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Attitude and behavior changes among gay and bisexual men after use of rapid home HIV tests to screen sexual partners

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Abstract

HIV testing can now be self-administered outside clinical settings through the purchase of home testing (HT) kits. Individuals also can use the kits to perform a test on a potential sexual partner prior to intercourse. We provided a three-month supply of HT kits to men who reported multiple male partners and little or no condom use for anal intercourse. Participants used the test kits with partners in over 100 occasions. At the end of the study, approximately half of the participants described shifts in their attitudes and/or behaviors related to sexual risk. Reported changes included increased awareness of risk, increased discussion of STI/HIV safety measures, changes in partner choice and heightened consciousness of partner thinking. Easy access to HT kits may be a risk-reduction strategy for men with a high risk profile because their regular use could have an impact beyond the specific sexual encounter.

Keywords

HIV; rapid testing; home testing; MSM; gay men; harm reduction

INTRODUCTION

HIV testing has long been viewed as an opportunity to encourage patient sensitization to risk [1]. At an early date in the epidemic, counseling by trained educators or health care providers was incorporated into many testing services, sometimes by law. HIV testing, unlike other screening procedures, became intimately linked to counseling in programs that espoused “voluntary counseling and testing” (VCT) in an attempt to influence testers’ future behavior. Extensive research has been conducted on how much and what kind of counseling leads to reduced HIV risk practices [2–6].

However, there is some evidence that the mere act of testing may have an impact on risk perceptions, attitudes and/or practices. In the large RESPECT-1 randomized clinical trial that considered the relative merits of counseling in two or four sessions compared to no counseling, all three arms showed movement toward lower risk, which was sustained at 12

months even though the reductions in the counseling arms were consistently greater [4]. As testing technology evolves and makes possible greater individual management of the testing process, self-testing and partner testing could add new influences on risk perception and eventually behavior.

The Food & Drug Administration recently authorized over-the-counter sale of the OraQuick Advance Rapid HIV-1/2® home test kit for self-administered HIV testing. Although the FDA did not recommend its use for screening sexual partners for HIV, the possibility of doing so now exists: HIV-negative men can obtain information on a partner's HIV status by requesting use of the rapid oral swab test before a sexual encounter. Thus men employing a "serosorting" strategy [7, 8] can partially verify HIV-negative partners' self-report, evaluate refusals to test and subsequently consider modifying their sexual practices [9–11]. Although very recent infections are not detected by an antibody test, many gay and bisexual men now attempting to serosort without such a tool run a high risk of acquiring HIV [12–18].

The immediate utility of a rapid home test (HT) would be to determine the partner's HIV serostatus with a greater degree of reliability than simply by asking. This could facilitate better informed decision-making for that particular sexual encounter [11]. However, routine use of HT might have additional, longer-lasting effects. Consistently asking partners to use a home test might stimulate a habit of conversation or sexual negotiation that had not occurred routinely in the past, and repeated testing of a variety of partners could alter the HT user's attitudes toward his overall sexual or relational practices, including his level of risk, his choice of partners, his sexual routines, or other cognitive or emotional aspects. Such shifts would have implications for long-term sexual risk management given that the relationship between behavioral intentions and attitudes with regards to HIV risk is well established [19]. Furthermore, many conceptual frameworks in health psychology posit that a change in behavioral intentions is predictive of behavior change itself [20–22]. Evidence in support of this hypothesis is extensive [23].

METHODS

Study candidates were recruited in New York City either in person or via Web sites using an advertisement indicating that researchers were studying possible uses of a rapid HIV home test. Those interested in participating were asked to call the research office and were administered a brief pre-screening questionnaire. Candidates were excluded if they did not have male partners; were HIV-positive; were in a monogamous relationship; were not interested in using HT with sexual partners; practiced receptive anal intercourse (RAI) fewer than three times per month; or used condoms in more than 20% of their RAI occasions. Those who qualified were invited to an in-person screening interview (Visit 1). After consent procedures, men were given a detailed explanation about HT and its window-period limitations. They then completed a computer assisted self-interview (CASI), which included questions about recent sexual behavior, prior HIV testing, risk concerns (using a 10-point Likert scale from 1=I'll do nothing to avoid getting HIV to 10=I'll do everything to avoid getting HIV, even not having sex), and risk perceptions for HIV and other sexually transmitted infections. The CASI instrument also included the Perceived Sexual Control Inventory [24], (19 items, Cronbach $\alpha = .88$) the Sexual Sensation-Seeking Scale [25] (9

items, Cronbach $\alpha = .75$) and questions about substance use. They then were given written instructions on using the OraQuick® test kit and proceeded to test themselves while monitored by a researcher. Negative results were confirmed using Clearview Complete HIV 1/2®, a blood-based rapid test. To enter into the study, candidates who attended Visit 1 needed to meet the previous eligibility requirements and in addition: test HIV-negative in both assays; understand that unprotected RAI may lead to HIV transmission and the implications of the period in which antibody tests do not detect recent infections; report that they were likely to use HT to screen potential sexual partners; and feel capable of recognizing and handling potentially violent situations that might arise from proposing to use the test.

Study candidates who met eligibility criteria returned to the research offices for Visit 2 on a subsequent day. After completing a new consent process, they entered the 3-month study. They were given condoms, a bag containing 16 HT kits, written instructions on how to use the kit, a card with HIV- and violence-related community resources, the study Web site address, and a 24-hour hotline number they could call for assistance from two clinical psychologists supervising the study. Participants were also asked to call an interactive voice response system (IVRS) at least weekly to report their sexual behavior and HT use.

Three months after Visit 2, participants returned for an in-depth interview with a clinical psychologist aimed at exploring the participants' experiences in using (or not using) HT with sexual partners. During the interviews, participants were asked to discuss three experiences of HT use with sexual partners, which could include experiences in which a partner refused to be tested. At a later point in the interview, participants were asked how, in general, HT use affected their HIV risk behavior. As the study was not designed as an intervention to alter participant attitudes or behaviors, they were not asked to repeat the CASI assessment on sexual practices and related topics. They received between \$30 and \$70 as compensation for their time for each of the visits, plus a small incentive per call and a bonus if calls were received at least once per week. The total could reach \$190. Study procedures were approved by the New York State Psychiatric Institute Institutional Review Board.

Data Analyses

Replies to the CASI were analyzed using SPSS statistical software. Participants who reported attitude and/or behavior shifts were compared to those who did not using t-tests or Mann-Whitney tests for count variables with skewed distributions.

In-depth interviews were recorded, transcribed and checked for accuracy. Repeated reading of transcripts by a team of four researchers led to the identification of the main themes that constituted the basis of codebook development. Codes were defined with inclusion and exclusion criteria including examples. All transcripts were double-coded, and discrepancies were discussed until consensus was reached. During the process of coding, researchers noted that a substantial number of participants reported a shift in their perceptions of their own risk behavior, sometimes (but not always) accompanied by changes in these behaviors. Although this outcome had not been anticipated in the elaboration of the interview guide, we incorporated the material into two codes, "Long-term impact of HT on sexual behavior" and

“Impact on HIV concerns.” We also reread material coded under “Impact of HT on sexual encounter,” which focused on the immediate effect of using HT in each specific instance. Two researchers independently analyzed respondents’ comments and categorized them as to whether or not they reported: (A) a broad shift in attitudes and/or feelings about their HIV-related sexual risk or general sexual practices (including men who said they were more aware of HIV; thought about it more; realized that their behavior had been unsafe; or questioned their past behavior related to HIV risk or partner choice); or took measures to reduce risk even if inconsistently; and (B) those who reported no reduction in their prior risk behavior nor change in their attitudes toward it. Disagreements on categorization were resolved through joint review of each case until consensus was reached.

RESULTS

Participant Characteristics

As shown in Table I, the mean age of the participants ($n=27$) was 34 years, and the mean annual income was approximately \$20,000. Approximately 60% of participants were non-White, and 75% had not completed college; one-third had a high school education or less. Participants had a mean of 15 sexual partners during the previous 3 months with approximately 14 occasions of receptive anal intercourse (RAI) and 12 occasions of insertive anal intercourse (IAI). On average, 74% of RAI and 78% of IAI occasions were without condoms.

Reported Risk Attitudes and Sexual Behaviors after Three Months of HT Use

Fourteen of the study participants (52%, hereafter Group A, $n=14$) described changes in their thinking or feelings about sexual risk and/or a reduction in the risk practices that had occurred over the 3-month study period. In nearly all cases, they associated these changes with their access to and use of the HT kits. Thirteen participants (48%, hereafter Group B, $n=13$) reported no change in attitudes, feelings, or practices.

There were no significant differences between Group A and Group B on age, income, motivation to remain HIV-negative, sexual sensation-seeking, number of sexual partners, number of times tested for HIV, or frequency of unprotected anal sex (see Table II). However, on average Group A scored lower on taking actions to avoid HIV infection (6.00 vs. 7.83; $t = 2.16$, $df = 24$, $p = .041$); lower on perceived sexual control (2.21 vs. 2.66; $t = 2.70$, $df = 25$, $p = .012$); and marginally higher on perceptions of risk for an STD in the near future (5.43 vs. 3.42, $t = -2.06$, $p = .051$), although not for perception of risk for HIV (4.62 vs. 3.42, $t = -1.51$, $p = 0.147$).

In interviews at the conclusion of the three-month study, Group A participants reported changes ranging from general, sometimes vague, references to a new attitude toward risk to increased awareness of the thoughts or decision-making processes of partners, sometimes resulting in a gradual alteration of behavioral patterns. Usually, though not always, the participants welcomed these new attitudes or behaviors.

Changes in attitude

The changes described by the men in Group A were varied. In some cases participants reported a greater overall awareness of HIV and sexual risk, e.g., that the use of HT “just made me more conscious” [#1020, 56, White].

So it just taught me how to be more careful and ask questions, always.

[#1011, 26, Hispanic]

I didn't have that in the forefront of my thinking before... So it's kind of put me on a different course, my sexuality, which is a positive thing, because each time before I'm having sex, I was thinking about the study with the tests, it kept reinforcing, you know, be safe, be safe, be safe, be safe.

[#1016, 43, White]

The mere presence of test kits in the home or in one's possession could stimulate a participant's consideration of HIV-related risk.

If you had 20 kits in your house... it definitely, it's more of a—it's harder to not think about it, we'll put it that way. It's harder to put it out of your head, you know, yeah.

[#1047, 29, White]

[Before having the tests,] I would have just had sex with him without thinking about it, even without asking.... I guess it just made me think more than anything, so... It made me think about whether a person's negative or positive.

[#1050, 28, African American]

These changes appear to be more sustained and are distinct from the men's immediate reactions to the possibility or execution of on-the-spot HIV testing with a new partner. For the men described here, the shift often resonated beyond the individual sexual encounter and affected their general feelings toward their sexual lives.

I just don't feel comfortable in the party atmosphere anymore. You know, it's just gotten to the point where completely risky situations don't feel safe.

[#1015, 33, White]

Reexamination of past behavior

A specific aspect of the changes related by several participants was a critical review of their own past actions during the exit interview. This re-examination sometimes was attributed explicitly to the use of HT during the 3-month study.

It was a lot more reassuring of my actions, and it gave me a good outlook on my past and how I should have been, compared to how it is now, so it was, it was a good outlook on it.

[#1035, 19, Hispanic]

I think a lot more about anything before I do it. The people that I'm attracted to, you know, is it coming from a place of loneliness? Like, you know, I really did a

lot of looking at myself in this, and why do I want to connect with these people and on what level, you know, and where is that coming from, where is the motivation for this? ... And I found out that there are certain types of partners I don't want to be with.

[#1015, 33, White]

Some of the new reflections involved ways in which the participants' prior risk-avoidance strategies might have been unreliable even though the reflection might not have influenced the sexual encounter as it was unfolding.

And then afterwards I sort of realized, you know, there was a whole conversation that I didn't even have, which was, you know, like—I mean, granted, I mean, even having the unsafe sex, but I never asked him about, you know, in the last three months any chance of exposure?... Like, I didn't—there were more questions, and I sort of just stopped at, Do the test, you know? So it was a good sort of reminder to me.

[#1050, 28, African American]

Not surprisingly, the experience of testing a partner HIV-positive was a powerful signal of the participants' good fortune in avoiding infection.

Um, after the boy [tested positive], after the boy from [a local] university, I, you know, just wanted to take a little break from meeting men. It was just, oh my god, you know.

Because then you look at the—you like, wow, what if that was me, you know? Yeah, and I, um, also had chosen not to ask [about HIV status].... I probably did have sex with people who were, who were positive, and I chose not to find out because I wanted to just not have the mood fucked up.

[#1028, 31, African American]

Increased awareness of partner subjectivity

Some participant comments reflected their increased awareness of what might be going through the mind of a potential partner.

I'd say just, you know, me thinking about it more and being more aware that, you know, people could be lying or even just don't know that they have, you know, something.

[#1050, 28, African American]

A concrete manifestation of the heightened awareness of what was going through the partner's mind was a reported increase in risk negotiations, conversations that occurred as a logical result of the request to test before the sexual encounter.

I [Interviewer]: *In general, how much is it then discussed if it's going to be bareback or not?*

R [Respondent]: *In the past, almost never. So this has been a big change for me.*

[#1015, 33, White]

So now I ask questions like—I ask them straight-out, do you, is, do you have anything?

[#1011, 26, Hispanic]

One participant noted that possession of the home test kit enabled him to raise a topic that he previously had found awkward or easy to avoid.

One reason I did—wanted to do it [the study] was to help find a way for me to actually implement the, even the conversation about STDs and which I find a difficult conversation to bring up and to have, and, and it kind of lent a reality to the situation, sort of made it more real.

[#1052, 38, White]

Another way in which partner subjectivity began to loom larger in participants' minds was the experience of a prospective partner's refusal to be tested. Participants were then compelled by the new circumstance to evaluate the meaning of the refusal. Some participants reported paying attention to non-verbal messages and body language of their potential partners—including when the test was eventually agreed to—and drew conclusions from them.

I: He was willing to take it, no problem?

R: No problem, but he had like a funny face like he was—that's how I know he didn't get tested in a long time, you know what I mean?

[#1030, 26, African American]

While the assessment of partner reactions occurred during specific incidents, use of the test kits over time sometimes led to a cumulative effect as in this case where the participant perceived that many potential or past sexual partners might have been HIV-positive.

[I'm] a little bit more cautious. I'm quicker to carry a condom nowadays because I do know that there's, you know, people out there that either don't know their statuses and don't want to know.

[#1030, 26, African American]

Changes in practices

In addition to the ways in which using HT altered the dynamics of specific sexual encounters, some of the men in Group A also reported having fewer sexual partners, evaluating them differently, and/or modifying specific sexual practices including reduced occasions of unprotected anal intercourse, especially as the receptive partner.

Well, with the—I started off, I wasn't really using protective sex like that. That's how I started off, and now I'm using safe sex, and now I just have one partner.

(#1032, 25, African American)

I still, I have a little trouble with saying no especially when I'm in the mood, you know, it's like—and that's why I'm trying to pick better partners or better sex partners.

[#1015, 33, White]

The change was usually linked directly to study participation.

[B]efore that, I was—I took chances. You know, I never had no testing going. I never had the test to do it, and I took chances.

[#1014, 25, African American]

Another participant reported that his sexual network was now more restricted to known partners and included fewer recent acquaintances.

I have the test, I carry one in my car, I carry one in my backpack, just in case, but I kind of had less sex experience with strangers. Like, I stick together with more, with the guys that got tested with me and with my previous partners than to meet up with other people.

[#1029, 32, Hispanic]

Although usually the changes were gradual and involved partial modifications, one man reported a complete shift in his habitual sexual repertoire.

[I]t made me more into practicing safe sex because I realized that I would never—or I would try never to have sex with somebody again unless they were tested first. And then I realized since that's the case, there's no need for me to go to parks or bathhouses or video booths or that kind of thing.

[#1020, 56, White]

In other cases the shift reflected consolidation of a desired movement toward greater caution, a logical consequence of the study's inclusion criteria, which required both that the men report a high level of risk practices and that they were interested in an HIV prevention strategy. Four participants reported that their decisions to volunteer for the study were motivated by a preexisting desire to reduce risk. ("I had already been moving toward greater safety. This reinforced it." #1022, 28, mixed race).

Regrets

Occasionally, Group A participants stated that they were not entirely pleased with the changes.

[I]t's turning it [sex] into something that's just not fun anymore. I mean, you have to do all this thinking. Sometimes you just don't want to think.

[#1024, 23 mixed race]

I: What was it like for you to have sex with somebody that you didn't use the test with?

R: *It totally is -- oh, that's a good question because it's definitely more anxiety provoking. (pause) Yes, absolutely because there is a way to know. And because I've been in the study, you kind of ruined me that way.*

I: *(laughter)*

R: *You know, I don't know if that's a good thing or not, but I'm kind of ruined from having sex with people where I don't know what their status is.*

[#1021, 58, African American]

No change

Thirteen participants (Group B, n=13, 48%) reported no change in their usual sexual practices or attitudes.

I: *So then when someone said no, what would happen afterwards?*

R: *Same thing that was going to happen before.*

[#1053, 38, White]

So I don't think the risk really changed, changed. The test made it easier to, I guess, like reaffirm the decision that I wanted to bareback with this person anyway. The test just made it, like clinched the deal, I guess you could say. But I had barebacked, you know, before I had the opportunity to test.

[#1017, 47, White]

I've never had anything, you know. It just—I pay attention. I just, I'm so alert, you know, when I'm going to have a good time, I'm going to have a good time.

[#1024, 23, mixed race]

Relaxation of risk concerns

Although all participants in this study had been selected based on their infrequent or nonexistent condom use, eleven participants (41%) from both Groups A and B said they experienced less anxiety about UAI once partners had tested HIV-negative. They frequently said testing provided relief or “put me at ease” (#1042, 52, African American) about dispensing with condom use and reduced the “morning-after” discomfort. Sometimes they spoke of obtaining a deeper and more satisfying sexual experience:

Somehow the relief of knowing that I really don't have to use this condom, I don't have to worry about this sort of thing just made the sexual acts longer and more vigorous in responding to it. Yes, because it carried a new kind of relaxedness that I used to have when I was in my 20s before the epidemic.

(#1021, 58, African American)

The changes were not always unidirectional in terms of risk. One man described a shift in his attitudes in which barebacking choices became easier while simultaneously noting his continued awareness of the need for precautions.

I had several conversations with my friends, and my friend just got the—just told me not to get too comfortable with that [testing partners], and he always kept in mind that it was the window period, and he always kept in mind that, to be careful about it. But yeah, I got more comfortable, and I got to enjoy more my sexual activity with them because I knew that I was not bringing any risk to nobody.

[#1029, 32, Hispanic]

Whether or not study participation generated the opportunity for this participant's discussion with friends, he describes both a more relaxed attitude about his risk-taking decisions and fewer contacts with new acquaintances as well as an awareness of the shortcomings of the HT approach.

DISCUSSION

The experience of possessing and storing HIV home test kits, asking partners to use them and proceeding to do so coincided with a generalized shift in the expressed attitudes and feelings of about half of the study participants. The reactions were not uniform: some said they became more selective about partners and/or the practices they were willing to engage in; others reported that they discussed safety more consistently. For some, the conversations held before testing and partners' occasional refusals to test generated speculation about partner motivations and attitudes and thus more consistent reflection about their own sexual lives. As a group, those who reported these changes tended to have lower initial scores on sexual control and motivation to avoid HIV as well as higher expectations of acquiring an STI, suggesting they might be both generally cognizant of their risks while at the same time not anticipating that a partner could be HIV-positive. This group may have come into the study with lower self-efficacy for condom use and found that possession of the test kits and introducing the testing possibility into the sexual encounter had increased their sense of control over what was taking place.

Approximately half of participants did not experience changes in attitudes or behavior; they scored higher for sexual control and had lower expectations of acquiring an STI. These men may have been more confident of their current safety strategies or more comfortable with their choices and the risks involved.

Although Group A participants frequently attributed the changes in their sexual risk attitudes and related behaviors to having access to the HT kits, there are other possible influences, including their role as study participants, the impact on risk of the extensive surveys participants completed at the outset, and the HIV test they agreed to as a condition of joining the study.

The study involved a small sample and cannot be generalized to the broader population of gay and bisexual men. In addition, the study's eligibility criteria limited participation to a particularly narrow group: those men with high-risk practices who nonetheless were willing to take part in a new approach to HIV prevention. Thus, some of the participants' accounts of changed attitudes and behaviors could be attributed to external factors if their decision to enter the study occurred at the same time as they were reevaluating their current actions.

Even in these cases, however, HT may have boosted their capacity to fulfill their stated desires; that is, access to HT kits might have strengthened their commitment to the new behaviors they were ready to adopt.

The study was done when HT was not available for commercial sale; this condition has since been permanently altered. However, HT is unlikely to be adopted widely in most gay sexual networks as long as the relatively high initial cost (roughly \$40 per test kit) is maintained. Also, we have no evidence that the changes were sustained after free access to the home testing supplies ended.

CONCLUSIONS

Many gay and bisexual men react negatively to pressures to adopt “safe sex”; new approaches are needed. Our study was not designed to induce a shift in men’s underlying attitudes toward their own sexual practices but simply to offer them a new, previously unavailable tool and explore its impact. Therefore, the unexpected, largely spontaneous reports of attitudinal and/or behavioral changes that our semi-structured interview (focused almost entirely on the mechanics of negotiating HT use and what happened immediately afterward) open up new avenues of inquiry. Further exploration can determine which of these reported effects are most frequent and most strongly influence future actions. We are currently developing a follow-up study with a much larger sample that will include an additional exit assessment drawing upon the findings reported above.

The possibility that easy (and free) access to HT for men with no specialized training may have influenced their overall thoughts and feelings about safety points to its potential for increasing awareness of disease risk at the very moment when additional caution can make an important difference. Thus, for sexually active individuals for whom condom use is rare or inconsistent, access to HT not only may affect how they evaluate risk to self and others, but also lead them to value their own HIV-negative status as they reaffirm it with each new testing opportunity. It emerges as a potential vehicle for stimulating a more autonomous, user-directed process of self-examination and adaptation.

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Table I

Sociodemographic characteristics of participants (n=27)

	Mean	SD	Range
Age	34.0	11.4	18–58
Income (in thousands)	20,587	22,863	0–90,000
	n (%)		
Race/ethnicity			
White		11 (41%)	
Latino		5 (19%)	
Black		9 (33%)	
Asian/Pacific islander or mixed ethnicity		2 (7%)	
Education			
High school graduate or less		9 (33%)	
Partial college		11 (41%)	
College graduate or more		7 (26%)	

TABLE II

Differences between men reporting attitude/behavioral shifts (Group A) and those who did not (Group B) (n=27)

	Group A (n=14)	Group B (n=13)	t(df)	p
	Mean (SD)	Mean (SD)		
Age	32.93 (11.91)	35.08 (11.19)	0.48 (25)	.634
Income (USD)	16,341 (18,089)	23,771 (26,203)	0.73 (19)	.475
Likely to get HIV in the future	4.62 (2.36)	3.42 (1.56)	-1.51 (21)	.147
Likely to get STD in the future	5.43 (2.95)	3.42 (1.78)	-2.06 (24)	.051
Actions to avoid HIV infection (higher=more likely to act)	6.00 (2.00)	7.83 (2.33)	2.16 (24)	.041
Motivation to remain HIV-negative (higher=more)	8.50 (2.18)	9.58 (1.17)	1.61 (20)	.122
Sexual sensation-seeking (higher=greater)	3.52 (0.97)	3.21 (0.93)	-0.87 (25)	.392
Sexual control (higher=more)	2.21 (0.45)	2.66 (0.43)	2.70 (25)	.012
	Median (Range)	Median (Range)	Mann-Whitney	p
Number of partners (3 months)	11 (5–90)	7 (3–45)	71.50	.342
Number of HIV tests (lifetime)	3 (0–40)	5 (2–25)	72.00	.354
URAI ^a occasions (3 months)	4 (0–80)	6 (0–33)	88.00	.883
UIAI ^b occasions (3 months)	2 (0–80)	3 (0–23)	85.00	.769

^aURAI = Unprotected receptive anal intercourse;

^bUIAI = Unprotected insertive anal intercourse