Long term effects of HIV counseling and testing for women:

Behavioral and psychological consequences are limited 18 months post-testing

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Abstract

Behavioral and psychological consequences of HIV counseling and testing (HIV C&T) for women were examined in a longitudinal, prospective study. Women who received HIV C&T at community health clinics (n=106) and a comparison group of never-tested women (n=54) were interviewed five times over 18 months. There was no change in risk behaviors as a consequence of testing: tested and non-tested women engaged in high-risk sexual behavior at baseline and 18 months later. Tested women reported more anxiety, depression and intrusive thoughts about AIDS than non-tested women. Although tested women were more concerned about AIDS, their potential risk factors over the study period generally were equivalent to non-tested women. HIV C&T should be considered one aspect of a broader program of HIV prevention; the identification of alternative interventions must be a public health priority.

Long term effects of HIV counseling and testing for women:

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HIV counseling and testing (HIV C&T) continues to be at the forefront of AIDS-related clinical care, research and prevention. For example, there is public debate about the risks and benefits of voluntary versus mandatory HIV testing for pregnant women (Centers for Disease Control and Prevention [CDC], 1995; Minkoff & Willoughby, 1995). Rapid access testing (Irwin et al., 1996) and home collection kits for HIV testing recently have been approved by the U.S. Food and Drug Administration (1995; see also Bayer, Stryker & Smith, 1995; Salbu, 1995), renewing questions about the consequences of HIV testing. While HIV C&T is being conducted primarily in clinical settings, the behavioral and psychological effects should be documented further.

HIV C&T is considered an important prevention intervention, and is the primary intervention mode of most state and federal programs. The key assumption is that through personal risk assessment and education, HIV C&T may reduce the frequency of high-risk transmission behaviors. **Higgins and her colleagues (1991) reviewed the literature on the effects of HIV C&T on high-risk behavior, and concluded that learning about a positive HIV antibody test result was related to decreased risk behavior; whereas seronegative status resulted in little or no behavior change among men who have sex with men. Psychological responses to HIV C&T have been mixed in two studies among gay and bisexual men: notification of seronegative status resulted in significant decline in psychological distress, while notification of HIV seropositive status resulted in increased distress in one study (Ostrow et al., 1989) and decreased distress in another study (Perry, Jacobsberg, Fishman, Welier, Gold & Frances, 1990). Pugh et al. (1994) found increased psychosocial distress among gay men seeking**

HIV testing, but no difference in distress 12 months later among those who tested seropositive versus seronegative.

More recent longitudinal studies found no sexual behavior change as a result of HIV C&T among participants in a community-based multi-site study (McCusker et al., 1996), college students (Wenger, Greenberg, Hillborne, Kusseling, Mangotich & Shapiro, 1992), or patients being tested (Wilson, Jaccard, Levinson, Minkoff & Endias, 1996) or treated for sexually-transmitted diseases (Wenger, Linn, Epstein & Shapiro, 1991). Most behavior change following HIV counseling and testing can be observed among discordant couples, where one person is HIV negative, and the other just tested HIV positive (Higgins et al., 1991).

Approximately one-third of women aged 18-44 residing in the United States have been tested for HIV (CDC, 1996). The efficacy of HIV C&T as a means of primary prevention for women remains unclear, in part because most research has focused on men who have sex with men (Higgins et al., 1991; Ickovics & Rodin, 1992; Jacobsen, Perry & Hirsch, 1990); **for studies that have included both women and men, sex differences are generally not reported (McCusker et al., 1996; Wenger et al., 1991, 1992).** There is some evidence that HIV C&T may not be effective in reducing women's high risk sexual behavior (Ickovics, Morrill, Beren, Walsh & Rodin, 1994); or if it is, it is only effective for some women (Morrill, Ickovics, Golubchikov, Beren & Rodin, 1996). However, the beneficial behavioral and psychological effects of HIV C&T may remain undetected because follow-up study periods have been too brief (i.e., ≤ 6 months) (Ickovics et al., 1994; Wenger et al., 1992). Lasting behavior change may be preceded by a lengthy cognitive and behavioral process that includes multiple cycles of attempted change and relapse (Galavotti et al., 1995; Prochaska, Redding, Harlow, Rossi & Velicer, 1994). Furthermore, longer-term patterns of behavioral change are probably the best predictor of lasting risk reduction.

The purpose of this study was to examine the long-term consequences of HIV C&T among women. The goal was to evaluate the behavioral and psychological consequences of HIV C&T as it occurs in community-based, public health clinics; it was not meant to be an evaluation of a particular type of counseling strategy. We tested the assumption that HIV C&T would result in reduced HIV-related risk behaviors for women (CDC, 1992).

METHOD

Study Participants

Participants were recruited from four urban community-based health clinics. The tested group included women voluntarily seeking HIV C&T at baseline (N=152). **This was the first HIV test for the majority of women (___%); ___% had been tested two times, and ___% tested 3 or more times.** Women using other clinic services (e.g., annual physical, ophthalmology) who had never been tested for HIV were included in the comparison group (N=77), matched by clinic, race and age. **A non-tested group was selected to enable comparison of the impact of HIV counseling and testing on behavioral and psychological outcomes, while controlling for the effects of repeated assessments as part of the study. Eight women were excluded from all analyses because they could not be followed for long-term assessment -- 2 women died during the study period (one from the tested group and one from the comparison group), and six women were tested anonymously.** (For more detail, see Ickovics et al., 1994; Morrill et al., 1996).

Procedure

Participants were recruited sequentially at each site; **interviewers were present on all days when HIV counseling and testing was scheduled to occur. Women were excluded only if pregnant because pregnancy may influence risk-taking behavior. After a clinic appointment (which included**

pretest counseling and blood draw for those receiving HIV C&T), eligible women were given basic information about the study by the HIV counselor or clinician. Those interested were introduced to a member of the research team who gave them more information about the study, obtained informed consent, and conducted the first interview. Strict ethical guidelines were followed to protect confidentiality, and participation was completely voluntary. Eighty percent of eligible women agreed to participate.

Five structured interviews were conducted in English or Spanish: following the initial clinic appointment (baseline/interview 1); 2 weeks later, after tested participants received their results and post-test counseling (interview 2); and again 3, 12, and 18 months post HIV C&T (interviews 3, 4, and 5, respectively). **Nearly all interviews were conducted in person, and each took approximately 45 minutes to complete; telephone interviews were used for 8 women who moved out of state over the course of the study. Intensive follow-up procedures were incorporated to establish a good retention rate across the study period; at baseline, participants provided contact information for themselves (i.e., address/phone number), as well as contact information about others who would know the participant's location in the event of a move (e.g., mother, sister, best friend).** Participants were paid a total of $150 for completing all five interviews. Structured interviews were conducted by trained interviewers who had at least a Master's degree in psychology.

State guidelines for HIV C&T were followed at all clinics. **All counselors were trained and certified by the Connecticut Department of Health to follow a core of basic counseling procedures, including a single pre-test assessment that lasted 20-40 minutes.** The counselors explained the HIV antibody test, identified reasons for testing and baseline risk, recommended preventive measures, addressed questions, and provided referrals for health care and social services in case of positive test results. HIV

counseling was informational in nature, rather than based on cognitive or behavioral skills development. HIV antibody testing was conducted by private laboratories using standard enzyme-linked immunosorbent assay (ELISA) with Western blot confirmation. **Post-test counseling for those who tested HIV-negative was generally more brief (5-15 minutes), with results provided as well as reinforcing messages for HIV prevention and behavior change.**

Instruments

Psychometrically valid and reliable scales that have been associated with health behaviors, including HIV risk behaviors, were selected for use in the structured interviews (for a more complete description, see Morrill et al., 1996). Measures were adapted from written survey to structured interviews, adding specific verbal instructions and the use of response cards. To capitalize on the strengths of the longitudinal design, a sub-set of identical measures were used at each interview; in this way change and stability in psychological and behavioral outcomes could be assessed. **Information was collected in four areas: (1) sociodemographic and background information, (2) general psychological indicators, (3) AIDS-specific psychological indicators; and (4) sexual behavior/risk.**

Sociodemographic and Background Information

Information included age, race/ethnicity, education, income, and sexual history.

General Psychological Indicators

Self-Esteem. The **10-item** Rosenberg Self-Esteem scale was used to measure overall satisfaction with self (Rosenberg, 1965). **A typical item was "on the whole you are satisfied with yourself"; response categories ranged from 1 (strongly disagree) to 5 (strongly agree). The average score for all items provided the overall scale score. Cronbach's coefficient alpha for internal consistency was high (CHECK SCORE).**

Depression and Anxiety. **The short version of the Hopkins Symptom Checklist (HSCL-25) provided independent measures of depression (15 items) and anxiety (10 items) (Derogatis, Lopman, Rickels, Uhlenhuth & Covi, 1984). Respondents reported how often they were bothered by certain symptoms in the past month (e.g., poor appetite, feeling fearful). Answers ranged from 0 ("not at all") to 3 ("often") on a Likert-type scale. Cronbach's alpha was .88 for depression and .84 for anxiety, indicating good internal consistency; one item ("headaches") was removed from the anxiety sub-scale to increase the reliability of the scale.**

AIDS-Specific Psychological Indicators.

Intrusive thoughts about HIV/AIDS. The Intrusion Subscale of the Impact of Events Scale, (Horwitz, Wilner & Alvarez, 1979) as adapted by Antoni et al. (1990) was used to assess **the extent to which subjects experienced intrusive thoughts, strong feelings, and unwanted images related to the threat of AIDS (e.g., "have you had trouble falling asleep or staying asleep because pictures or thoughts about AIDS came into your mind?"). Scores were calculated as the mean of 15 items; response categories ranged from 1 ("not at all") to 4 ("often") on a Likert-type scale (Cronbach's alpha = .92)**

The modified Health Locus of Control Scale (Wallston, Wallston & Devillis, 1978) measured the extent to which women perceived they had control over HIV acquisition (Kelly et al., 1990). **Nine items reflected three different dimensions: internal control ("you are in control of whether or not you get AIDS"), chance/luck external control ("if you get AIDS, it's a matter of fate"), and powerful-others external control ("whether or not you get AIDS is determined by other people"), using a Likert-type**

scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha was adequate (CHECK SCORE).

Perceived susceptibility to HIV/AIDS. Women were asked to estimate perceived risk in the past month (Hobfoll et al., 1993; Ickovics & Rodin, 1992; Sikkema et al., 1996), **ranging from 1 ("not risky at all") to 5 ("extremely risky").** Women also rated their chance of ever getting AIDS, on a scale from **0% ("definitely will not get AIDS") to 100% ("definitely will get AIDS").**

Sexual Behavior/Risk. Sexual behavior and risk measures were adapted from the Multicenter AIDS Cohort Study (e.g., Adib, Joseph, Ostrow, Tal & Schwartz, 1991) to be appropriate to women. Women reported the number of times they engaged in protected and unprotected vaginal and anal intercourse during the preceding 30 days. They indicated whether any sexual partner was HIV-positive, used injection drugs (current/past), had sex with men, or other sexual partners. Those who responded negatively to all items were considered to have "no known partner risk"; all others were considered to have a partner with "uncertain or high risk." A composite measure of level of risk was derived**, based on the premise that three conditions are necessary for heterosexual transmission of HIV: sexual intercourse, without a condom, and with a partner who carries HIV. A hierarchically-ordered, four-level risk variable was created with values from 0 to 3, based on self-reported sexual behaviors:** (0) not sexually active; (1) no unprotected intercourse; (2) unprotected intercourse with a partner with no known risk; and, (3) unprotected intercourse with a partner having uncertain or high risk. **This moves beyond previous measurement schemes that only consider behaviors (e.g., unprotected intercourse) without reference to partner risk (Ickovics, et al., 1994).**

Statistical Analyses

To determine whether there were behavioral and psychological changes over time and whether these changes were the result of HIV C&T, repeated measures analyses of variance (ANOVA) and multivariate analyses of variance (MANOVA) were used. A repeated measures design controls for individual differences, producing a more powerful test of the study hypotheses than a between subjects design (Bray & Maxwell, 1985; Cohen & Cohen, 1983).

RESULTS

The retention rate over the 18-month study period was 74.6%. Compared to the women who did not complete the study (n=56), women who completed the study (n=165) were more likely to be Caucasian, have more education, and be employed at baseline, (all $p<.05$). There were no differences in the behavioral or psychological factors at baseline.

The average age of the women was 31.4 years (SD = 8.4). Many women had only a high school education or less (43.1%), and the majority of women (65.6%) had income less than $12,000 per year. The women were ethnically and racially diverse: 54.3% were white, 31.3% were African American, 11.3% were Latina, and 3.1% were of other race/ethnicity. There were no differences in sociodemographic characteristics between the women in the tested and non-tested groups. Many women were at potential risk for HIV; approximately one half had a history of sexually transmitted diseases, had more than one sexual partner in the last year, had a risky partner in the last month, and had unprotected vaginal intercourse (Table 1). **The tested women were significantly more likely to have more than one sexual partner in the last year and more likely to have had female sexual partners. [OTHER DIFFS AT BASELINE -- PSYCH/BEHAVIOR???]**

Psychological and Behavioral Consequences of HIV Counseling and Testing: Multivariate Analyses

For the longitudinal analyses, the women who tested positive for HIV antibodies were excluded (n=5). The psychological and behavioral consequences of learning that one's serostatus is positive were expected to differ from the consequences of a negative test result.

General Psychological Indicators. (See Table 2.) Repeated-measures MANOVA on three measures of psychological adjustment revealed significant differences by group (i.e., HIV C&T), $F(1,158)=6.72$, $p=.01$, and time, $F(14,145)=823.8$, $p<.001$, and a significant group by time interaction, $F(14,145)=2.91$, $p=.04$. Follow-up ANOVAs revealed that tested women were more anxious, $F(1,158)=6.18$, $p=.01$, and depressed, $F(1,158)=5.29$, $p=.02$, than non-tested women throughout the study. For both groups, anxiety decreased, $F(4,632)=3.70$, $p=.006$, depression decreased, $F(4,632)=9.06$, $p<.001$, and self-esteem increased, $F(4,632),=12.16$, $p<.001$, over the study period. Women in the non-tested group reported a larger overall decrease in depression (interaction effect $F(4)=3.22$, $p=.01$).

AIDS-Specific Psychological Indicators. (See Table 2.) A MANOVA on AIDS-specific psychological indicators revealed significant differences by group, $F(1,155)=4.48$, $p=.04$, and time, $F(19,137)=106.4$, $p<.001$, and a significant group by time interaction, $F(19,137)=2.45$, $p=.03$. Follow-up ANOVAs revealed that the women who were counseled and tested for HIV had more intrusive thoughts during the study than women in the non-tested group, $F(1,158)=5.06$, $p=.03$. At the time of post-test counseling (interview 2), women in the tested group reported significantly more intrusive thoughts compared to baseline, whereas there was no change for women in the non-tested group (interaction effect $F(4,632)=9.73$, $p<.001$). Women in both groups significantly decreased in the level of intrusive thoughts by the final interview, $F(1,158)=4.87$, $p=.03$. Internal health locus of control increased significantly over time for both groups of women driven primarily by differences from baseline to the final follow-up interview, $F(4,632)=4.34$, $p<.002$.

For risk perceptions, women in both groups reported a significant decline in perceived risk at the second interview, and maintained this lower level throughout the study period, $F(4,624)=10.14$, $p<.001$. For perceived chance of getting AIDS eventually, there were different patterns of change across time for each group (interaction effect, $F(4,624)=5.13$, $p<.001$), but perceived chance was significantly lower at the final interview compared to baseline, $F(1,156)=18.83$, $p<.001$.

Sexual Risk. Analysis of sexual risk was limited to women who were heterosexually active during the study (n=138). (See Table 3.) There was a significant decrease in risk from the first to the second interview and a significant increase in risk from the second to the third interview, regardless of HIV C&T, $F(4,532)=3.05$, $p=.02$. By the final interview, both groups returned to baseline levels of sexual risk. There was a marginal group difference, with the tested women reporting slightly less sexual risk than the non-tested women, $F(1,133)=3.24$, $p=.07$, and there was no difference in sexual risk based upon the interaction between group and time.

On average, 26.5% of the women were not sexually active at any given time (range 13.0-41.2%) (Table 3). Abstinence was highest for the tested group at the second interview, indicating that while waiting for test results, many women engaged in no sexual activity. In contrast, unprotected sexual activity was reported by at least one-half of the women at any given time. From baseline to the final interview, changes in sexual risk were often indicated as differences in *perceived partner risk*, whereby respondents were more likely to indicate that their partners had "uncertain or high risk" at baseline and "no known risk" at the final interview **(i.e., change from a risk level of 3 to 2); there was less movement from any unprotected intercourse (risk levels 3 or 2) to protected intercourse (level 1) or not sexually active (level 0).**

DISCUSSION

HIV C&T had limited long-term effects in reducing risky sexual behavior: women neither decreased nor increased their sexual risk over time. HIV C&T typically involved one pre-test and one post-test counseling session; health-related behavior change is unlikely after such a brief intervention. Moreover, behavior change is less likely for individuals who test negative for HIV (Coates, Morin & McKusick, 1987; McCusker et al., 1988). HIV C&T is theorized to influence behavior change through the provision of information about AIDS; however, the acquisition of AIDS-related information is a necessary but not sufficient condition for HIV-risk behavior change (Baldwin, Whitely & Baldwin, 1990). Motivation to change behavior and skills building are also critical aspects of successful AIDS prevention interventions (Fisher & Fisher, 1992; Hobfoll, Jackson, Lavin, Britton & Sheperd, 1994).

Tested women reported greater anxiety and depression and had more intrusive thoughts about AIDS than non-tested women. These psychological differences **were most pronounced at baseline, and thus** may provide information about women who voluntarily seek HIV C&T.

The changes of these and other psychological variables over the course of the study (e.g., decline in anxiety and depression, increase in self-esteem) may reflect real changes in these dimensions for the study participants, or may be a function of an instrumentation effect related to repeated interview administration. Other studies do show declines in reported symptoms of anxiety and depression when using the Hopkins Symptom Checklist in longitudinal studies (Barrett & Hurst, 1982; Lackner, Joseph, Ostrow & Eshleman, 1993). Nonetheless, the validity and reliability of these measures have been well-established in both clinical and non-clinical study samples (Crandall, 1973; Derogatis et al., 1984; Winokur, Winokur, Rickels & Cox; 1984). Moreover, since the changes are generally not uniform and consistent (e.g., scores go up and down over time; and some of the changes are different by group), measurement error may be less of a concern.

Although it is impossible to disentangle these effects, we might speculate that anxiety and depression decline after the baseline interview because HIV counseling and testing created some distress around the testing period, that diminished over the follow-up study period; for the comparison group, baseline distress may have been associated with the medical services/procedures for which they were visiting the clinic at the time they were recruited in the study. The change over time in self-esteem may reflect an enhanced sense of self that occurs as a function of study participation, given the opportunity to reflect on one's own attitudes and experiences; this may be similar to the placebo or "non-specific" treatment effects reported in medication studies and in psychotherapy outcome studies (Barrett & Hurst, 1982).

The tested women were more concerned about AIDS than non-tested women; however, their potential risk factors at baseline and their sexual risk over the course of the study generally were equivalent. There were many women engaging in high risk sexual behavior **(e.g., unprotected intercourse, partners with uncertain or high risk, history of sexually transmitted disease)** who had never been tested for HIV. **Moreover, more than one-half of the women -- both tested and non-tested -- engaged in unprotected intercourse at nearly every assessment point, including roughly one-quarter who had unprotected intercourse with a partner of uncertain or high risk.**

Intrusive thoughts about AIDS, perceived risk, and chance of getting HIV declined over the study period, although there was no evidence of reduced risk behavior. The changes toward sexual risk reduction (from baseline to the final interview) often involved changes in the partner risk factors the women reported. Greater knowledge of partners' risk factors has been associated with lower perceived risk for AIDS (Prochaska, Albrecht, Levy, Sugrue & Kim, 1990); however, partner risk assessment is often inaccurate (i.e., under-reported) (Hobfoll et al., 1993). Moreover, women at greater risk (e.g., women with high-risk sexual

partners) are least likely to engage in safer sexual behavior such as using condoms consistently compared to women with less risky partners (Grinstead, Faegeles, Binson, & Eversly, 1993).

This study has several notable strengths, including its longitudinal design, enabling a prospective examination of a broad array of behavioral and psychological changes as a result of HIV counseling and testing. It is one of the only studies in the HIV C&T literature to include a matched non-tested comparison group. In addition the study participants were a diverse group of clients attending community health clinics.

Nonetheless, the generalizability of these results remains to be demonstrated. **In particular, issues of attrition and the demographic differences between study completers and drop outs may limit generalizability, and require further attention in future investigations. The issues of observed changes over time as a function of potential measurement error requires further attention. Finally, the differences between the tested and non-tested groups and the changes over time that were reported were all statistically significant; however, these differences reflect only modest changes in the mean scores. Further research is required to determine the clinical relevance of these differences in psychological functioning and behavioral risk.**

HIV C&T will continue to play a primary role in the AIDS epidemic, irrespective of its efficacy as an intervention for reducing risky behavior. Future research should include randomized controlled trials to test the effectiveness of alternative counseling strategies (e.g., multiple sessions, with a sexual partner) that are theoretically based. Until then, the value of HIV C&T remains in identifying individuals who are infected. It also will be important to document whether new post-test telephone counseling associated with home collection procedures result in behavioral risk reduction for those who test negative or positive for HIV, and the extent of psychological distress when this type of counseling is provided.

Overall, HIV C&T appears to be ineffective in changing women's sexual risk. HIV C&T should be considered one aspect of a broader program of HIV prevention. Theories used to guide HIV prevention research have been individualistic and have failed to take into account interpersonal, cultural and gender factors that influence risky behavior (Amaro, 1995; Ickovics, Thayaparan & Ethier, in press; Morrill, 1994; Wyatt, 1994). New models for understanding HIV risk behavior are essential to formulate a successful prevention intervention. Successful HIV prevention interventions for women also must address the primary causes of women's risk such as drug addiction, poverty, and disempowerment to curtail the spread of this epidemic.

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Table 1

Sexual risk behaviors at baseline

Risk factor	Group		$?^2$
	Tested (n=106) % (n)	Non-tested (n=54) % (n)	
Ever had STD	47.2 (50)	48.2 (26)	.01
Any female sexual partners	13.2 (14)	0 (0)	7.82**
More than one partner (past year)	60.4 (64)	40.7 (22)	5.55*
More than one partner (past month)	11.3 (12)	5.6 (3)	1.40
Risky partner (past month)	52.8 (56)	42.6 (23)	1.50
Unprotected vaginal intercourse (past month)	53.3 (48)	59.3 (32)	1.03
Unprotected anal intercourse (past month)	7.6 (5)	4.8 (2)	.33
Sex in exchange for drugs/money (past month)	3.7 (3)	0 (0)	1.54
Sex after alcohol/drugs (past month)	49.4 (40)	52.4 (22)	.10

* $\underline{p} < .05$; ** $\underline{p} < .01$