



CFAR Substance Use Research Core (SURC) Faculty Publication and New Awards Digest

New research on HIV and substance use by our SURC faculty.

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New Publications

The United States National Cancer Institute's coordinated research effort on tobacco use as a major cause of morbidity and mortality among people with HIV.

Ashare RL, Bernstein SL, Schnoll R, Gross R, Catz SL, **Cioe P**, Crothers K, Hitsman B, Marhefka SL, McClure JB, Pacek LR, Vidrine DJ, Vilardaga R, Kaufman A, Edelman EJ. [Nicotine Tob Res. 2021 Jan 22;23\(2\):407-410.](#)

Summary: The use of antiretroviral therapy for people with HIV (PWH) has improved life expectancy. However, PWH now lose more life-years to tobacco use than to HIV infection. Unfortunately, PWH smoke at higher rates and have more difficulty maintaining abstinence than the general population, compounding their risk for chronic disease. In this Commentary, we describe a United States National Cancer Institute-led initiative to address the relative lack of research focused on developing, testing, and implementing smoking cessation interventions for PWH. This initiative supports seven clinical trials designed to systematically test and/or develop and test adaptations of evidence-based smoking cessation interventions for PWH (eg, combination of behavioral and pharmacological). We summarize

each project, including setting/recruitment sites, inclusion/exclusion criteria, interventions being tested, and outcomes. This initiative provides critical opportunities for collaboration and data harmonization across projects. The knowledge gained will inform strategies to assist PWH to promote and maintain abstinence, and ensure that these efforts are adaptable and scalable, thereby addressing one of the major threats to the health of PWH. Reducing smoking behavior may be particularly important during the COVID-19 pandemic given that smokers who become infected with SARS-CoV-2 may be at risk for more severe disease.

Implications: This Commentary describes a National Cancer Institute-led initiative to advance the science and practice of treating tobacco use among PWH, which is now responsible for more life years lost than HIV. We describe the scope of the problem, the objectives of the initiative, and a summary of the seven funded studies. Harmonization of data across projects will provide information related to treatment mediators and moderators that was not previously possible. Stakeholders interested in tobacco cessation, including researchers, clinicians and public health officials, should be aware of this initiative and the evidence-base it will generate to advance tobacco treatment among this high-risk population.

Post-traumatic stress disorder and risky opioid use among persons living with HIV and chronic pain.

Bhatraju E, Liebschutz JM, Lodi S, Forman LS, Lira MC, Kim TW, Colasanti J, Del Rio C, Samet JH, Tsui JI. [AIDS Care. 2021 Feb 4:1-8.](#)

Persons with HIV (PWH) experience chronic pain and Post-Traumatic Stress Disorder (PTSD) at higher rates than the general population, and more often receive opioid medications to treat chronic pain. A known association exists between PTSD and substance use disorders, but less is known about the relationship between PTSD and risky opioid use among PWH taking prescribed opioid medications. In this observational study of PWH on long-term opioid medications for pain we examined associations between PTSD symptom severity based on the Post Traumatic Stress Disorder Checklist for DSM-5 (PCL-5, response range 0-80) and the following outcomes: 1) risk for opioid misuse (COMM score ≥ 13); 2) risky alcohol use (AUDIT score ≥ 8); 3) concurrent benzodiazepine prescription; and 4) morphine equivalent dose. Among 166 patients, 38 (23%) had a PCL-5 score over 38, indicating high PTSD symptom burden. Higher PCL-5 score (per 10 point difference) was associated with increased odds of opioid misuse (aOR: 1.55; 95%CI: 1.31-1.83) and risky drinking (aOR: 1.28; 1.07-1.52). No significant association was observed between PCL-5 score and benzodiazepine prescriptions or morphine equivalent dose. These findings suggest that when addressing alcohol and opioid use in PWH on long term opioid therapy, attention to PTSD symptoms is especially important given the higher risk for risky alcohol and opioid use among patients with this common comorbid condition.

Hazardous alcohol use, impulsivity, and HIV-risk behavior among HIV-positive Russian patients with a history of injection drug use.

Chavez K, Palfai TP, Cheng DM, Blokhina E, Gnatienco N, Quinn EK, Krupitsky E, Samet JH. [Am J Addict. 2020 Dec 30.](#)

Background and objectives: Previous findings on the association between hazardous drinking and HIV-risk behavior have been equivocal, varying by population and individual difference factors. This study examined associations between hazardous drinking, impulsivity, and HIV-risk behaviors among HIV-positive Russian patients with a history of injection drug use (IDU), not on antiretroviral therapy.

Methods: Negative binomial regression analyses of data from a randomized controlled trial were performed (N = 241). Main independent variables were the Alcohol Use Disorders Identification Test and the Barratt Impulsiveness Scale. Outcomes were number of condomless sexual episodes (CSE; primary), number of sexual partners, and needle-sharing frequency (secondary).

Results: Hazardous drinking was positively associated with the frequency of CSE (adjusted incidence rate ratio [aIRR] = 2.16, 95% confidence interval [CI], 1.98-2.36). Moderate (aIRR = 0.51, 95% CI, 0.46-0.56) and high (aIRR = 0.66, 95% CI, 0.60-0.73) impulsivity were associated with fewer CSE compared with low impulsivity. Hazardous drinking (aIRR = 0.64, 95% CI, 0.52-0.79) and impulsivity (aIRR = 0.95, 95% CI, 0.94-0.96) were both associated with fewer sexual partners. Hazardous drinking and impulsivity were each associated with increased needle sharing. The association between hazardous drinking and number of needle-shares was strongest at higher impulsivity levels.

Conclusion and scientific significance: Hazardous drinking may be a risk factor for CSE among HIV-positive Russian patients and may influence needle sharing. Findings contribute to our understanding of the interactive associations between hazardous drinking and impulsivity with sexual risk behaviors and needle sharing among HIV-positive Russian patients with a history of IDU.

Violence, HIV risks, and polysubstance use among HIV-positive people who inject drugs in Ukraine.

Lee JO, Yoon Y, Idrisov B, Kiriazova T, Makarenko O, Sereda Y, Bendiks S, Cody K, Schoenberger SF, Nurius PS, Halim N, Flanigan T, **Samet JH**, Liebschutz J, **Lunze K**. [AIDS Behav. 2021 Jan 1.](#)

Violence experience has been consistently associated with HIV risks and substance use behaviors. Although many studies have focused on intimate partner violence (IPV), the role of violence at a structural level (i.e., police abuse) remains relevant for people who inject drugs. This study evaluated the association of IPV and police-perpetrated violence experiences with HIV risk behaviors and substance use in a cohort of HIV-positive people who inject drugs in Ukraine. We also evaluated possible moderation effects of gender and socioeconomic status in the links between violence exposure and HIV risk and polysubstance use behaviors. Data came from the Providence/Boston-CFAR-Ukraine Study involving 191 HIV-positive people who inject drugs conducted at seven addiction treatment facilities in Ukraine. Results from logistic regressions suggest that people who inject drugs and experienced IPV had higher odds of polysubstance use than those who did not experience IPV. Verbal violence and sexual violence perpetrated by police were associated with increased odds of inconsistent condom use. The odds of engaging in polysubstance use were lower for women in relation to police physical abuse. We found no evidence supporting socioeconomic status moderations. Violence experiences were associated with substance use and sexual HIV risk behaviors in this cohort of HIV-positive people who inject drugs in Ukraine. Trauma-informed prevention approaches that consider both individual and structural violence could improve this population's HIV risks.

Experiences of minority stress among gay, bisexual, and other men who have sex with men (GBMSM) in Nigeria, Africa: The intersection of mental health, substance use, and HIV sexual risk behavior.

Ogunbajo A, Iwuagwu S, Williams R, Biello KB, **Kahler CW**, Sandfort TGM, Mimiaga MJ. [Glob Public Health. 2020 Oct 27:1-15.](#)

Nigerian gay, bisexual, and other men who have sex with men (GBMSM) experience social marginalization, discrimination and violence due to their sexual orientation and same-sex attraction, which may affect mental health, substance use, and HIV sexual risk behavior. The goal of the current study was to conduct formative qualitative research to gain better understanding of these issues among GBMSM in Lagos, Nigeria. Face-to-face, semi-structured, in-depth interviews were conducted with 30 GBMSM in Lagos, Nigeria. Data were analyzed using a deductive content analysis approach. We found that Nigerian GBMSM experienced both general life stressors as well as proximal and distal sexual minority identity stressors, including rejection by family members, harassment, and physical violence perpetrated by the general public and police officers. Participants described dealing with mental health problems within the context of family rejection, experienced stigma due to sexual orientation, and feelings of social isolation. Substance use was described as occurring within the context of social settings. Lastly, some participants mentioned that they engaged in risky sexual behaviour while under the influence of alcohol and drugs. These findings call for comprehensive and innovative, GBMSM-affirming behavioural healthcare, substance cessation services, and innovative HIV prevention interventions specifically designed and tailored for Nigerian GBMSM.

Network structure and rapid HIV transmission among people who inject drugs: A simulation-based analysis.

Singleton AL, **Marshall BDL**, Bessey S, Harrison MT, Galvani AP, Yedinak JL, **Jacka BP**, Goodreau SM, **Goedel WC**. [Epidemics. 2020 Dec 14;34:100426.](#)

As HIV incidence among people who inject drugs grows in the context of an escalating drug overdose epidemic in North America, investigating how network structure may affect vulnerability to rapid HIV transmission is necessary for preventing outbreaks. We compared the characteristics of the observed contact tracing network from the 2015 outbreak in rural Indiana with 1000 networks generated by an agent-based network model with approximately the same number of individuals ($n = 420$) and ties between them ($n = 913$). We introduced an initial HIV infection into the simulated networks and compared the subsequent epidemic behavior (e.g., cumulative HIV infections over 5 years). The model was able to produce networks with largely comparable characteristics and total numbers of incident HIV infections.

Although the model was unable to produce networks with comparable cohesiveness (where the observed network had a transitivity value 35.7 standard deviations from the mean of the simulated networks), the structural variability of the simulated networks allowed for investigation into their potential facilitation of HIV transmission. These findings emphasize the need for continued development of injection network simulation studies in tandem with empirical data collection to further investigate how network characteristics played a role in this and future outbreaks.

HIV and substance use stigma, intersectional stigma and healthcare among HIV-positive PWID in Russia.

Vetrova MV, Cheng DM, Bendiks S, **Gnatienko N**, Lloyd-Travaglini C, Jiang W, Luoma J, Blokhina E, Krupitsky E, Lioznov D, Ekstrand ML, Raj A, **Samet JH**, **Lunze K**. [AIDS Behav. 2021 Jan 28.](#)

Little is known about the intersection of HIV stigma and substance use stigma. Using data from 188 HIV-positive people who inject drugs (PWID) in Russia, we examined the associations of these stigmas and their interaction with access and utilization of healthcare. While substance use stigma was significantly associated with poor access to care (AOR 2.31, 95%CI 1.50-3.57), HIV stigma was not. HIV stigma was associated with lower inpatient care utilization (AOR 0.32, 95%CI 0.14-0.65), while substance use stigma was not. We did not detect a significant interaction between the two forms of stigma for either of the primary outcomes. However, those with high levels of both substance use stigma and HIV stigma had higher odds of poor general access to healthcare (AOR 1.86, 95%CI 1.19-2.92), and lower odds of recent general outpatient (AOR 0.52, 95%CI 0.32-0.85) and any inpatient (AOR 0.48, 95%CI 0.22-0.99) care utilization compared to those with low levels of both types of stigma. Interventions addressing both substance use and HIV stigma in general healthcare settings might improve care in this HIV key population.

Hazardous alcohol use, antiretroviral therapy receipt, and viral suppression in people living with HIV who inject drugs in the United States, India, Russia, and Vietnam.

Wagman JA, Wynn A, Matsuzaki M, **Gnatienko N**, Metsch LR, Del Rio C, Feaster DJ, Nance RM, Whitney BM, Delaney JAC, Kahana SY, Crane HM, Chandler RK, Elliott JC, Altice F, Lucas GM, Mehta SH, Hirsch-Moverman Y, El-Sadr WM, Vu Q, Nguyen Thanh B, Springer SA, Tsui JI, **Samet JH**. [AIDS. 2020 Dec 1;34\(15\):2285-2294.](#)

Objectives: In high-income countries, hazardous alcohol use is associated with reduced receipt of antiretroviral therapy (ART) and viral suppression among people living with HIV (PLHIV) who inject drugs. These associations are less understood in lower middle-income countries (LMIC) and upper middle-income countries.

Design: We examined associations between hazardous alcohol use, ART receipt, and viral suppression among PLHIV who reported current or former injection drug use. Participants were from nine studies in the United States (high-income country), India (LMIC), Russia (upper middle-income country), and Vietnam (LMIC).

Methods: Hazardous alcohol use was measured via Alcohol Use Disorders Identification Test. Outcomes were HIV viral suppression (viral load of <1000 RNA copies/ml) and self-reported ART receipt. Logistic regression assessed associations between hazardous alcohol use and both outcome variables, controlling for age and sex, among participants with current and former injection drug use.

Results: Among 2790 participants, 16% were women, mean age was 37.1 ± 9.5 years. Mean Alcohol Use Disorders Identification Test scores were 4.6 ± 8.1 (women) and 6.2 ± 8.3 (men); 42% reported ART receipt; 40% had viral suppression. Hazardous alcohol use was significantly associated with reduced ART receipt in India (adjusted odds ratio = 0.59, 95% confidence interval: 0.45-0.77, P < 0.001); and lower rates of viral suppression in Vietnam (adjusted odds ratio = 0.51, 95% confidence interval: 0.31-0.82, P = 0.006).

Conclusion: Associations between hazardous alcohol use, ART receipt, and viral suppression varied across settings and were strongest in LMICs. Addressing hazardous alcohol use holds promise for improving HIV continuum of care outcomes among PLHIV who inject drugs. Specific impact and intervention needs may differ by setting.

Alcohol use and antiretroviral adherence among patients living with HIV: Is change in alcohol use associated with change in adherence?

Williams EC, McGinnis KA, Rubinsky AD, Matson TE, Bobb JF, Lapham GT, Edelman EJ, Satre DD, Catz SL, Richards JE, Bryant KJ, **Marshall BDL**, Kraemer KL, Crystal S, Gordon AJ, Skanderson M, Fiellin DA, Justice AC, Bradley KA. [AIDS Behav. 2021 Jan;25\(1\):203-214.](#)

Alcohol use increases non-adherence to antiretroviral therapy (ART) among persons living with HIV (PLWH). Dynamic longitudinal associations are understudied. Veterans Aging Cohort Study (VACS) data 2/1/2008-7/31/16 were used to fit linear regression models estimating changes in adherence (% days with ART medication fill) associated with changes in alcohol use based on annual clinically-ascertained AUDIT-C screening scores (range - 12 to + 12, 0 = no change) adjusting for demographics and initial adherence. Among 21,275 PLWH (67,330 observations), most reported no (48%) or low-level (39%) alcohol use initially, with no (55%) or small (39% \leq 3 points) annual change. Mean initial adherence was 86% (SD 21%), mean annual change was - 3.1% (SD 21%). An inverted V-shaped association was observed: both increases and decreases in AUDIT-C were associated with greater adherence decreases relative to stable scores [$p < 0.001$, $F(4, 21,274)$]. PLWH with dynamic alcohol use (potentially indicative of alcohol use disorder) should be considered for adherence interventions.

Using ecological momentary assessment (EMA) to explore mechanisms of alcohol-involved HIV risk behavior among men who have sex with men (MSM).

Wray TB, Monti PM, Kahler CW, Guigayoma JP. [Addiction. 2020 Dec;115\(12\):2293-2302.](#)

Background and aims: Heavy drinking is associated with increased risk of incident HIV infection among men who have sex with men (MSM). Past studies suggest that this association may be due to the tendency for intoxication to interfere with condom use. However, research on potential causal mechanisms explaining this relationship has been limited primarily to laboratory studies. In this study, we tested several potential mediators of the relationship between alcohol use level and HIV risk behavior.

Design: Ecological momentary assessment (EMA) methods conducted over a 30-day period.

Setting and participants/cases: MSM ($n = 100$) in the northeastern United States.

Measurements: Participants completed daily diary surveys and up to six experience sampling surveys randomly prompted throughout the day.

Findings: Very heavy levels of drinking (12+ drinks) increased the odds of engaging in any sex [odds ratio (OR) = 1.87, $P < 0.001$]. Coefficient products and 95% confidence intervals indicated that both subjective sexual arousal (OR = 1.52, $P < 0.001$) and sex intentions (OR = 1.74, $P < 0.001$) significantly mediated the association between very heavy drinking and the odds of sex. When participants reported sex, the odds of engaging in high-risk condomless anal sex (CAS) increased incrementally after drinking heavily (five to 11 drinks; OR = 3.27, $P = 0.006$) and very heavily (12+ drinks; OR = 4.42, $P < 0.001$). Only subjective sexual arousal significantly mediated the association between alcohol use level and high-risk CAS (OR = 1.16, $P = 0.040$).

Conclusions: Increases in subjective sexual arousal after drinking heavily appear to partly account for alcohol-related HIV risk behaviors in the daily lives of men who have sex with men. Alcohol's role in strengthening motivationally consistent emotional states may therefore play a more important role in facilitating alcohol-involved HIV risk than explicit sexual motivation.
