay Woo, MD[*,†], **Craig R. Cohen, MD, MPH**[†], **Elizabeth A. Bukusi, MBChB, MMed, PhD, MPH**[†,‡], and **Megan J. Huchko, MD, MPH**[†]

[*]Stanford University School of Medicine, Palo Alto

[†]Department of Obstetrics, Gynecology and Reproductive Sciences, University of California, San Francisco, San Francisco, CA

[‡]Research Care and Training Program, Center for Microbiology Research, Kenya Medical Research Institute, Nairobi, Kenya

Abstract

In resource-limited settings, detection of sexually transmitted infections (STIs) often relies on self-reported symptoms to initiate management. We found self-report demonstrated poor sensitivity for STI detection. Adding clinician-initiated questions about symptoms improved detection rates. Vaginal examination further increased sensitivity. Including clinician-initiated screening in resource-limited settings would improve management of treatable STIs.

Accurate diagnosis and treatment of sexually transmitted infections (STIs) prevents health complications such as pelvic inflammatory disease, ectopic pregnancy, and infertility.[1] HIV-infected populations are at higher risk for acquiring STIs.[2] The HIV epidemic has disproportionally affected resource-limited settings, and new infections continue to outpace treatment access,[3] making effective STI screening and treatment essential to comprehensive HIV care and prevention programs. However, in resource-limited settings, STI management has proven particularly challenging given limited funds, personnel, laboratory capacity, and space. Many HIV care clinics are not able to offer routine screening for STIs.[4]

The World Health Organization (WHO) algorithm for syndromic management of genital infections provides a strategy to help clinics in resource-limited settings address patient complaints of abnormal genital symptoms without relying on laboratory diagnostics and has been incorporated into many national guidelines.[5–7] However, syndromic management is limited because it depends on a patient presenting with a complaint. Effectiveness depends on the patient's comfort and willingness to address potentially sensitive subjects with their health care provider, which can be especially difficult in cultures where such discussion, especially between sexes, is considered taboo. Furthermore, women may not focus on reproductive health complaints when asked general or HIV-related screening questions and may only discuss reproductive health complaints if a clinician asks a more directed question. These limitations are complicated by the fact that many STIs are asymptomatic; there are few clinical predictors to identify who is at risk[8] and relaying solely on symptoms such as

Correspondence: Megan J. Huchko, MD, MPH, Department of Obstetrics, Gynecology and Reproductive Sciences, University of California, San Francisco, 50 Beale St, Suite 1200, San Francisco, CA 94105. megan.huchko@ucsf.edu.

Statement of disclosure: No conflict of interest exists for any of the authors.

vaginal discharge still underdiagnoses the actual number infected.[9] Despite this limitation, we believe that eliciting a more extensive history from patients could still help diagnose more disease. We hypothesized that the inclusion of focused questions, along with a basic physical examination, would increase the sensitivity and specificity of syndromic management for nonulcerative STIs among HIV-infected women in an HIV clinic in Kenya.

This cross-sectional study was carried out among a cohort of HIV-infected women enrolled at Family AIDS Care and Education Services clinic[10] in Kisumu, Kenya, between October 2010 and April 2011. Approval was received from the Committee for Human Research at the University of California, San Francisco, and the Kenya Medical Research Institute Ethical Review Committee, and women provided written informed consent before participation in the study. Women were recruited from the cervical cancer screening program that included nonpregnant women older than 23 years. Clinical and demographic characteristics were collected for each participant (age, latest $CD4^+$ count, WHO stage, antiretroviral use, contraception use, and number of sexual partners).

During their routine clinic visit, participants' HIV primary care provider asked them to report any health complaints with the following question: do you have any complaints today? At the end of their regular clinic visit, all participants underwent screening for abnormal vaginal discharge in 4 steps per our study protocol. First, participants were asked if they had any general vaginal symptoms (brief prompt). Next, all participants were asked specifically about complaints of genital pruritis and vaginal odor and discharge (detailed prompt). Because women who spontaneously reported vaginal symptoms had essentially already answered the brief and detailed prompt, we categorized them as positive. Participants then underwent a physical examination with a speculum examination, which included specimen collection for STI testing and assessment of cervical friability, mucopurulent discharge, erythema, or abnormal-appearing vaginal discharge (Fig. 1).

In this proof-of-concept study, we chose to focus only on nonulcerative cervical STIs, testing for *Neisseria gonorrhoeae, Chlamydia trachomatis*, and *Trichomonas vaginalis* (*TV*). Women were excluded if they had ulcerative or condylomatous genital lesions or evidence of candidiasis on speculum examination. Cervical swabs were evaluated for *N. gonorrhoeae* and *C. trachomatis* via nucleic acid amplification test (Roche Amplicor TM, Indianapolis, IN). Participants were tested for TV by wet mount (57.7%) and InPouch (Biomed Diagnostics, White City, OR) (42.3%) from swabs collected from the posterior vaginal fornix.

Using laboratory confirmation as the gold standard, sensitivity, specificity, and positive predictive value were calculated for each method of ascertainment: unprompted, brief prompt, detailed prompt, and gynecologic examination. Statistical analysis was performed using STATA 11 (StataCorp LP, College Station, TX).

Demographic and clinical information for the 334 women enrolled in the study are reported in Table 1. The overall prevalence of a nonulcerative STI was 12.3% (41/334). The prevalence of *N. gonorrhoeae* was 1.8% (6/334), that of *C. trachomatis* was 0.9% (3/334), and that of TV was 9.9% (33/334). Only 13 women (3.9%) reported symptoms unprompted, after a general health assessment. When using the clinician-initiated diagnostic strategies, 61 (18.3%) women reported symptoms after a brief prompt and 63 (18.8%) after a detailed prompt. Twenty-three (6.9%) women had a pelvic examination suggestive of cervicovaginal infection (Table 2). Sensitivity, specificity, and positive predictive values for any measured STI were 0%, 95.6%, and 0% based only on self-report. With the use of clinician-initiated diagnostic strategies, sensitivity, specificity, and positive predictive values were 19.5%,

81.9%, and 13.1% for brief prompt; 19.5%, 81.2%, and 12.7% for detailed prompt; and 31.7%, 96.6% and 56.5%, respectively, for the pelvic examination (Fig. 2)

The proportion of STIs detected by brief prompt was significantly different from self-report alone (difference = 0.1951, $P < 0.01$). There was no significant difference between proportions of STIs detected on brief and detailed prompting, and in fact, the proportions were nearly identical. Thus, further analysis was done with only using results from the brief prompt. The proportion of STIs detected by pelvic examination was also significantly different from results found by unprompted report (difference = 0.244, $P < 0.01$) and brief prompt (difference = 0.122, $P < 0.05$).

Of the 13 women self-reporting STI-related symptoms unprompted, none had laboratory-confirmed disease. The false-positive rate was 86.9% (53/61) for brief prompt and 43.4% (10/23) for gynecologic examination. Seventy-eight percent (32/41) of women with positive STI laboratory testing result reported no symptoms at all, and 31.3% (10/32) of these women would have been diagnosed as having an STI on clinical examination. The false-negative rate was 12.7% (41/321) for the unprompted self-report, 12.1% (33/273) for the brief prompt, and 9.0% (38/311) for the gynecologic examination.

Our study showed that reliance on unprompted self-report in response to a general health question resulted in a very poor sensitivity for detecting nonulcerative STIs in HIV-infected women. In our sample, no women who self-reported symptoms had one of the infections we were testing for, and no women with the infections we were looking for reported symptoms without directed questioning. Thus, basing management of STIs in resource-limited settings solely on unprompted patient-initiated report via the syndrome management protocol appears inadequate.

The addition of clinician-initiated STI-specific screening strategies improved the detection of treatable STIs, with no difference observed between the use of brief questions and the use of detailed questions. The addition of a gynecologic examination led to the greatest improvement in sensitivity and specificity. Our experience supports the introduction of a single, simple question to improve the accuracy of screening for STIs in the absence of laboratory testing capability. Where feasible, our findings also support a basic gynecologic examination, including speculum, especially for detection of *TV*.

False-positive rates were high for all diagnostic methods, which is likely attributable to the overall low prevalence of disease. It is concerning, however, that management based on unprompted patient report of symptoms or the current standard of care in Kenya and much of sub-Saharan Africa had a 100% false-positive rate.[11] Many antibiotics used to treat these STIs have low barriers to resistance, and syndromic management is implemented in settings where access to second-line antibiotics is limited, making the judicious use of the available therapies essential.[12]

One limitation to our study was that we did not have the resources to test for bacterial vaginosis (BV), one of the most common causes of abnormal vaginal discharge worldwide including sub-Saharan Africa.[13] Although excluding BV would have no impact on the high proportion of false negatives, it is likely that the sensitivities for all groups would have been increased if we had included BV in our study.

Almost three quarters of the women found to have an abnormal vaginal discharge on examination had a laboratory-diagnosed STI, indicating that physical examination was an effective way of identifying women likely to have an STI. The inclusion of a genitourinary examination in STI screening in a resource-limited setting is not always possible because there is a need for equipment, sterilization capacity, and a private examination area.

However, in settings where an examination is feasible, performing one could greatly increase the accuracy of STI screening for asymptomatic women.

Although alternative solutions such as point-of-care diagnostics that do not require special equipment or laboratory capacity are still needed, our study demonstrates that improved clinical ascertainment of STI signs and symptoms in women can be undertaken in the meantime to improve the diagnosis and treatment of STIs in women infected with HIV. In particular, the simple addition of even just 1 clinician-initiated, focused question and/or a speculum examination greatly increased the ability to accurately diagnose STIs in this vulnerable population of HIV-infected women.

Acknowledgments

We would like to thank our study and clinical staff at Family AIDS Care and Education Services for their hard work in sexually transmitted infection screening and treatment. We also thank the Director of Kenya Medical Research Institute and the Director of Center of Microbiology Research for their permission to publish this manuscript.

Funding: Victoria Woo was supported by a grant from the Doris Duke Charitable Foundation to the University of California, San Francisco. Megan Huchko was supported by the Clinical and Translational Science Institute, University of California, San Francisco, KL2/KL2 RR024130-04 program.

REFERENCES

1. Soper DE. Pelvic inflammatory disease. Obstet Gynecol. 2010; 116:419–428. [PubMed: 20664404]
2. Rottingen JA, William Cameron D, Garnett GP. A systematic review of the epidemiologic interactions between classic sexually transmitted diseases and HIV. Sex Transm Dis. 2001; 28:579–597. [PubMed: 11689757]
3. Anonymous. UNAIDS Global report 2010. UNAIDS report on the global AIDS epidemic 2010. Available at: http://www.unaids.org/globalreport/Global_report.htm.
4. Spaar A, Graber C, Dabis F, et al. Prioritising prevention strategies for patients in antiretroviral treatment programmes in resource-limited settings. AIDS Care. 2010; 22:775–783. [PubMed: 20473792]
5. World Health Organization. Training modules for the syndromic management of sexually transmitted infections. World Health Organization; 2007. Available at: http://www.who.int/reproductivehealth/publications/rtis/9789241593407index/en/index.html.
6. World Health Organization. Guidelines for the management of sexually transmitted infections. World Health Organization; 2003. Available at: http://whqlibdoc.who.int/publications/2003/9241546263.pdf.
7. Vishwanath S, Talwar V, Prasad R, et al. Syndromic management of vaginal discharge among women in a reproductive health clinic in India. Sex Transm Infect. 2000; 76:303–306. [PubMed: 11026889]
8. Lewis DA, Chirwa TF, Msimang VM, et al. Urethritis/Cervicitis pathogen prevalence and associated risk factors among asymptomatic HIV-infected patients in South Africa. Sex Transm Dis. 2012; 39:531–536. [PubMed: 22706215]
9. Milsana K, Maicke N, Werner L, et al. Symptomatic vaginal discharge is a poor predictor of sexually transmitted infections and genital tract inflammation in high-risk women in South Africa. J Infect Dis. 2012; 206:6–14. [PubMed: 22517910]
10. Kulzer JL, Penner JA, Marima R, et al. Family model of HIV care and treatment: A retrospective study in Kenya. J Int AIDS Soc. 2012; 15:8. [PubMed: 22353553]
11. Liambila, W.; Awuor, C.; Natecho, A., et al. Report of high level Consultative Meeting. NASCOP; 2009. Revitalizing the national STI/RTI control activities in Kenya. Available at: www.nacc.or.ke/attachments/article/102/STI.pdf.

12. Chisholm SA, Neal TJ, Alawattegama AB, et al. Emergence of high-level azithromycin resistance in *Neisseria gonorrhoeae* in England and Wales. J Antimicrob Chemother. 2009; 64:353–358. [PubMed: 19468025]

13. Sewankambo N, Gray RH, Wawer MJ, et al. HIV-1 infection associated with abnormal vaginal flora morphology and bacterial vaginosis. Lancet. 1997; 350:546–550. [PubMed: 9284776]

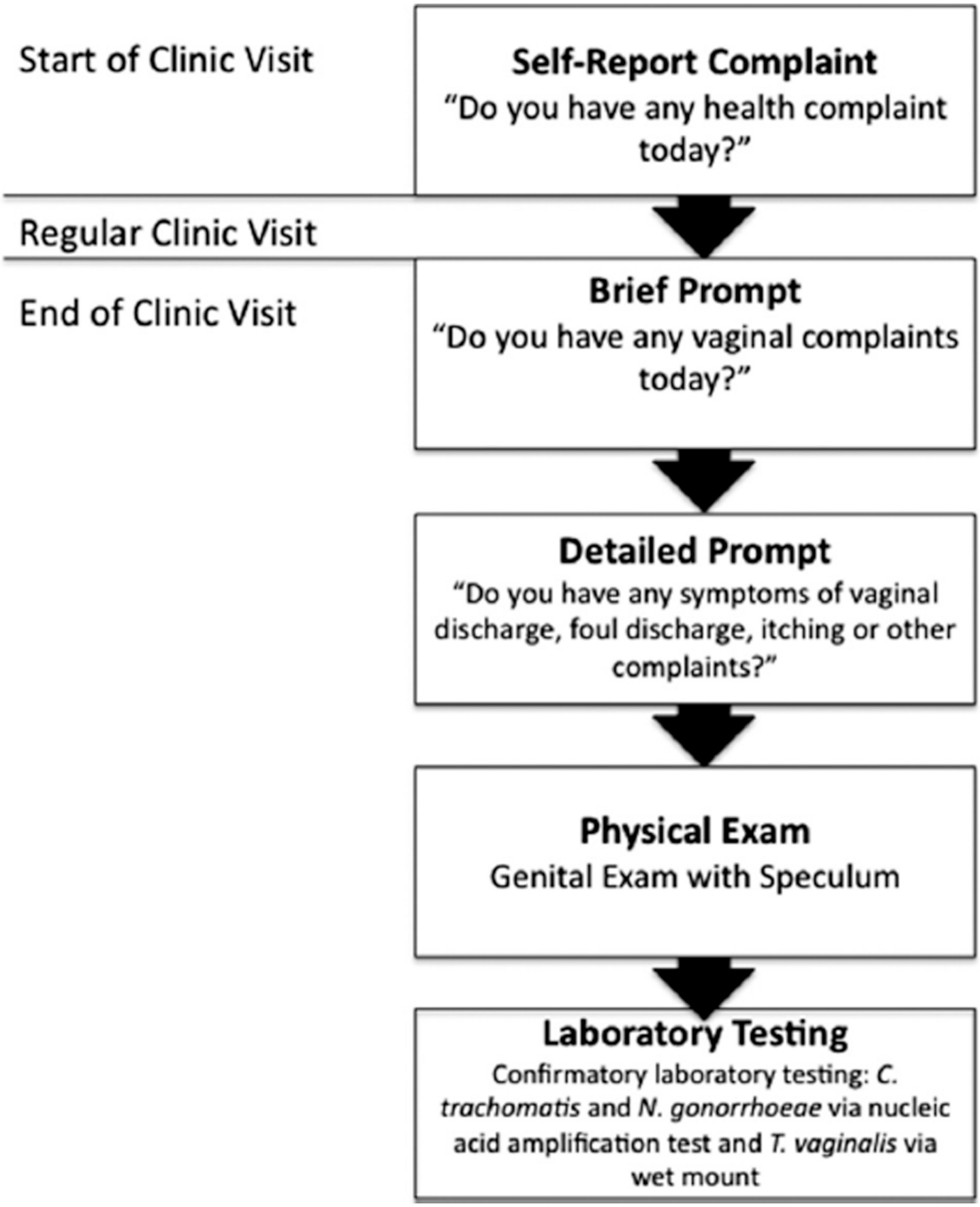

Figure 1.
Study schematic depicting the order of evaluation methods for diagnosis of STIs in HIV-infected women in Western Kenya.

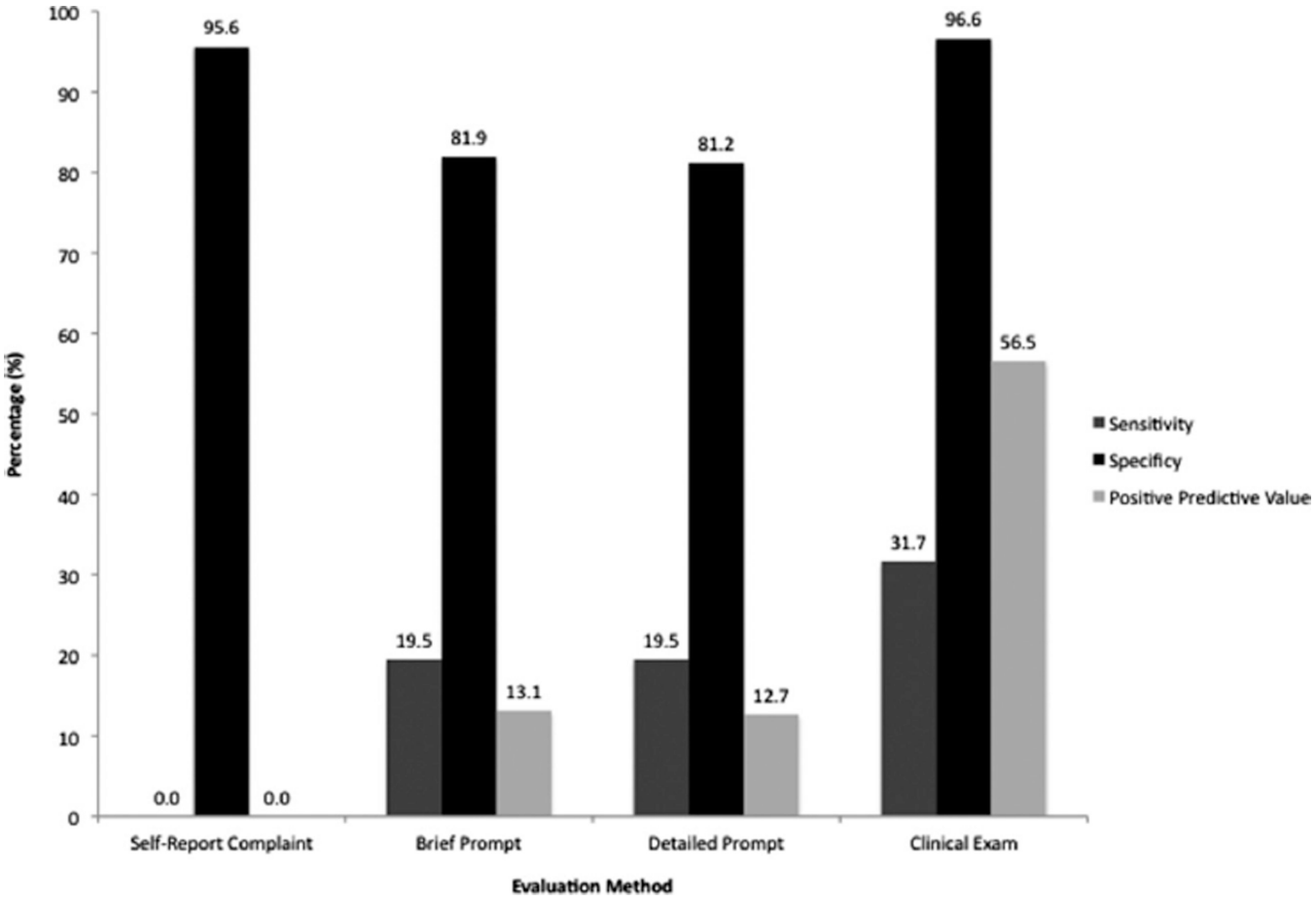

Figure 2.

Sensitivity, specificity, and positive predictive value of 4 evaluation methods for diagnosis of STIs: self-report in response to general health question at a routine visit, brief prompt defined as a single screening question: detailed prompt defined as specific questions targeted toward STI detection, and clinical examination defined as genital examination with speculum.

TABLE 1

Baseline Clinical and Demographic Characteristics of 334 HIV-Infected Women Presenting in an HIV Clinic for Routine Visit With and Without Diagnosed Nonulcerative STI, Defined as *N. gonorrhoeae, C. trachomatis*, and *TG*

Baseline Characteristics	Women Diagnosed as Having an STI (n = 41)	Women Without a Diagnosed STI (n = 293)	*P*
Age, mean ± SD, y	30.8 ± 1.1	32.8 ± 0.4	0.12
CD4 count, mean cells ± SD, mm^3	505 ± 55.6	469 ± 15.4	0.45
WHO stage, %			0.14
1	7 (19.4)	100 (35.5)	
2	11 (30.6)	75 (26.6)	
3	16 (44.4)	82 (29.1)	
4	2 (5.6)	25 (8.9)	
Antiretroviral use, %	24 (63.2)	205 (70.0)	0.39
Hormonal contraception use, %	10 (26.3)	70 (23.9)	0.74
Age at first intercourse, mean ± SD, y	16.0 ± 2.1	16.9 ± 2.7	0.05
Lifetime number of sexual partners, mean ± SD	4.6 ± 3.7	3.9 ± 6.0	0.49
Currently sexually active, %	28 (73.7)	221 (75.7)	0.79

TABLE 2

The Number of HIV-Infected Women With Positive and Negative Results for 4 Different Evaluation Methods Compared With Positive and Negative Results for the Gold Standard, Laboratory Testing of STIs, Defined as *N. gonorrhoeae, C. trachomatis*, and *TV* (n = 334)

	Laboratory Testing	
	Positive	**Negative**
Self-report complaint		
Positive	0	13
Negative	41	280
Brief ascertainment		
Positive	8	53
Negative	33	240
Detailed Ascertainment		
Positive	8	55
Negative	33	238
Pelvic examination		
Positive	13	10
Negative	28	283