

# **Associations among Violence Exposure, Mental Disorder, SUD and HIV**

R. Thomas Sherba, Ph.D.

Case Western Reserve University,  
Cleveland, Ohio

## **Statement of Research Problem**

Since the beginning of the HIV/AIDS epidemic in the United States, researchers have studied the paths of transmission of HIV. An emergent path highlighted by Brief et al. (2004) follows a conceptual model of HIV infection which operates as follows: Individuals exposed to trauma develop depression and/or anxiety or other related mental disorder(s); they use alcohol and/or drugs to self-medicate or cope with unpleasant thoughts or feelings related to the trauma, which in turn impairs their judgment, thus increasing their engagement in HIV risk behaviors, and increasing their risk of contracting HIV. While studies have established trauma exposure, mental disorder and SUD as independently associated with HIV infection, there is a paucity of research examining the impact of trauma exposure and co-occurring mental and substance use disorders (COD). Galvan, Burnam and Bing (2003) concluded that population-based estimates of COD among HIV-positive people are not available in the literature. Klinkenberg and Sacks (2004) concurred, "We still know relatively little about PLWH/A [people living with HIV and/or AIDS] with co-occurring mental and substance use disorders. Additional epidemiological study is needed in order to more fully describe their health and substance-using characteristics," (p. S33). Persons suffering from the effects of trauma exposure who develop COD may be in jeopardy of acquiring HIV.

## **Research Background and Hypotheses**

This study's primary aim was to provide COD prevalence data as well as additional epidemiologic data needed to establish more firmly violence exposure and COD as principally associated with HIV infection. In this study, trauma was conceptualized as violence exposure, chosen because it is one of the primary known causes of trauma symptomatology (Breslau, Davis, Peterson, & Schultz, 2000). This study's secondary aim was to provide epidemiologic data which could be used to inform HIV prevention efforts: primary, secondary and tertiary. According to the National AIDS Manual (2007), the three levels of prevention are defined as follows: Primary HIV prevention refers to activity focused on preventing uninfected people from becoming infected; Secondary HIV prevention refers to activity aimed at enabling people with HIV

to stay well; and Tertiary HIV prevention aims to minimize the effects of ill–health experienced by someone who is symptomatic with HIV disease.

Through the application of the conceptual model of HIV infection, this study was designed to answer the following research questions: (1) What proportion of individuals who experienced a lifetime mental health issue also experienced lifetime violence exposure; (2) does the proportion of individuals who experienced both a lifetime mental health issue and lifetime violence exposure differ based on HIV infection status; (3) is lifetime violence exposure significantly associated with HIV infection; and (4) is COD significantly associated with HIV infection?

To address the aforementioned research questions, four hypotheses were set forth and analyzed. H1: There will be a significant positive relationship between individuals who experienced a lifetime mental health issue and individuals who experienced lifetime violence exposure. H2: The proportion of individuals who had experienced a lifetime mental health issue and lifetime violence exposure will be greater for individuals living with HIV/AIDS than for non-HIV/AIDS controls. H3: There will be a significant positive association between the variable of Lifetime Violence Exposure and HIV infection. H4: There will be a significant positive association between the variable of COD and HIV infection.

## **Methodology**

Participants were clients assessed for alcohol and other drug (AOD) treatment through the 40 adult AOD treatment providers in the network of providers overseen by the Alcohol and Drug Addiction Services Board of Cuyahoga County (ADASBCC) from December 12, 2001 through July 18, 2007 (date parameters of the 45,436 available computerized assessment records). Trained intake assessment counselors input client self-report data into a computer program during a face-to-face assessment interview with client, using a structured comprehensive intake assessment instrument designed for ADASBCC for the purpose of diagnosing AOD abuse and dependence.

Study design was a matched comparison of two subgroups of clients who sought assessment and were assigned an AOD diagnosis of abuse or dependence, stratified by HIV-serostatus. Furthermore, in order to ensure that there were an adequate number of HIV-infected clients for analysis, any client who reported that he or she had been diagnosed with HIV and/or AIDS and whose assessment record had complete data across all study variables was included in the study group. The comparison group was of equal number to the study group (N = 638) and matched one-to-one on the following four demographic variables: Gender, Race or Ethnicity, Age and Educational Status. Matching was accomplished through randomization as follows: A dataset of all HIV-uninfected cases that matched on all four matching variables for each study group member was generated; each case was screened for complete data, and those cases with complete data were retained for randomization; a matching record was selected from the dataset of eligible matches using the random selection function of SPSS version 15.0. All study variables were drawn from the ADASBCC dataset of the Comprehensive Intake Assessment Instrument-Cleveland version (CIAI-C). The CIAI-C, designed primary by the Department of Sociology of the University of Akron and ADASBCC, is a measure

containing 1,557 variables that measure lifetime and current AOD severity levels in the same domains as those included in the Addiction Severity Index (ASI) (McKay et al., 2005). The CIAI-C also includes measures in additional domains such as DSM IV five axes diagnosis, current and past issues with mental health and past violence exposure.

CIAI-C data were housed in a Microsoft Access database. Thus, available CIAI-C data were queried in Access version 2003 for variable data that pertained to the aforementioned study variables. All cases generated through query were stored in an Access table for import into SPSS version 15.0 for analysis, and only those cases with complete data across all items needed to compute study variables were retained for analysis. The following study variables were drawn from CIAI-C items:

***Lifetime Physical Abuse.*** A dichotomous variable measuring whether from birth through time of assessment client reported ever having been hit, slapped, punched, kicked, threatened with a weapon, stabbed or shot and/or having a history of being the victim of domestic violence (1 = client reported physical abuse experienced as a child and/or an adult or 0 = client reported no physical abuse experienced as a child or as an adult).

***Lifetime Sexual Abuse.*** A dichotomous variable measuring whether from birth through time of assessment client reported ever having been kissed, licked, sucked, fondled, or vaginally/anally penetrated (as a child or unwillingly as an adult); ever having been asked (as a child), almost having been forced or forced to kiss, lick, suck, fondle, or vaginally or anally penetrate (as a child and/or an adult); ever having been allowed (as a child) or forced to watch people engage in sexual activities or to view pornographic materials (as a child and/or an adult) (1 = client reported sexual abuse experienced as a child and/or an adult or 0 = client reported no sexual abuse experienced as a child or as an adult).

***Lifetime Violence Exposure.*** A dichotomous variable measuring whether from birth through time of assessment client reported ever having experienced any physical or sexual abuse as measured in the variables Lifetime Physical Abuse and Lifetime Sexual Abuse (1 = client reported physical and/or sexual abuse experienced as a child and/or an adult or 0 = client reported no physical or sexual abuse experienced as a child or as an adult).

***Lifetime Depression.*** A dichotomous variable measuring whether client reported ever having had a period of two weeks or longer of feeling sad, depressed, or a loss of interest in things cared about (1 = client reported having experienced depression or 0 = client reported not having experienced depression).

***Lifetime Suicidality.*** A dichotomous variable measuring whether client reported ever having had serious thoughts of ending own life or committing suicide (1 = client reported having experienced suicidality or 0 = client reported not having experienced suicidality).

***Current Significant Mental Health Problem.*** A dichotomous variable measuring whether client reported currently taking any medication for problems with emotions, nerves or mental health and/or interviewing clinician noted the presence of severe psychiatric condition(s) that might interfere with client's ability to participate in AOD

treatment (1 = client reported currently taking medication for mental health problem(s) and/or was deemed by interviewing clinician to have a significant mental health problem or 0 = client reported not currently taking medication for mental health problem(s) and was not deemed by interviewing clinician to have a significant mental health problem).

***Past Significant Mental Health Problem.*** A dichotomous variable measuring whether client reported ever having been hospitalized and/or ever having received outpatient treatment for problems with emotions, nerves or mental health (1 = client reported having been hospitalized and/or having received outpatient treatment for problems with emotions, nerves or mental health or 0 = client reported not having been hospitalized and not having received outpatient treatment for problems with emotions, nerves or mental health).

***Mental Disorder Diagnosis.*** A dichotomous variable measuring whether interviewing clinician assigned any mental disorder diagnosis on Axis I or Axis II and/or clinician noted client report of having been diagnosed previously with any mental disorder on Axis I or Axis II (1 = client received a mental disorder diagnosis or reported a mental disorder diagnosis or 0 = client did not receive a mental disorder diagnosis nor reported a mental disorder diagnosis).

***Lifetime Mental Health Issue.*** A dichotomous variable measuring whether client reported lifetime depression, lifetime suicidality and/or was found to have a current and/or past significant mental health problem(s) and/or mental disorder diagnosis (1 = client reported lifetime depression and/or lifetime suicidality and/or was found to have a current and/or past significant mental health problem(s) and/or mental disorder diagnosis or 0 = client did not report lifetime depression or lifetime suicidality and was not found to have a current or past significant mental health problem(s) or mental disorder diagnosis).

This study's data analysis plan included univariate, bivariate and multivariate analyses. In order to test H1, a chi-square test was performed with the variables of Lifetime Mental Health Issue by Lifetime Violence Exposure. In order to test H2, the chi-square test of Lifetime Mental Health Issue by Lifetime Violence Exposure was rerun accounting for HIV Status. In order to test H3 and H4, a logistic regression model was developed with HIV Status entered as the dependent variable and the following as independent variables entered through block entry: Lifetime Physical Abuse, Lifetime Sexual Abuse, Lifetime Depression, Lifetime Suicidality, Current Significant Mental Health Problem, Past Significant Mental Health Problem, and Mental Disorder Diagnosis. Odds ratios with corresponding confidence intervals were generated. An alpha level of .05 was used for all statistical tests, and confidence intervals for odds ratios were set at 95%.

## Results

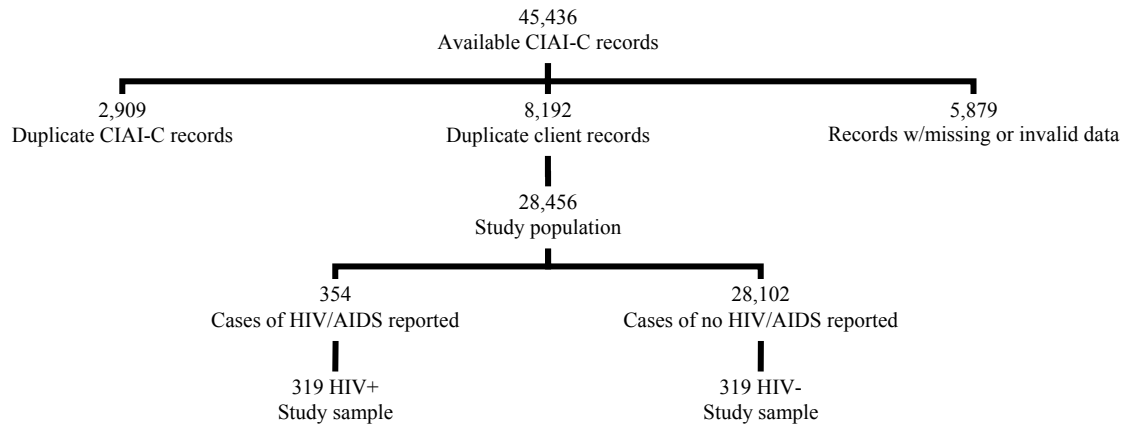
A final sample of 638 cases was achieved. As illustrated in Figure 1, this sample was drawn from a study population of 28,456 which was determined from the number of available CIAI-C records less all duplicate CIAI-C records, all duplicate client CIAI-C records (i.e., more than one assessment record for any given client), and all records with any missing or invalid responses across study eligibility criteria. [Note when duplicate

client records were found, the most recent assessment was included and all previous assessment records were excluded.] Each record included represents a unique client with no client represented more than once in the study population. Of the unique client records, 354 reported having been diagnosed with HIV/AIDS; thus, the HIV prevalence rate for the study population was 1.2%, three to four times higher than the general population prevalence estimates of .3 to .4% (Cournos & McKinnon, 1997; Rosenberg et al., 2001; Sullivan et al., 1999). Of these 354 HIV-positive cases, 23 were missing data on one or more study variable(s) and 12 had no AOD diagnosis (one of the study inclusion criteria). The resulting 319 HIV-positive cases were matched to 319 HIV-negative cases as outlined previously, resulting in a total of 638 cases.

As shown in Table 1, matching of HIV-positive cases to HIV-negative cases on the variables of Gender, Race or Ethnicity and Educational Status was a success (i.e., exact matches were found for each HIV-positive case). The matching variable of Age was a near success with all but six cases matching exactly. These six cases were matched to the closet HIV-negative case in age that matched perfectly on the other three matching variables. They matched as follows: 34 to 37, 38 to 39, 42 to 43, 49 to 52, 51 to 52 and 56 to 55. [Note there was almost no difference in age between the HIV-positive sample ( $M = 40.61$ ,  $SD = 7.78$ ) and the HIV-negative sample ( $M = 40.64$ ,  $SD = 7.79$ ).]

Bivariate analyses were performed to test H1 and H2. A significant relationship was found between individuals who experienced a Lifetime Mental Health Issue and individuals who experienced Lifetime Violence Exposure ( $N = 638$ ,  $\chi^2 = 36.31$ ,  $df = 1$ ,  $p = .00$ ); and this was a positive relationship, meaning that an increase of Lifetime Mental Health Issue was associated with an increase in Lifetime Violence Exposure. Thus, given that the chi-square test produced a positive significant result, H1 was retained. However, while the found proportional difference was greater for individuals living with HIV/AIDS than for non-HIV/AIDS controls (55% of HIV-positive clients experienced both a Lifetime Mental Health Issue and Lifetime Violence Exposure whereas 35% of HIV-negative clients experienced both a Lifetime Mental Health Issue and Lifetime Violence Exposure), this difference was not statistically significant, meaning those who had experienced Lifetime Violence Exposure were found to have had a Lifetime Mental Health Issue more often than those who had not experienced Lifetime Violence Exposure irrespective of HIV status. H2 was not retained.

Figure 1. Study sample size determination.

Table 1 : *Analyses of Matching Variables*

	<u>Study population</u>	<u>HIV+ sample</u>	<u>HIV- sample</u>
<b>% Male</b>	59.5	68.0	68.0
<b>Race/ethnicity</b>			
% Not answered	0.1	0.3	0.3
% Native American/Alaskan	0.2	0.6	0.6
% Asian/Pacific Islander	0.1	0.0	0.0
% Hispanic/Spanish	5.8	14.7	14.7
% Black/African American	56.7	58.9	58.9
% White/Caucasian	36.2	24.6	24.6
% Another Group	0.9	0.9	0.9
<b>Age in years<sup>a</sup></b>			
Range	17-92	19-62	19-62
Mean	34.96	40.61	40.64
Median	35	41	41
Mode	23	39	39
SD	10.86	7.78	7.79
<b>Educational status</b>			
% Less than 12 years	50.7	48.0	48.0
% 12 years	29.9	29.1	29.1
% More than 12 years	19.4	22.9	22.9

<sup>a</sup>Exact matches on age were not found for six cases; these cases were matched within +/- 3 years

A logistic regression model was developed to identify the relative importance of violence exposure and COD with HIV infection. Furthermore, as illustrated in Figure 2, it was further hypothesized that Lifetime Physical Abuse would be significantly associated with HIV infection; Lifetime Sexual Abuse would be significantly associated with HIV infection; Lifetime Depression would be significantly associated with HIV infection; Lifetime Suicidality would be significantly associated with HIV infection; Current Significant Mental Health Problem would be significantly associated with HIV infection; Past Significant Mental Health Problem would be significantly associated with HIV infection; and Mental Disorder Diagnosis would be significantly associated with HIV infection.

The model was constructed to test H3 and H4 as outlined previously in the methods section. [Note each independent variable was found to have a significant association with HIV infection through bivariate analyses, thus each was included in the model.] P-values and odds ratios with corresponding confidence intervals were generated. The level of significance for multivariate analyses was also set at  $p < .05$ . Table 2 displays the results of logistic regression modeling. Lifetime Physical Abuse was not significantly associated with HIV infection (hypothesis not retained). Lifetime Sexual Abuse was significantly associated with HIV infection ( $p = .01$ , OR = 1.75) (hypothesis retained); those who experienced Lifetime Sexual Abuse were 75% more likely to be HIV-positive than HIV-negative. Lifetime Depression was not significantly associated with HIV infection (hypothesis not retained); however, a p-value of .08 (actual  $p = .075$ , OR = 1.43) indicates a trend toward HIV-positive clients having been more likely to have experienced Lifetime Depression than HIV-negative clients. Lifetime Suicidality was significantly associated with HIV infection ( $p = .00$ , OR = 1.99) (hypothesis retained); those who experienced Lifetime Suicidality were almost twice as likely to be HIV-positive than HIV-negative. Current Significant Mental Health Problem was significantly associated with HIV infection ( $p = .02$ , OR = 1.72) (hypothesis retained); those who were determined to have a Current Significant Mental Health Problem were 72% more likely to be HIV-positive than HIV-negative. Past Significant Mental Health Problem was not significantly associated with HIV infection (hypothesis not retained). And, Mental Disorder Diagnosis was not significantly associated with HIV infection (hypothesis not retained); however, a p-value of .06 (actual  $p = .056$ , OR = 1.64) indicates a trend toward HIV-positive clients having been more likely to have received or reported having a Mental Disorder Diagnosis than HIV-negative clients.

Pearson correlations were generated for each pairing of study variables and examined in order to determine if multicollinearity was a significant factor. All correlations were small to moderate, suggesting that multicollinearity was not a significant factor. The largest coefficient produced was for the correlation between Past Significant Mental Health Problem and Current Significant Mental Health Problem ( $p = .00$ ,  $r = .62$ ). Post hoc power analyses for regression were also performed using G\*Power 2 (Buckner, Erdfelder & Faul, 1997). First, G\*Power calculated effect size as .21 using multiple correlation squared ( $R^2 = .17$ ). Then power analyses were conducted by inputting necessary data ( $f^2 = .21$ ,  $\alpha = .05$ ,  $N = 638$ , number of predictors = 7). Power was determined to have been adequate to produce confidence in rejecting the null hypothesis ( $\lambda = 130.66$ , Critical  $F(7, 630) = 2.02$ , Power = 1.00).

Figure 2. Hypothesized associations with HIV infection.

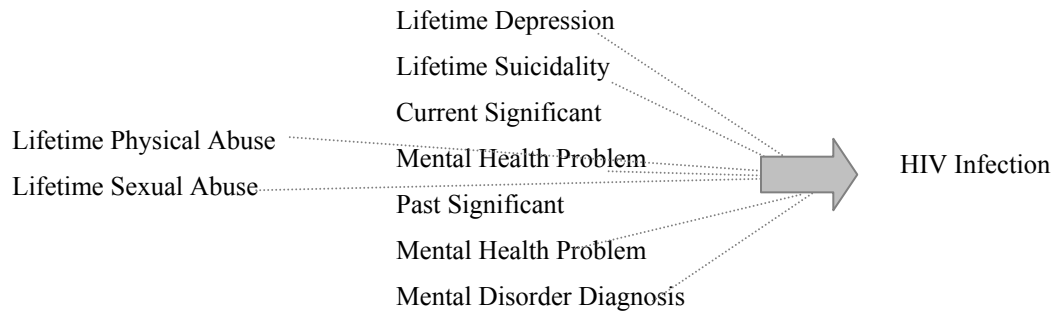


Table 2: Analyses of Associations among Violence Exposure, Mental Disorder, SUD and HIV

<u>Logistic regression</u>						
	Model $\chi^2$	<i>Df</i>	<i>P</i>	Goodness of fit $\chi^{2a}$	<i>Df</i>	<i>P</i>
Overall Model	85.07	7	.00	5.38	7	.61
<u>95% CI</u>						
	B	Wald $\chi^2$	<i>P</i>	OR	Lower	Upper
<b>The model</b>						
Lifetime physical abuse	-.12	.43	.51	.88	.61	1.28
Lifetime sexual abuse	.56	7.13	.01	1.75	1.16	2.65
Lifetime depression	.36	3.17	.08	1.43	.97	2.11
Lifetime suicidality	.69	11.30	.00	1.99	1.33	2.98
Current significant mental health problem	.54	5.06	.02	1.72	1.07	2.75
Past significant mental health problem	-.05	.04	.84	.96	.60	1.51
Mental disorder diagnosis	.49	3.66	.06	1.64	.99	2.71
Constant	-.78	27.46	.00	.46		

<sup>a</sup>Hosmer and Lemeshow Test



## **Utility for Social Work Practice**

One of this study's aims was to provide epidemiologic data which could be used to inform HIV prevention efforts: primary, secondary and tertiary. This study's findings did point to significant associations of violence exposure (i.e., lifetime sexual abuse) and COD (i.e., current significant mental health problem: currently taking any medication for problems with emotions, nerves or mental health and/or presence of severe psychiatric condition) with HIV, underscoring the ongoing challenges in confronting the HIV epidemic while highlighting the urgent need to expand access to effective HIV prevention programs. Thus, with the gained support for the associations of violence exposure and COD with HIV infection, fine tuning of HIV prevention efforts has been deemed necessary. This study produced the following practice recommendations.

### ***Primary HIV Prevention***

Primary HIV prevention refers to activity focused on preventing uninfected people from becoming infected. Primary HIV prevention efforts generally consist of sex education, often with condom distribution and HIV counseling and testing, and additionally to IV drug users, distribution of bleach kits and needle exchange. In order to be more comprehensive and effective, primary HIV prevention needs to include complete mental health and SUD screenings, including screening for violence exposure. These screenings would identify people at increased risk for HIV, allowing interventionists to address underlying risk factors for HIV infection by making referrals and linkages to appropriate clinical care. Furthermore, HIV education needs to be a part of standard psychiatric and AOD treatment programs, and in light of the supported significant association of COD with HIV, COD treatment programs especially need to include HIV education. Different treatments have been proposed to address COD. The following treatment approaches are the most prominent found in the COD literature: stagewise, motivational interviewing and 12-step.

Stagewise approaches designed to meet the unique needs of clients at different stages of recovery from substance misuse generally propose four stages of treatment for the client with COD: engagement, persuasion, active treatment and relapse prevention. HIV education needs to be delivered during each of these four treatment stages. For example, during the persuasion phase the social worker assists the client in recognizing the risk for HIV infection inherent to substance use (e.g., impaired judgment which often leads to unprotected sex or sharing of an injection needle). HIV education would also work well in tandem with AOD treatment using motivational interviewing, and it needs to be included. For instance, the personal goal of remaining healthy and HIV-negative could be established with discrepancy developed to help the client realize that continued substance use is not compatible with remaining disease free, and self-efficacy could be achieved through the practice and mastering of HIV risk-reduction skills (e.g., condom negotiation). Likewise, 12-step groups for clients with COD (e.g., Double Trouble in Recovery) whose operating premise is that individuals with COD collectively support each other in eliminating their substance use and in adhering to their treatment goals for recovery (e.g., medication adherence) needs to be expanded to include HIV prevention as one of its treatment goals for recovery.

In terms of COD with violence exposure, Falloot and Harris' (2002) Trauma Recovery and Empowerment Model (TREM) has emerged as a promising intervention. Given the TREM model's structure of empowerment, education and skill-building, HIV prevention could easily be inserted and thus, it is this researcher's recommendation that HIV prevention be included. Moreover, in light of this study's finding that HIV-positive males were significantly associated with child physical abuse and with child and adult sexual abuse, TREM needs to be expanded to men.

### ***Secondary HIV Prevention***

Secondary HIV prevention refers to activity aimed at enabling people with HIV to stay well. Secondary HIV prevention efforts often include the following components: HIV testing and counseling, partner notification and referral services, education on sexual behavior changes and safer sex methods, support of medication adherence, psychoeducation and support groups that discuss healthy lifestyle choices (e.g., proper nutrition and stress reduction), screening for STDs, and screening for AOD abuse and when appropriate, referral to AOD treatment. Mental disorder screenings, which contain items to detect trauma symptomatology, also need to be included in secondary prevention efforts as mental issues have been associated with poor HIV-medication adherence, which may result in treatment failure and poorer health outcomes. Moreover, there is consensus in research findings that for clients with COD and HIV there is an additional risk that substance use will adversely affect immune function and health status. Thus, all of the treatment approaches highlighted previously would work well for people living with COD and HIV; however, HIV education (e.g., prevention of reinfection via new strains of HIV) and prevention of transmission to others would need to be foci as well as dealing with any trauma symptomatology.

### ***Tertiary HIV Prevention***

Tertiary HIV prevention aims to minimize the effects of ill-health experienced by someone who is symptomatic with HIV disease. Tertiary HIV prevention efforts often include: prophylactic use of drugs and complementary therapies, and immuno-supportive educational programs. Furthermore, prevention efforts targeted at PLWA must take into account traumatic stressors (i.e., violence exposure) and their potential impact on the course of the disease; and given the vulnerability of people living with AIDS to discrimination and hate crime, violence prevention measures also need to be included in tertiary HIV prevention efforts as these measures provide an opportunity to maximize health care utilization and potentially improve physical and mental health. And again, as with secondary HIV prevention, tertiary HIV prevention needs to include interventions for people living with COD and HIV that recognize the importance of treating all associations of HIV.

Thus, for those who screen positive for the association of violence exposure, the following violence prevention measures need to be considered. As put forth by CDC (2006), these measures include strategies based on promoting respectful relationships (e.g., nonviolent conflict resolution, effective communication skills, ability to negotiate and adjust to stress, belief in a partner's right to autonomy, shared decision making and trust building). Furthermore, suicide prevention measures also need to be included in the

three levels of HIV prevention. As put forth by CDC (2008), these measures include strategies based on promoting and strengthening individual, family, and community connectedness in order to prevent suicidal behaviors. Components of community connectedness include: connectedness between individuals (e.g., high frequency of social contact and low levels of social isolation), connectedness of individuals and their families to community organizations (e.g., attachments to community organizations such as school and churches to increase an individual's sense of belonging, foster a sense of personal worth and provide access to a larger source of support), and connectedness among community organizations and social institutions (e.g., formal relationships between support services and referring organizations to help ensure that services are actually delivered that promote a client's well-being).

## **Conclusion**

This study achieved its aims of providing prevalence data of COD with HIV infection and of providing epidemiologic data to help further establish violence exposure and COD as principally associated with HIV infection—data which were needed to better inform HIV prevention efforts. In producing these data, this study also highlighted the need for additional research that addresses the associations of COD and HIV in the same client and the need for additional research that addresses the impact of violence exposure and COD with HIV. Future research needs to look at the effectiveness of the practice recommendations set forth here, and needs to evaluate the expansion of named approaches to new populations (e.g., TREM to males). As the HIV epidemic in the United States continues to progress, interventions continuously need to be tailored according to prevention needs.

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