



Published in final edited form as:

J Acquir Immune Defic Syndr. 2010 August ; 54(4): e3–e4. doi:10.1097/QAI.0b013e3181da1270.

Suicidal Ideation is Associated with HIV Transmission Risk in Men who Have Sex with Men

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Keywords

AIDS; Cocaine; HIV Transmission Risk; Methamphetamine; Suicidal Ideation

Even in the era of anti-retroviral therapy (ART), the suicide rate remains elevated among HIV-positive persons.¹ Individuals who are at increased risk for suicide often have a more pessimistic, hopeless view of the future^{2, 3} and tend to preferentially attend to immediate sensations.⁴ These cognitive changes promote behavioral disinhibition, which places one at higher risk for attempting suicide and may also increase engagement in other risk taking behaviors.⁵ The present cross-sectional investigation with 232 HIV-positive men who have sex with men (MSM) examined a cognitive escape model of HIV transmission risk behavior.⁶ Suicidal ideation was conceptualized as a vulnerability factor that is accompanied by a constellation of cognitive changes that predisposes individuals to behavioral disinhibition. Consequently, we hypothesized that participants experiencing suicidal ideation would report increased rates of HIV transmission risk behavior after controlling for other cognitive and affective symptoms of depression. Because stimulant use has been associated with an increased likelihood of engaging in HIV transmission risk behavior,^{7, 8} it was examined as a releasing stimulus that may explain the relationship between suicidal ideation and HIV transmission risk.

Methods

The present study utilized data from 232 HIV-positive MSM who reported elevated ART-related side effect burden (i.e., the upper 40% of composite side effect burden scores).⁹ Assessments were conducted using computer-assisted interviewing methods to enhance the veracity of self-reported suicidal ideation, sexual risk taking, and substance use.¹⁰ *Suicidal ideation and depressive symptoms* were measured using the 21-item Beck Depression Inventory II (BDI-II).¹¹ One BDI-II item assessing suicidal ideation was dichotomized to reflect any thoughts of self harm. Drawing on an investigation examining the psychometric properties of the BDI-II,¹² we calculated a modified 7-item BDI-Cognitive subscale (Cronbach's $\alpha = .85$) that excluded the suicidal ideation item. Because HIV-related symptoms and somatic depressive symptoms are confounded, we also calculated a modified 7-item BDI-Affective (i.e., sadness, loss of pleasure, crying, agitation, loss of interest,

indecisiveness, irritability) subscale (Cronbach's $\alpha = .78$). For *HIV transmission risk*, participants completed a brief sex risk measure that assesses the total number of partners, number of partners without a condom, and number of unprotected sex partners who were HIV-positive during the past 3 months. Indices of HIV transmission risk during anal intercourse included: 1) any HIV transmission risk as the insertive partner; 2) any HIV transmission risk as the receptive partner; and 3) any HIV transmission risk (insertive or receptive). *Weekly stimulant use* was classified as reporting use of cocaine, crack, or methamphetamine once a week or more on average during the past 3 months.

Results

Most participants identified as gay (89%) or bisexual (9%). The majority of participants were Caucasian (60%), but a sizeable proportion of participants were Hispanic/Latino (17%) or African American (11%). Mean age was 46.4 ($SD = 7.8$) years, and individuals had been diagnosed with HIV for 14.1 ($SD = 6.0$) years on average. The mean self-reported T-helper (CD4+) cell count was 415 ($SD = 253$) and 34% reported having a detectable HIV viral load.

Approximately 28% of participants (66/232) reported thoughts of suicide in the past two weeks, and 3% (7/232) indicated they would like to kill themselves or would kill themselves if they had the chance. We also estimated that 16% of participants reported any HIV transmission risk behavior with 12% reporting transmission risk as the receptive partner and 9% reporting transmission risk as the insertive partner. Eight percent of participants reported using stimulants at least weekly. As shown in Table 1, binary logistic regression analyses indicated that suicidal ideation was independently associated with greater than a 2-fold increase in the odds of reporting any HIV transmission risk (26% vs. 12%). Suicidal ideation was not associated with transmission risk as the receptive partner (17% vs. 10%), but it was independently associated with almost a 3-fold increase in the odds of reporting HIV transmission risk as the insertive partner (15% versus 6%). Findings also indicated that for every 1 standard deviation increase in the modified composite score of cognitive symptoms of depression, the odds of reporting HIV transmission risk as the insertive partner were 89% higher. Suicidal ideation was also independently associated with more than a 3-fold increase in the odds of reporting stimulant use at least weekly (15% vs. 5%). Finally, mediation analyses indicated that stimulant use did not explain the relationship between suicidal ideation and any HIV transmission risk ($\beta = .04$, 95% CI = $-.01 - .15$, $p > .10$) or the relationship between suicidal ideation and transmission risk as the insertive partner ($\beta = .06$, 95% CI = $-.01 - .19$, $p > .10$).

Discussion

To our knowledge, the present study is the first to observe that individuals experiencing suicidal ideation may be more likely to engage in HIV transmission risk behavior. Other cognitive symptoms of depression (including pessimism) were also independently associated with HIV transmission risk behavior as the insertive partner during anal intercourse. These findings stand in stark contrast to a meta-analysis of 34 published studies which observed that depressive symptoms were not reliably associated with HIV transmission risk

behavior.¹³ Depression is multi-faceted clinical condition with cognitive, affective, and somatic dimensions. Although affective (e.g., sadness) and somatic (e.g., fatigue) symptoms of depression may be obstacles to engaging in sexual intercourse,¹⁴ findings from the present study indicate that suicidal ideation and other cognitive symptoms of depression may predispose individuals to engaging in HIV transmission risk. Although cognitive symptoms of depression appear to be a key vulnerability factor that may contribute to HIV transmission risk, this does not appear to be due to increased rates of weekly stimulant use. However, bearing in mind that stimulant users on ART display elevated HIV viral load,^{15, 16} behavioral interventions that address the cooccurrence of stimulant use and HIV transmission risk among individuals experiencing suicidal ideation could reduce HIV transmission rates.¹⁷ Clinicians treating HIV-positive MSM who are experiencing suicidal ideation should also systematically assess concomitant substance use and HIV transmission risk behavior in order to provide targeted prevention counseling where appropriate.

Further research is needed to examine the pathways that account for increased rates of HIV transmission risk behavior among those experiencing suicidal ideation. One previous cross-sectional investigation observed that individuals experiencing suicidal ideation were more likely to report non-disclosure of their HIV serostatus.¹⁸ Although non-disclosure of HIV serostatus has associated with an increased likelihood of reporting HIV transmission risk behavior,⁷ there was not a direct association between suicidal ideation and HIV transmission risk.¹⁸ Non-disclosure of HIV status should be evaluated as a plausible mediator of the relationship between suicidal ideation and HIV transmission risk in future longitudinal research. Results of the present investigation should also be interpreted in light of the inclusion criteria. HIV-positive MSM were invited to participate because they reported elevated ART-related side effect burden, which was associated with higher levels of neuroticism in our prior work.⁹ Neuroticism is a relatively stable personality trait that provides an index of the extent to which individuals are prone to experiencing negative affect across various situational contexts. Elevated levels of trait neuroticism among participants in this study may have strengthened the observed association between cognitive symptoms of depression and risk taking behaviors.

Acknowledgments

This research was funded by grants from the National Institute of Mental Health (R01 MH068208; K24MH087220; Johnson, PI).

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Table 1

Logistic Regression Analyses for Indices of HIV Transmission Risk and Weekly Stimulant Use (N = 232)

	Any Transmission Risk		URAI		UIAI		At Least Weekly Stimulant Use	
	AOR	95% CI	AOR	95% CI	AOR	95% CI	AOR	95% CI
Time since HIV Diagnosis	0.99	0.93 – 1.05	0.98	0.92 – 1.05	1.03	0.95 – 1.12	0.96	0.89 – 1.04
Caucasian	1.00	Reference	1.00	Reference	1.00	Reference	1.00	Reference
African American	0.62	0.17 – 2.26	0.55	0.12 – 2.56	1.25	0.25 – 6.37	0.83	0.17 – 4.01
Hispanic/Latino	0.63	0.22 – 1.82	0.51	0.14 – 1.87	1.68	0.47 – 6.06	0.65	0.17 – 2.52
Other Ethnic Minority	1.09	0.36 – 3.26	0.83	0.22 – 3.13	3.00	0.79 – 11.38	0.30	0.04 – 2.48
BDI-Affective	0.74	0.45 – 1.22	0.85	0.49 – 1.47	0.55 [†]	0.28 – 1.07	1.29	0.70 – 2.36
BDI-Cognitive	1.34	0.85 – 2.10	1.57 [†]	0.96 – 2.57	1.89*	1.07 – 3.36	0.74	0.39 – 1.41
Suicidal Ideation	2.44*	1.08 – 5.55	1.45	0.56 – 3.76	2.93*	1.01 – 8.49	3.10*	1.03 – 9.31

URAI = Unprotected Receptive Anal Intercourse with HIV-negative or unknown status partners;

UIAI = Unprotected Insertive Anal Intercourse with HIV-negative or unknown status partners;

AOR = Adjusted Odds Ratio;

[†]
 $p < .10$;*
 $p < .05$