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 toNatalia Gnatienko to include in the next publication digest!

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Recent Funding Announcements

RFA-OD-25-008: Tobacco Regulatory Science Small Grant Program for New Investigators (R03 Clinical Trial Optional)

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Please let us know if you are interested in pursuing these opportunities!

New Publications

Validating the information technology (IT) implementation framework to Implement mHealth technology for consumers: A case study of the Sense2Quit app for smoking cessation. *Int J Med Inform*. 2025 Oct;202:105977. PMCID: PMC12145232. Brin M, Fontalvo S, Hu D, **Cioe P**, Huang MC, Xu W, Schnall R.

Objective: The goal of this paper was to understand the applicability of the Information Technology (IT) Implementation Framework, a multi-level approach to identify factors that impede or promote IT usage, for incorporating a mHealth technology for consumers in the community setting.
Methods: A case study of the implementation of the Sense2Quit App for smoking cessation among people living with HIV was examined to parse out the factors within the framework that are applicable to mHealth technology and the factors that may need modification for use of this framework within this context.

Results: Findings suggest that phases two through five of the framework were applicable to our study and phase one was not.
Conclusion: Findings support the use of the theory for implementation of mHealth technology for promoting consumer health at the community level. This use case may be useful for stakeholders evaluating implementation of mHealth for patients with chronic conditions as it highlights the need to identify preferences of app specifications, personal habits, and various factors such as confidentiality and digital literacy which may challenge sustained usage.

Multiple discrimination, substance-related coping, and depression among sexual minority men with HIV. *J Homosex*. 2025 Jul 14:1-20.
Chiu C, Shin HJ, Baldwin HT, O'Cleirigh C, Mayer KH, **Batchelder AW**.

Sexual minority men (SMM) with HIV who use substances experience multiple forms of stigma (e.g., experienced discrimination) related to aspects of themselves and their behaviors and are disproportionately affected by depression. More research is needed to examine the interrelations between multiple discrimination, including substance-related discrimination, and depression, and the intervening role of substance-related coping among SMM with HIV who use drugs. Self-report data (N = 195) collected between 2017-2018 included experienced discrimination (categories included HIV, sexual orientation, race/ethnicity, substance use), substance-related coping, and depressive symptoms. ANCOVA results revealed significant differences in depressive symptoms based on the number of discrimination categories endorsed, $F(6,188) = 11.71$, $p < .001$, with groups that endorsed discrimination across more stigmatized categories reporting higher depressive symptoms. Supplemental ANCOVA results also indicated differences in depressive symptoms based on endorsement of substance use discrimination, $F(4,190) = 19.16$, $p < .001$. Analysis of indirect associations revealed substance-related coping partially accounted for the relation between multiple discrimination and depressive symptoms, b = 1.19, 95%CI [0.58, 1.91]. Results suggest that there is a cumulative association between multiple discrimination and depressive symptoms, and substance-related discrimination and substance-related coping may be particularly important influencers on this association. Multi-level intervention efforts that target multiple discrimination could help ameliorate the high rates of depression in this community.

The effects of switching to the standardized research electronic cigarette in people with HIV who smoke in the United States. *Prev Med*. 2025 Jul;196:108309.
Cioe PA, Lechner WV, Stang GS, **Kahler CW**, Tashima KT, Eissenberg T, Tidey JW.

Objective: People with HIV (PWH) who smoke and report ambivalence about quitting may benefit from switching to non-combusted nicotine products. This pilot study examined the effects of providing the NIDA standardized research electronic cigarette (SREC) on smoking behaviors and inflammatory biomarkers in PWH.
Methods: Thirty-five participants in the United States were enrolled from April 2022 to January 2024 (Mean age 54.4 [13.2] years, 30.1 % female, 62.9 % White) and randomized to SREC provision (n = 17) or usual brand control (n = 18). SREC participants were asked to substitute tobacco-flavor pod-type SRECs for their combustible cigarettes. SREC use and cigarette use were assessed weekly for 6 weeks. Serum inflammatory biomarkers were measured at baseline and week 6.
Results: The effect of condition on cigarettes per day (CPD) during the 6-week period was significant, B = -5.68, 95 % CI = -10.25, -1.11: CPD were reduced by 42.7 % in the SREC condition versus 17.3 % in the control condition. Participants in the SREC condition reported significantly lower urge to smoke at week 6 compared to those in control, (B = -17.05, 95 % CI = -27.15, -6.95). One (5.9 %) participant reported that they transitioned completely from CCs to SREC at week 6. Significant decreases in inflammatory biomarkers were not observed.
Conclusions: Participants who were provided the SREC, compared to those in the control condition, smoked fewer CPD and had reduced urge to smoke. However, dual use was the most common outcome, indicating that additional support may be needed to improve the likelihood of complete transition from CCs to noncombustible products.

"I've learned that I'm open-minded to this possibility": A qualitative study to evaluate the acceptability of a psilocybin-aided smoking cessation treatment for people with HIV who smoke. *Addict Sci Clin Pract*. 2025 Jul 21;20(1):56. PMCID: PMC12278509.
Cioe PA, Stang GS, Azam D, Dugal S.

Background: People with HIV (PWH) are disproportionately affected by cigarette use, with a 40 - 70% prevalence rate. Although many express a strong interest in quitting, many PWH who smoke experience lower cessation rates with traditional treatments, in part due to their comorbid anxiety and depressive symptoms. Psilocybin, a classic psychedelic referred to as "breakthrough therapy" by the U.S. Food & Drug Administration (FDA), has been shown to have potential as a therapeutic treatment for psychiatric symptoms, (e.g., anxiety and depression) and substance use disorders, including tobacco dependence. Preliminary evidence has shown that administering psilocybin to people who smoke and have been previously unable to quit with traditional treatments resulted in impressive smoking abstinence rates (80%) at 6-months in a smoking cessation pilot study.
Objective: Explore, using qualitative methods, the perceptions and acceptability of a psilocybin-assisted treatment for smoking cessation among PWH who smoke.
Methods: Semi-structured, in-depth qualitative interviews were conducted with PWH who smoke. Interviews were audio-recorded, transcribed verbatim, and analyzed using rapid thematic analysis.
Results: Twenty-five participants were enrolled: 15 cis male, 9 cis female, and 1 transgender female. Five main themes emerged: varying previous experiences with psilocybin; uncertainty about psilocybin's effects and concern over potential side effects; need for trusted sources of information and testimonials; ultimately willing to try psilocybin-aided therapy for tobacco treatment; and, set and setting of psilocybin use matters.
Conclusions: Psilocybin-assisted smoking cessation treatment appears to be acceptable among PWH who smoke. Participants highlighted the importance of addressing key concerns related to an emerging therapy to increase acceptability and willingness to try it. Further research is needed to evaluate the safety and effectiveness of psilocybin prior to incorporating this emerging therapy for smoking cessation into tobacco treatment clinical services for PWH.

Preloading with nicotine replacement therapy in people with HIV who smoke: a pilot randomized controlled trial. *Nicotine Tob Res*. 2025 Jun 6:ntaf123.
Cioe PA, Stang GS, Azam D, Piper ME, **Kahler CW**.

Introduction: Smoking cessation rates in people with HIV (PWH) are lower than in the general population, even when evidence-based treatments are used. This 16-week study examined the feasibility, acceptability, and preliminary efficacy of preloading with nicotine replacement therapy (NRT) in PWH to improve cessation outcomes.
Methods: Forty-nine participants were randomized to nicotine patch preloading for 3 weeks (NRT-P) prior to the target quit date (TQD) or standard treatment with no preloading (ST). All participants received combination NRT for 8 weeks at TQD, with five sessions of behavioral counseling. At week 16, biochemically verified 7-day point-prevalence abstinence (PPA) was assessed.
Results: Mean preloading patch days was 19.7 (out of 21 days; SD 2.7), indicating excellent acceptability. Mean patch days post-TQD (out of 56 days) was 47.4 (SD = 13.2) in NRT-P and 32.7 (SD = 21.8) in ST (t = -2.48, p=.01). At week 16 there was no group difference in week 16 PPA, but NRT-P participants smoked significantly fewer cigarettes per week (10.1 [SD 14.7] vs. 47.2 [SD 67.6]) and had lower CO levels (5.22 [SD 3.6] vs. 10.89 [SD 11.3], p=.04) compared to ST participants. Cessation self-efficacy increased significantly over time in the NRT-P condition only.
Conclusions: NRT preloading is feasible and acceptable among PWH, with excellent adherence to preloading, and benefits observed relative to ST following TQD in patch adherence, self-efficacy, cigarettes smoked per day, and CO levels. The lack of effect of preloading on smoking abstinence suggests further study is needed.
Implications: Preloading with nicotine patch among people with HIV (PWH) who smoke prior to the target quit date may be an effective means of improving adherence to smoking cessation medications both pre- and post-quit. By increasing self-efficacy for quitting and lowering cigarette dependence, preloading may improve cessation rates and help reduce

the burden of tobacco-related disease among PWH. Further research is needed.

A robust cross-platform solution with the Sense2Quit system to enhance smoking gesture recognition: model development and validation study. *J Med Internet Res*. 2025 May 20;27:e67186. PMCID: PMC12134699.
Das A, Feng J, Brin M, **Cioe P**, Schnall R, Huang MC, Xu W.

Background: Smoking is a leading cause of preventable death, and people with HIV have higher smoking rates and are more likely to experience smoking-related health issues. The Sense2Quit study introduces innovative advancements in smoking cessation technology by developing a comprehensive mobile app that integrates with smartwatches to provide real-time interventions for people with HIV attempting to quit smoking.
Objective: We aim to develop an accurate smoking cessation app that uses everyday smartwatches and an artificial intelligence model to enhance the recognition of smoking gestures by effectively addressing confounding hand gestures that mimic smoking, thereby reducing false positives. The app ensures seamless usability across Android (Open Handset Alliance [led by Google]) and iOS platforms, with optimized communication and synchronization between devices for real-time monitoring.
Methods: This study introduces the confounding resilient smoking model, specifically trained to distinguish smoking gestures from similar hand-to-mouth activities used by the Sense2Quit system. By incorporating confounding gestures into the model's training process, the system achieves high accuracy while maintaining efficiency on mobile devices. To validate the model, 30 participants, all people with HIV who smoked cigarettes, were recruited. Participants wore smartwatches on their wrists and performed various hand-to-mouth activities, including smoking and other gestures such as eating and drinking. Each participant spent 15 to 30 minutes completing the tasks, with each gesture lasting 5 seconds. The app was developed using the Flutter framework to ensure seamless functionality across Android and iOS platforms, with robust synchronization between the smartwatch and smartphone for real-time monitoring.
Results: The confounding resilient smoking model achieved an impressive F_1-score of 97.52% in detecting smoking gestures, outperforming state-of-the-art models by distinguishing smoking from 15 other daily hand-to-mouth activities, including eating, drinking, and yawning. Its robustness and adaptability were further confirmed through leave-one-subject-out evaluation, demonstrating consistent reliability and generalizability across diverse individuals. The cross-platform app, developed using Flutter (Google), demonstrated consistent performance across Android and iOS devices, with only a 0.02-point difference in user experience ratings between the platforms (iOS 4.52 and Android 4.5). The app's continuous synchronization ensures accurate, real-time tracking of smoking behaviors, enhancing the system's overall utility for smoking cessation.
Conclusions: Sense2Quit represents a significant advancement in smoking cessation technology. It delivers timely, just-in-time interventions through innovations in cross-platform communication optimization and the effective recognition of confounding hand gestures. These improvements enhance the accuracy and accessibility of real-time smoking detection, making Sense2Quit a valuable tool for supporting long-term cessation efforts among people with HIV trying to quit smoking.

Cannabis use disorder among people with and without HIV. *J Addict Med*. 2025 May 13.
Haley DF, **So-Armah K**, Justice AC, Kidwai-Khan F, Xuan Z, Sayko Adams R, Fox MP, Edelman EJ, Wrona A, Silverberg MJ, Satre DD, Trickey A, Ingle SM, McGinnis KA.

Objectives: In the United States, adults aged 65 and older are the fastest-growing age group using cannabis. People living with HIV (PLWH) are an aging population with prevalent cannabis use exceeding the general population. We examined cannabis use disorder (CUD) diagnoses from 2000 to 2022, by age, race/ethnicity, sex, comorbidity, and HIV status.
Methods: This analysis (2000-2022) includes electronic health records from 185,372 individuals in the Veterans Aging Cohort Study-HIV, a national US cohort of PLWH matched 1:2 to people without HIV (PLWoH). Annual CUD diagnosis was determined by dividing the number with CUD International Classification of Diseases-Clinical Modification codes by total observations. We examined trends by age, race/ethnicity, sex, comorbidity,

and HIV status graphically and with multivariable logistic models.
Results: Demographic characteristics were comparable for PLWH (n=58,959) versus PLWoH (n=126,413): 45% Black non-Hispanic (NH); 35% White NH; 7% Hispanic; 3% women, mean age 48 years. Twenty percent of PLWH had a CUD from 2000 to 2022. CUD increased in all subgroups and was consistently higher among PLWH (odds ratio=1.14 [95% CI=1.11-1.18]). Individuals 65 and older experienced the greatest relative increase: PLWH (0.9% vs. 4.0%) and PLWoH (0.03% vs. 3.15%).
Conclusions: CUD increased dramatically among all subgroups over time and was higher among PLWH. CUD increase among older PLWH and those with multimorbidity is especially concerning as cannabis interacts with many prescription medications. Universal screening and treatment advances are needed, as is research characterizing patterns and modalities of cannabis use, CUD, and potential harms and benefits in PLWH and PLWoH.

WeChat-based messaging and behavioral counseling for smoking cessation for people with HIV in China: a randomized controlled pilot trial. *AIDS Behav*. 2025 Jul 24.
Huang J, Yang S, Xie Z, Guo B, Lan Y, Li Y, Jiang Y, Forman LS, **Lunze K**, Liang B, Abdullah AS, Ye L, Liang H, Quintiliani LM.

Cigarette smoking among people with HIV is a leading preventable cause of morbidity and mortality, particularly in China given its immense burden of smoking. This pilot study aimed to evaluate the feasibility, acceptability, and efficacy on smoking cessation of a community-informed WeChat-based messaging and behavioral counseling intervention for people with HIV who smoke called Quit for Life. The study design was a 2-group randomized clinical trial. Data collection occurred between February 2022 and August 2023 within a tertiary infectious disease hospital in Nanning city, Guangxi, China. Participants included adults with HIV who smoked, were willing to set a quit date, and received HIV care at the hospital. Participants were randomized to the 8-week Quit for Life intervention group (nicotine replacement therapy gum, self-help quitting smoking guide, behavioral counseling, and WeChat-based messaging), or the control group (nicotine replacement therapy gum and self-help guide only). Complete case analysis was performed. Of 219 people assessed for eligibility, 109 participants were randomized (mean [SD] age, 45.3 [15.1] years; men [96.3%]) and 98 completed the 12-week assessment (89.9% retention rate). At 12-week follow-up, the biochemically verified smoking cessation rate (primary outcome) was significantly higher in the intervention group compared to the control group (59.1% abstinence vs. 25.6%, adjusted odds ratio 5.3 [1.5,19.2]. Implementation and feasibility metrics indicated most participants receiving the intervention as intended gave high ratings of the usefulness of counseling sessions and WeChat-based messaging. Given these findings, subsequent studies should investigate implementation and scale-up of this intervention for people with HIV in China.

Pain and alcohol consumption among people living with HIV: examining the moderating roles of depression and social support. *Alcohol*. 2025 Jul 23;128:13-20.
Taghian NR, Palfai TP, Winter MR, Kim TW, Magane KM, Saitz R, **Stein MD**.

Pain and heavy alcohol use are common among people living with HIV (PLWH), and influence one another, potentially exacerbating these conditions over time. This study examines the prospective association between pain and alcohol use among PLWH with a history of unhealthy drinking behaviors and/or substance use and tests whether depression and social support are moderators. A sample of 233 participants from the Boston Alcohol Research Collaborative on HIV/AIDS cohort completed measures of pain intensity (i.e., average severity of pain in the past week) and pain interference (i.e., average interference of pain in everyday life), heavy episodic drinking, number of drinks, social support and depression at baseline and 6 months later. Negative binomial regression analyses assessed whether pain at baseline predicted alcohol use at 6 months, and examined baseline social support and depression as moderators. Pain intensity was significantly associated with number of drinks (IRR = 1.80, 95 % CI: 1.05, 3.08) but not number of heavy drinking days (IRR = 1.84, 95 % CI: 0.83, 4.07), while pain interference was not associated with number of drinks (IRR = 1.63, 95 % CI: 0.96, 2.75) nor heavy drinking days (IRR = 1.43, 95 % CI: 0.64, 3.17) at six months. Neither social support, nor depression were significant moderators of the association between pain and 6-month

alcohol use outcomes. Pain intensity is prospectively associated with more alcohol use, but not with heavy drinking among PLWH. We conclude that pain is an important factor to address when considering interventions to reduce alcohol use among PLWH.

Aligning efforts to boost medications for opioid use disorder and pre-exposure prophylaxis for HIV. *J Gen Intern Med*. 2025 Jul 3.
Tilhou AS, **Assoumou SA**, **Samet JH**.

Among the many harmful consequences of opioid use disorder (OUD), two outcomes are particularly critical: opioid overdose and HIV infection. Fortunately, two interventions-medications for OUD (MOUD) and pre-exposure prophylaxis (PrEP) for HIV-effectively reduce the risk of opioid overdose and HIV, respectively. Despite the safety and availability of MOUD and PrEP, their uptake remains quite low. Efforts to increase use of MOUD and PrEP have occurred largely independently, yet these interventions integrate well in the setting of office-based treatment of OUD. To develop strategies that promote utilization of both medications, an integrated framework is needed. The OUD care cascade, a model describing treatment stages through which a patient may progress, has been increasingly used to facilitate monitoring and strategically expand MOUD services. Integrating PrEP into this framework could bring increased attention to PrEP utilization and strengthen efforts to enhance uptake of both medications. While real-world challenges exist along the continuum from diagnosis to retention, integrated measurement frameworks such as dashboards can help track progress, identify gaps, and optimize treatment strategies. To accelerate progress in the fight against HIV and opioid overdose, it is time to integrate monitoring and research of MOUD and PrEP.