Multi-Level Predictors of Suicidality Among HIV+ Substance Users in 11 US Cities

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Introduction

- Among HIV+ persons, prevalent psychiatric comorbidities increase risk of suicide and interfere with disease management.
- Even in the era of HIV treatment as prevention (TasP), suicide risk remains elevated and suicidality predicts higher HIV viral load.
- A complex interplay of medical, structural, behavioral, and psychosocial factors influence suicidality in HIV+ persons.
- Injection drug use (IDU) and non-injection drug use are associated with heightened risk for suicide, and more comprehensive studies are needed to understand suicide risk in HIV+ substance users.
- The primary objective of this study with HIV+ substance users was to examine multi-level predictors of any suicidal thoughts and a composite measure of suicidality over 12 months.

Methods

- The NIDA Clinical Trials Network (CTN) protocol 0049 was a randomized controlled trial of patient navigation (PN) with and without financial incentives (FI) for HIV+ substance users.
- HIV+ inpatients with self-reported opiate use, stimulant use, or heavy alcohol use in the medical record were screened at 11 hospitals in the US with a high census ($\geq$ 200 admissions per year).
- Participants were enrolled if they presented with:
  1) an AIDS-defining illness OR
  2) a recent CD4+ count < 350 cells/mm^3 and an unsuppressed viral load (> 200 copies/mL) OR
  3) a CD4+ count <= 500 cells/mm^3 in the past 12 months and a viral load >200 copies/mL or unknown viral load accompanied by the Site PI's discretion
- Participants completed self-report measures and provided peripheral venous blood samples to measure viral suppression ($\leq$ 200 copies/mL) at baseline, six, and 12 months.

Exposures. Participants completed measures assessing medical, structural, behavioral, and psychosocial factors. Validated measures of alcohol, tobacco, and other substance use severity as well as social support were administered.

Suicidality outcomes. Any suicidal thoughts in the past week were assessed by a single item of the Brief Symptom Inventory. The Concise Health Risk Tracking (CHRT) measure included three items assessing the frequency of suicidal thoughts, considering methods of suicide, and plans for suicide in the past week (Cronbach's alpha = 0.90).

Methods

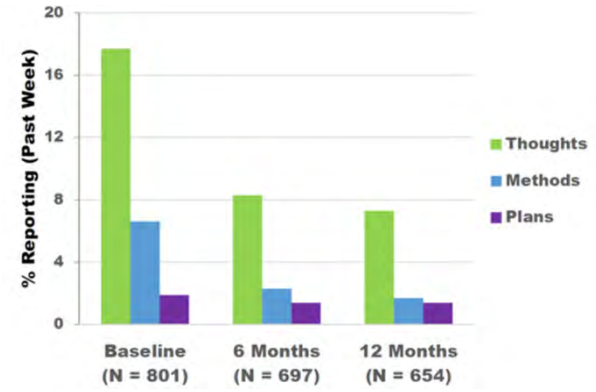
Statistical analyses. Multi-level modeling was used to account for non-independence of suicidal ideation, suicidality, and viral suppression measurements over 12 months. Multi-level models were fitted by maximum likelihood estimation. Analyses adjusted for study site as a random effect. Composite scores for alcohol, tobacco, and substance use severity were mean centered so that the adjusted odds ratio (AOR) reflects the increase in odds of the outcome per standard deviation increase in each severity measure.

Results

The sample of 801 participants was predominantly Black (78%), middle-aged (Mean = 44.6; SD = 10.0), and male (67%) with a median CD4+ count of 109 cells/mm^3. Approximately 11% of participants were virally suppressed at baseline.

Suicidality declined significantly over 12 months. The baseline prevalence estimates of suicidal thoughts, considering methods for suicide, and plans for suicide were 18%, 7%, and 2% respectively in the past week (see Figure). As shown in the Figure, suicidality indicators declined significantly over the 12-month follow-up.

Figure. Suicidality indicators in HIV+ substance users over 12 months



Suicidality predicts lower odds of viral suppression. Each one standard deviation increase in the suicidality composite score (AOR = 0.81; 95% CI = 0.74 – 0.89) was significantly associated with 19% lower odds of viral suppression over 12 months.

No effects of PN and PN+FI. There were no significant effects of PN or PN+FI on suicidal ideation or the suicidality composite score.

Results

Predictors of any suicidal thoughts. The following were significantly associated with reporting suicidal thoughts over 12 months:

	AOR	95% CI
Stable Housing	**0.60**	**0.39 – 0.92**
Prescription for Efavirenz	**0.47**	**0.31 – 0.71**
Social Support	**0.71**	**0.62 – 0.83**
Substance Use Severity	**1.38**	**1.17 – 1.63**

Predictors of suicidality. The following were significantly associated with higher suicidality composite scores over 12 months:

	Beta	p-value
Hispanic/Latino Ethnicity	**0.34**	**< 0.01**
CD4+ Count < 200 cells/mm^3	**0.13**	**0.03**
Alcohol Use Severity	**0.11**	**< 0.01**
Any IDU (past 12 months)	**0.24**	**< 0.01**
At least Some College	**-0.17**	**0.03**
Social Support	**-0.07**	**0.02**

Discussion

- Findings highlight that overlapping, multi-level factors influence suicidality among HIV+ substance users.
- Consistent with prior studies, a critically low CD4+ count is associated with increased suicidality. This may reflect concerns related to health impairments or a sense of a foreshortened future.
- Although Efavirenz was associated with decreased odds of suicidal thoughts, this may reflect reluctance of providers to prescribe this medication to those with more severe psychiatric symptoms.
- Stable housing emerged as an important structural factor that could reduce risk of suicidal thoughts in HIV+ substance users, which underscores the benefits of housing assistance programs.
- Even among HIV+ substance users, alcohol and substance use severity (including IDU) predict increased suicidality. Substance use disorder treatment could reduce suicide risk.
- Greater social support was a consistent protective factor for reduced suicidality, which underscores the potential benefits of referrals social support groups for substance use disorders and HIV.
- The association of suicidality with 19% lower odds of viral suppression highlights that interventions targeting suicidality could optimize the clinical and public health benefits of TasP.