



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

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

If you have any other publications or awards, please send them to [Natalia Gnatienco](#) to include in the next publication digest!

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Announcements

The Inter-CFAR Substance Use Research Community (I-SURC) is pleased to announce a new quarterly I-SURC Early Stage Investigator Spotlight Seminar Series! The purpose of this seminar series is to provide a platform for early stage investigators to disseminate their work to a national audience of CFAR investigators with specific interests in the intersection of HIV and substance use. This opportunity is reserved for CFAR-affiliated early career investigators (post-doctoral fellow or faculty with no more than 5 years at the Assistant Professor level), who would like to present work that has either not yet been published or was published less than a year ago. If you are interested in being considered for this opportunity, [please complete this brief form](#).

Additionally, the I-SURC is opening up a limited number of grant application feedback opportunities (i.e., K-series, first R-series) for early career investigators who have never received R01 funding. If you are applying for these types of awards and are interested in receiving feedback on your application from senior HIV and substance use researchers, [please click here](#).

Relevant Funding Announcements

[RFA-DA-23-024](#): NIDA REI: Reaching Equity at the Intersection of HIV and Substance Use: Novel Approaches to Address HIV Related Health Disparities in Underserved Racial/Ethnic Populations (R34 Clinical Trial Optional)

[RFA-DA-23-023](#): NIDA REI: Reaching Equity at the Intersection of HIV and Substance

Please [let us know](#) if you are interested in pursuing these opportunities!

New Publications

Self-reported cannabis use and HIV viral control among patients with HIV engaged in care: Results from a national cohort study. *Int J Environ Res Public Health*. 2022 May 6;19(9):5649. PMID: PMC9101884.

Bahji A, Li Y, Vickers-Smith R, Crystal S, Kerns RD, Gordon KS, Macmadu A, Skanderson M, **So-Armah K**, Sung ML, Bhondoekhan F, **Marshall BDL**, Edelman EJ.

Background: The association between cannabis use and HIV-1 RNA (viral load) among people with HIV (PWH) engaged in care is unclear.

Methods: We used data collected from 2002 to 2018 on PWH receiving antiretroviral therapy (ART) enrolled in the Veterans Aging Cohort Study. Generalized estimating equations were used to estimate associations between self-reported past-year cannabis use and detectable viral load (≥ 500 copies/mL), with and without adjustment for demographics, other substance use, and adherence.

Results: Among 2515 participants, 97% were male, 66% were Black, the mean age was 50 years, and 33% had detectable HIV viral load at the first study visit. In unadjusted analyses, PWH with any past-year cannabis use had 21% higher odds of a detectable viral load than those with no past-year use (OR = 1.21; 95% CI, 1.07-1.37). However, there was no significant association between cannabis use and viral load after adjustment.

Conclusions: Among PWH engaged in care and receiving ART, cannabis use is associated with decreased adherence in unadjusted analyses but does not appear to directly impact viral control. Future studies are needed to understand other potential risks and benefits of cannabis use among PWH.

Patient and provider perspectives on a novel, low-threshold HIV PrEP program for people who inject drugs experiencing homelessness. *J Gen Intern Med*. 2022 May 25:1–9. Epub ahead of print. PMID: PMC9132566.

Bazzi AR, Shaw LC, **Biello KB**, Vahey S, Brody JK.

Background: HIV outbreaks among people who inject drugs (PWID) and experience homelessness are increasing across the USA. Despite high levels of need, multilevel barriers to accessing antiretroviral pre-exposure prophylaxis (PrEP) for HIV prevention persist for this population. The Boston Health Care for the Homeless Program (BHCHP) initiated a low-threshold, outreach-based program to support engagement in PrEP services among PWID experiencing homelessness.

Methods: To inform dissemination efforts, we explored patient and provider perspectives on key program components. From March to December 2020, we conducted semi-structured qualitative interviews with current and former BHCHP PrEP program participants and prescribers, patient navigators, and outreach workers (i.e., providers). Thematic analysis explored perspectives on key program components.

Results: Participants (n = 21) and providers (n = 11) identified the following five key components of BHCHP's PrEP program that they perceived to be particularly helpful for supporting patient engagement in PrEP services: (1) community-driven PrEP education; (2) low-threshold, accessible programming including same-day PrEP prescribing; (3) tailored prescribing supports (e.g., on-site pharmacy, short-term prescriptions, medication storage); (4) intensive outreach and navigation; and (5) trusting, respectful patient-provider relationships.

Discussion: Findings suggest that more patient-centered services formed the basis of BHCHP's innovative, successful PrEP program. While contextual challenges including competing public health emergencies and homeless encampment "sweeps" necessitate ongoing programmatic adaptations, lessons from BHCHP's PrEP program can inform PrEP delivery in a range of community-based settings serving this population, including syringe service programs and shelters.

Long-acting injectable human immunodeficiency virus pre-exposure prophylaxis preferred over other modalities among people who inject drugs: Findings from a qualitative study in California. *AIDS Patient Care STDS*. 2022 Jul;36(7):254-262. Epub 2022 Jun 21.

Bazzi AR, Valasek CJ, Streuli SA, Vera CF, Harvey-Vera A, Philbin MM, **Biello KB**, Roth AM, Strathdee SA, Pines HA.

People who inject drugs (PWID) have extraordinarily low uptake of human immunodeficiency virus (HIV) pre-exposure prophylaxis (PrEP) despite high levels of need. Long-acting PrEP modalities hold promise for HIV prevention among PWID, but product preferences remain poorly understood. From September to November 2021, we conducted qualitative interviews with 28 HIV-negative, adult (≥ 18 years) PWID in San Diego County, CA, to explore their perspectives on daily oral PrEP pills and long-acting PrEP modalities (i.e., injections, implants, intravaginal rings, and broadly neutralizing antibodies), which we explained using standard scripts. Thematic analysis identified variations in PrEP modality interest and acceptability. We identified three key factors across the 28 interviews that appeared to influence PrEP modality preferences: perceived convenience of use, invasiveness, and familiarity (based on past experience). Overall, most participants preferred injectable PrEP over other modalities because they viewed injectable medications as convenient, noninvasive, and familiar. While injectable PrEP was recently approved for use in the United States and was most the acceptable PrEP modality in this sample, our findings suggest that intervention and implementation research is urgently needed to improve our understanding of strategies that could support access, uptake, and sustained adherence to longer-acting PrEP for PWID.

Impulsivity and linkage to HIV care among people living with HIV in St. Petersburg, Russia. *AIDS Behav*. 2022 Jun 16. Epub ahead of print.

Dey AK, Ennis N, Cheng DM, Blokhina E, Raj A, Quinn E, Bendiks S, Palfai T, Dunne EM, Cook RL, Krupitsky E, **Samet JH**.

This study evaluated the association between impulsivity and linkage to HIV care among Russians living with HIV recruited from an inpatient narcology hospital. Linking Infectious and Narcology Care (LINC) study participants who completed the Barratt Impulsiveness Scale (BIS) were included in these analyses. The primary independent variable was impulsivity score which was categorized as high impulsivity (BIS score > 71) vs. low impulsivity (BIS score ≤ 71). The primary outcome, linkage to care post recruitment, was defined as one or more HIV medical care visits at 12-month follow-up. Multiple logistic regression models were used to evaluate the association between high impulsivity and linkage to HIV care controlling for potential confounders. Participants ($N = 227$) were adults with a mean age of 34 years ($SD = 5$), and the majority were male (74%). We did not detect a significant association between impulsivity and linkage to HIV care after adjusting for respondents' age, gender, CD4 cell count, and depression score. We also found that substance use and hazardous drinking did not appear to confound the relationship. Although our study was unable to detect an association between impulsivity and linkage to HIV care, it may provide direction for future research exploring the associations between impulsivity and HIV care.

Patient-reported bothersome symptoms attributed to alcohol use among people with and without HIV. *AIDS Behav*. 2022 May 13. Epub ahead of print.

Gordon KS, Becker WC, Bryant KJ, Crystal S, Maisto SA, **Marshall BDL**, McInnes DK, Satre DD, Williams EC, Edelman EJ, Justice AC.

Helping people with HIV (PWH) and without HIV (PWoH) understand the relationship between physical symptoms and alcohol use might help motivate them to decrease use. In surveys collected in the Veterans Aging Cohort Study from 2002 to 2018, PWH and PWoH were asked about 20 common symptoms and whether they thought any were caused by alcohol use. Analyses were restricted to current alcohol users (AUDIT-C > 0). We applied generalized estimating equations. The outcome was having any Symptoms Attributed to Alcohol use (SxAA). Primary independent variables were each of the 20

symptoms and HIV status. Compared to PWoH, PWH had increased odds of SxAA (OR 1.54; 95% CI 1.27, 1.88). Increased AUDIT-C score was also associated with SxAA (OR 1.32; 95% CI 1.28, 1.36), as were trouble remembering, anxiety, and weight loss/wasting. Evidence that specific symptoms are attributed to alcohol use may help motivate people with and without HIV decrease their alcohol use.

HIV, substance use, and intersectional stigma: Associations with mental health among persons living with HIV who inject drugs in Russia. *AIDS Behav.* 2022 Aug 1. Epub ahead of print.

Hook K, Sereda Y, Rossi S, Koberna S, Vetrova MV, Lodi S, **Lunze K.**

HIV stigma is associated with negative physical and mental health outcomes. Intersectional stigma among persons living with HIV (PLHIV) results from interrelated, synergistic impacts of experiencing multiple stigma forms. Its relation with mental health outcomes is still an emerging area of study in this key population. This study aimed to evaluate associations of intersectional stigma, defined as endorsing high levels of HIV and substance use stigmas, with depressive and anxiety symptoms in a cohort of 111 PLHIV who inject drugs in St. Petersburg, Russia. Over a third of participants (37%) reported experiencing intersectional stigma (i.e., both stigma scores above the median). In adjusted analysis, lower Patient Health Questionnaire depression scale (PHQ-9) scores (beta (β)=-4.31, 95% CI: -7.11 - -1.51, $p = 0.003$) and Generalized Anxiety Disorders Scale (GAD-7) scores (β =-3.64, 95% CI: -5.57 - -1.71, $p < 0.001$) were associated with having low scores for both HIV and substance use stigmas. Lower PHQ-9 scores (β =-3.46, 95% CI: -5.72 - -1.19, $p = 0.003$) and GAD-7 scores (β =-3.06, 95% CI: -4.62 - -1.50, $p < 0.001$) were also associated with high stigma on either HIV or substance use stigma scales. Controlling for demographics, depressive symptoms approximately linearly increased from both forms of stigma low to experiencing either form of stigma high to experiencing intersectional stigma, while levels of anxiety symptoms were comparable among participants with both types of stigma low and one stigma high. Participants who experienced intersectional stigma reported the greatest severity of both depressive and anxiety symptoms, as compared to individuals who endorsed low stigma scores (i.e., low stigma on both HIV and substance use stigma scales) or high scores of only one form of stigma. This suggests that intersectional stigma in this population of PLHIV who inject drugs in Russia is linked with worsened mental health outcomes, exceeding the effects of experiencing one form of stigma alone. Interventions to help people cope with intersectional stigma need to consider affective symptoms and tailor coping strategies to address impacts of multiple forms of mental health distress.

Prescribe to save lives: Improving buprenorphine prescribing among HIV clinicians. *J Acquir Immune Defic Syndr.* 2022 Aug 15;90(5):546-552. PMID: PMC9283214.

Jawa R, **Walley AY**, Wilson DJ, Green TC, McKenzie M, Hoskinson R Jr, Bratberg J, Ramsey S, **Rich JD**, Friedmann PD.

Background: HIV clinicians are uniquely positioned to treat their patients with opioid use disorder using buprenorphine to prevent overdose death. The Prescribe to Save Lives (PtSL) study aimed to increase HIV clinicians' buprenorphine prescribing via an overdose prevention intervention.

Methods: The quasi-experimental stepped-wedge study enrolled 22 Ryan White-funded HIV clinics and delivered a peer-to-peer training to clinicians with follow-up academic detailing that included overdose prevention education and introduced buprenorphine prescribing. Site-aggregated electronic medical record (EMR) data measured with the change in X-waivered clinicians and patients prescribed buprenorphine. Clinicians completed surveys preintervention and at 6- and 12-month postintervention that assessed buprenorphine training, prescribing, and attitudes. Analyses applied generalized estimating equation models, adjusting for time and clustering of repeated measures among individuals and sites.

Results: Nineteen sites provided EMR prescribing data, and 122 clinicians returned surveys. Of the total patients with HIV across all sites, EMR data showed 0.38% were prescribed buprenorphine pre-intervention and 0.52% were prescribed buprenorphine postintervention. The intervention increased completion of a buprenorphine training course (adjusted odds ratio 2.54, 95% confidence interval: 1.38 to 4.68, $P = 0.003$) and

obtaining an X-waiver (adjusted odds ratio 2.11, 95% confidence interval: 1.12 to 3.95, P = 0.02). There were nonsignificant increases at the clinic level, as well.

Conclusions: Although the PtSL intervention resulted in increases in buprenorphine training and prescriber certification, there was no meaningful increase in buprenorphine prescribing. Engaging and teaching HIV clinicians about overdose and naloxone rescue may facilitate training in buprenorphine prescribing but will not result in more treatment with buprenorphine without additional interventions.

Functional impairment and cognitive symptoms among people with HIV infection on chronic opioid therapy for pain: the impact of gabapentin and other sedating medications. *AIDS Behav.* 2022 Jun 23. Epub ahead of print.

Kim TW, Samet JH, Lodi S, Kimmel SD, Forman LS, Lira MC, Liebschutz JM, Williams EC, Walley AY.

Gabapentin is associated with dizziness, falls, and somnolence yet commonly prescribed to people with HIV (PWH) treated with chronic opioid therapy (COT). Physical function and cognition are understudied when prescribed together. Among PWH on COT, we evaluated whether co-prescribed gabapentin is associated with (a) functional impairment; (b) trouble thinking clearly; and (c) difficulty controlling drowsiness using logistic regression models adjusted for prescribed opioid dose, other (non-gabapentin) sedating medication, substance use disorder, and mental/physical health indicators in a cross-sectional study. Among 166 participants, 40% were prescribed gabapentin, 41% reported functional impairment, 41% trouble thinking clearly, and 38% difficulty controlling drowsiness. Gabapentin co-prescribed with COT was significantly associated with trouble thinking clearly but not with functional impairment or difficulty controlling drowsiness. Clinicians should be cognizant of potential problems with thinking clearly when co-prescribing gabapentin and opioid medication.

Stimulant use interventions may strengthen 'Getting to Zero' HIV elimination initiatives in Illinois: Insights from a modeling study. *Int J Drug Policy.* 2022

May;103:103628. Epub 2022 Feb 24. PMID: PMC9058209.

Lee F, Sheeler D, Hotton A, Vecchio ND, Flores R, Fujimoto K, Harawa N, Schneider JA, Khanna AS.

Objective(s): Getting to Zero (GTZ) is an Illinois-based HIV elimination initiative. GTZ identifies younger Black men who have sex with men (YBMSM) as a population who have experienced disproportionate HIV incidence. Rising stimulant use among YBMSM has been determined to impede engagement in the HIV prevention and treatment continua for reducing onward HIV transmission. Given the limited development of dedicated or culturally appropriate interventions for this population, this modeling study explores the impact of stimulant use on HIV incidence among YBMSM and assesses the impact of interventions to treat stimulant use on downstream HIV transmission to achieve GTZ goals.

Methods: A previously developed agent-based network model (ABNM), calibrated using data for YBMSM in Illinois, was extended to incorporate the impact of stimulant use (methamphetamines, crack/cocaine, and ecstasy) on sexual networks and engagement in HIV treatment and prevention continua. The model simulated the impact of a residential behavioral intervention (BI) for reducing stimulant use and an outpatient biomedical intervention (mirtazapine) for treating methamphetamine use. The downstream impact of these interventions on population-level HIV incidence was the primary intervention outcome.

Results: Baseline simulated annual HIV incidence in the ABNM was 6.93 [95% Uncertainty Interval (UI): 6.83,7.04] per 100 person years (py) and 453 [95% UI: 445.9,461.2] new infections annually. A residential rehabilitation intervention targeted to 25% of stimulant using persons yielded a 27.1% reduction in the annual number of new infections. Initiating about 50% of methamphetamine using persons on mirtazapine reduced the overall HIV incidence among YBMSM by about 11.2%. A 30% increase in antiretroviral treatment (ART) and preexposure prophylaxis (PrEP) uptake in the non-stimulant using YBMSM population combined with a 25% uptake of BI for stimulant using persons produces an HIV incidence consistent with HIV elimination targets (about 200 infections/year) identified in the GTZ initiative.

Conclusions: Behavioral and biomedical interventions to treat stimulant use, in addition to expanding overall ART and PrEP uptake, are likely to enhance progress towards achieving GTZ goals.

Correlates of intersectional HIV and substance use stigma affecting people with HIV and substance use in St. Petersburg, Russia. *AIDS Behav.* 2022 Aug 2. Epub ahead of print.

Lodi S, Rossi SL, Bendiks S, Gnatienko N, Lloyd-Travaglini C, Vetrova M, Toussova O, Bushara N, Blokhina E, Krupitsky E, Ekstrand ML, Lioznov D, **Samet JH, Lunze K.**

People with HIV (PWH) who inject drugs often experience coexisting HIV- and substance use-related stigma manifestations. We assessed correlates of HIV stigma (Berger HIV stigma scale), substance use stigma (Substance Abuse Self-stigma scale) and intersectional HIV and substance use stigma in a cohort of PWH with a lifetime history of drug use in St. Petersburg, Russia. Intersectional stigma was defined as having a score greater than the median for both forms of stigma. Of the 208 participants, 56 (27%) had intersectional stigma. Depressive symptoms and alcohol dependence were significantly associated with a higher HIV and substance stigma score, but not with intersectional stigma. Individual and community interventions to reduce the impact of HIV stigma and substance use stigma affecting PWH who inject drugs should consider assessing and addressing mental health and unhealthy substance use. Further work with longitudinal data is needed to understand mechanisms leading to intersectional stigma.

Effectiveness of Varenicline and Cytisine for Alcohol Use Reduction Among People With HIV and Substance Use: A Randomized Clinical Trial. *JAMA Netw Open.* 2022 Aug 1;5(8):e2225129.

Tindle HA, Freiberg MS, Cheng DM, Gnatienko N, Blokhina E, Yaroslavtseva T, Bendiks S, Patts G, Hahn J, **So-Armah K, Stein MD,** Bryant K, Lioznov D, Krupitsky E, **Samet JH.**

Importance: Cigarette smoking and risky alcohol consumption co-occur and are undertreated. Nicotine receptor partial agonists and nicotine replacement therapy (NRT) treat smoking but are unproven for alcohol, and clinical trials rarely include individuals with HIV, substance use, and mental health conditions.

Objective: To compare the effects on drinking and smoking of nicotinic acetylcholine receptor partial agonists varenicline and cytisine with those of NRT.

Design, setting, and participants: This 4-group randomized, double-blinded, placebo-controlled clinical trial was conducted from July 2017 to December 2020 in St Petersburg, Russia. Included participants were 400 individuals with HIV who engaged in risky drinking (≥ 5 prior-month heavy-drinking days [HDDs]) and daily smoking; they were followed up for 12 months after enrollment. Data were analyzed from May 2021 through June 2022.

Interventions: Participants received alcohol and tobacco counseling, 1 active medication, and 1 placebo in 1 of 4 groups: active varenicline and placebo NRT (group 1), placebo varenicline and active NRT (group 2), active cytisine and placebo NRT (group 3), or placebo cytisine and active NRT (group 4).

Main outcomes and measures: The primary outcome was number of prior-month HDDs at 3 months. Secondary outcomes included biochemically validated abstinence from alcohol at 3 months and smoking at 6 months.

Results: Among 400 participants (263 [65.8%] men; mean [SD] age, 39 [6] years), 97 individuals (24.3%) used opioids and 156 individuals (39.1%) had depressive symptoms. These individuals had a mean (SD) CD4 count of 391 (257) cells/mm³, smoked a mean (SD) of 21 [8] cigarettes/d, and reported a mean (SD) of 9.3 (5.8) HDDs in the prior 30 days. At 3 months, the mean (SD) number of HDDs was decreased vs baseline across all groups (group 1: 2.0 [3.8] HDDs vs. 9.5 [6.1] HDDs; group 2: 2.1 [4.3] HDDs vs 9.3 [5.7] HDDs; group 3: 1.5 [3.3] HDDs vs 8.9 [5.0] HDDs; group 4: 2.4 [5.2] HDDs vs 9.6 [6.3] HDDs). There were no significant differences at 3 months between groups in mean (SD) HDDs, including group 1 vs 2 (incident rate ratio [IRR], 0.94; 95% CI, 0.49-1.79), 3 vs 4 (IRR, 0.60; 95% CI, 0.30-1.18), and 1 vs 3 (IRR, 1.29; 95% CI, 0.65-2.55). There were no significant differences at 6 months between groups in smoking abstinence, including group 1 vs 2 (15 of 100 individuals [15.0%] vs 17 of 99 individuals [17.2%]; odds ratio [OR], 0.89; 95% CI, 0.38-2.08), 3 vs 4 (19 of 100 individuals [19.0%] vs 19 of 101 individuals [18.8%]; OR, 1.00; 95% CI, 0.46-2.17), and 1 vs 3 (OR, 0.79; 95% CI, 0.35-

1.78). Post hoc analyses suggested lower mean (SD) HDDs (eg, at 3 months: 0.7 [1.8] HDDs vs 2.3 [4.6] HDDs) and higher alcohol abstinence (eg, at 3 months: 30 of 85 individuals [35.3%] vs 54 of 315 individuals [17.1%]) among those who quit vs continued smoking.

Conclusions and relevance: This study found that among individuals with HIV who engaged in risky drinking and smoking, varenicline and cytisine were not more efficacious than NRT to treat risky drinking and smoking but that behavior change rates were high in all groups.

Anger and substance use in HIV-positive patients with chronic pain. [AIDS Care.](#)

2022 Jun 21:1-9. Epub ahead of print.

Yeh JC, Uebelacker LA, Pinkston MM, Anderson BJ, Busch AM, Abrantes AM, Baker JV, Stein MD.

Chronic pain increases the risk of substance use in people living with HIV (PLWH). Depression and anxiety have also been identified as risk factors for substance use among PLWH. Relatedly, other negative mood states, such as anger, may influence chronic pain among PLWH. The current cross-sectional study examined whether the distinct negative mood state of anger is associated with substance use among 187 PLWH who report chronic pain. Using negative binomial regression analyses, we found higher levels of anger were positively associated with alcohol use. Higher levels of anger were inversely associated with benzodiazepine use. No association was found between anger and marijuana use, and there were no significant interactions between anger and pain severity on substance use. Our findings suggest that anger is an independent risk factor for substance use among PLWH and chronic pain. Addressing anger may be useful when adapting behavioral therapies in the treatment of pain among PLWH.

Modeling the impact of race, socioeconomic status, discrimination and cognitive appraisal on mental health concerns among heavy drinking HIV+ cisgender MSM.

[AIDS Behav.](#) 2022 Jun 10. Epub ahead of print.

Zelaya DG, Guy AA, Surace A, Mastroleo NR, Pantalone DW, Monti PM, Mayer KH, Kahler CW.

Prior research has attributed mental health disparities between marginalized and non-marginalized populations to socioeconomic differences (i.e., education, income, employment), stigma (e.g., HIV-related discrimination), and cognitive appraisal (i.e., optimism, hostility, satisfaction with life), but the relations among these variables have not been examined concomitantly. The current study utilized structural equation modeling to examine how race and socioeconomic status impact mental health outcomes through increased exposure to stigma and more negative cognitive appraisals. Data came from a randomized controlled trial of motivational interviewing to address heavy drinking in cisgender men with HIV who have sex with men (n = 180). We found that self-reported discrimination experiences related to race/ethnicity, sexual orientation, and HIV status significantly mediated the relation between socioeconomic status and mental health concerns, whereas cognitive appraisal did not. These findings suggest that, among heavy drinking men with HIV who have sex with men, having low socioeconomic resources may increase exposure to discrimination which, in turn, may worsen mental health. Interventions that address social determinants, like socioeconomic disadvantage, and that enhance coping resources related to stigma, may have positive effects on mental health.
