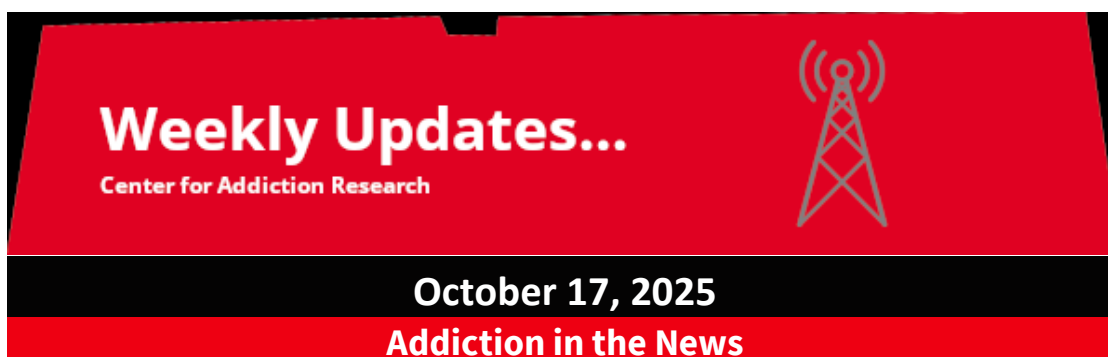


Welcome to the weekly newsletter from the Center for Addiction Research! Each newsletter includes highlights from addiction in the news topics, active funding opportunities offered by NIDA/NIAAA, and information about any new publications from CAR members. Please email Jen Rowe (roweji@ucmail.uc.edu) to change your communication preferences. Thank you.

Thank you for your interest in the Center for Addiction Research - our mission is to accelerate scientific progress in the prevention and treatment of substance use disorders and their consequences by fostering research collaborations across: 1) UC departments, colleges, and centers including Cincinnati Children's Hospital Medical Center; 2) Local, regional, and state community and governmental partners; and 3) Other academic institutions and industry."



UC/ Regional News

Medical Marijuana: Implications for nurses in Ohio

As cannabis use becomes more mainstream in both medical and recreational contexts, nurses must stay informed. In a recent webinar, Associate Professor Lori Catalano, PhD, JD, RN, discussed the historical, legal and clinical implications of medical cannabis, with a special focus on Ohio law and nursing responsibilities. Cannabis has been used medicinally for thousands of years. Ancient cultures in China, India, Egypt, and the Islamic world used it to treat pain, seizures, inflammation, glaucoma and nausea. It was widely used in Western medicine during the 19th century and was listed in the U.S. Pharmacopeia until...

Ohio Gov DeWine bans THC, intoxicating hemp products

Ohio GOP Gov. Mike DeWine has signed an executive order banning THC and intoxicating hemp products in the state. The order signed Wednesday will require retailers to stop selling all gummies, beverages, cookies and other products containing THC (tetrahydrocannabinol) – the main psychoactive compound in the cannabis plant – by Tuesday, according to Fox News. "Intoxicating hemp products are known to have significant impacts on young, developing brains, yet these products are legally marketed to kids, sold to kids and ingested by kids in Ohio," DeWine said. Many of these products have colorful packaging that...

'Trying to maximize our window ' | Some Ohio businesses see demand surge amid intoxicating hemp ban attempt

CINCINNATI — Ohio businesses are looking to capitalize on borrowed time, less than 24 hours after Ohio Gov. Mike Dewine's executive order banning the sale of intoxicating hemp products was temporarily blocked by a judge. The back-and-forth circumstances have been dizzying for some manufacturers and sellers of the products, which contain psychoactive cannabinoids like delta-8, delta-9 and THCA. "It's been exhausting, for sure," Benjamin Capodagli, the owner of Cappy's locations in Loveland and Norwood, said. "I've been here at least 10, 12, 14 hours every day since (the ban) was announced." The ban briefly took...

Over 40% of deceased drivers in motor vehicle crashes test positive for THC, study shows

New study findings show that over 40% of drivers who died in motor vehicle collisions tested positive for active delta-9-tetrahydrocannabinol (THC) in their system, with average blood levels far exceeding those considered to cause impairment. The research highlights a significant and persistent public health risk that is unchanged by the legalization of recreational cannabis, the authors said. The research was presented at the American College of Surgeons (ACS) Clinical Congress 2025, held in Chicago, October 4–7. Researchers analyzed coroner records from Montgomery County in Ohio from January 2019 to September...

Ohio's medical marijuana program saw a 43% decline in active patients from May 2024 to July 2025

People reported reduced satisfaction with Ohio's medical marijuana program since recreational marijuana sales started, according to a new Ohio State University Drug Enforcement and Policy Center survey. Slightly more than half of the people surveyed (56%) reported being either extremely satisfied or somewhat satisfied with the Ohio Medical Marijuana Control Program (OMMCP) — a drop compared to 74% on last year's survey. More people also reported some level of dissatisfaction on this year's survey — 30% in 2025 compared to 20% in 2024. "I think the drop in dissatisfaction was ... a little more than...

Ohio Attorney General awards grants for addiction treatment in Ohio jails

OHIO — A third round of grants was recently awarded to law enforcement officials to help prioritize addiction treatment for jail inmates. Ohio Attorney General Dave Yost distributed the funds, totaling \$2 million, to 11 jails, expanding the program's reach to 37 counties across the state. With this latest investment, the program has exceeded \$5.6 million. "These grants are supplying the tools and support for addicted inmates to overcome withdrawal, get clean and improve their lives upon release," Yost said. "My thanks to Ohio's sheriffs for showing that recovery is always within reach." The Opioid Remediation Grant Program is awarding...

Northeast Ohio counties make the case for mental health and addiction services funding

Voters in several Northeast Ohio counties are being asked to consider renewal or replacement levies on the Nov. 4 ballot for their local mental health and recovery boards. These boards provide a variety of services including crisis intervention, alcohol and drug addiction recovery programs, mental health treatment and community support for adults and youth. In Summit County, all voters are being asked to consider Issue 1, which includes a renewal and increase for the County of Summit ADM Board. The ADM Board funds, monitors and evaluates behavioral health services for the county. “We offer the full continuum of...

Semi-annual report highlights drug use patterns in Ohio

OHIO — Every six months, the Ohio Substance Abuse Monitoring (OSAM) Network puts out a report on “new and emerging substance use patterns” highlighting drug availability, prices and trends across various regions in the state. The most recent report looked at data from July to December of last year and included responses from 439 people including people involved with drug use, those undergoing treatment/support, community professionals and law enforcement. Among the highlights are high availability of methamphetamine and...

Local counselor shares personal addiction story while fighting opioid crisis

TOLEDO, Ohio (WTVG) - A local behavioral health agency is on the front lines fighting to end the opioid crisis, with counselors working to save one life at a time. One of their social workers is sharing her own personal story of how addiction has touched her life. New Concepts Clinical Chief Officer Jacque Caro sits at her desk, going over treatment plans for some of her clients. There are uplifting messages on the walls to motivate anyone who walks into her office, and a picture of the love of her life on her desk. Caro and her husband understand addiction firsthand. “He has 14 years of recovery from opiates himself. He...

Ohio State program trains workers in psychedelic crisis care

COLUMBUS, Ohio — The Ohio State University has created a new program to help prepare health care workers and first responders to treat people suffering from adverse reactions to psychedelic drugs. A \$400,000 SOAR Innovation grant from the Ohio Department of Behavioral Health funds the Psychedelic Emergency, Acute and Continuing Education (PEACE) program. The program includes in-person seminars and online learning material geared toward emergency departments, first responders, law enforcement and behavioral health professionals. Ohio State cited that there has been a rise in unsupervised...

State of Addiction: Stakeholders, leaders meet for annual Kentucky Opioid Symposium

LOUISVILLE, Ky. — Monday was the opening day of the 2025 Kentucky Opioid Symposium, hosted at the Kentucky International Convention Center. Members

from across the state, including Attorney General Russell Coleman, were in attendance. Overdose deaths in the commonwealth decreased for the third year in a row, with a 30.2% decrease in 2024 compared with the previous year, according to the Kentucky Drug Overdose Fatality Report. In 2023, there were 2,020 overdose deaths, and in 2024, there were 1,410. However, Coleman said the work is not done. "That is a lot of empty seats at kitchen tables," Coleman...

National News

This Popular Diabetes Drug Could Reduce Cravings for Alcohol and Drugs

A widely used group of medications originally developed to manage diabetes and obesity may also hold promise for treating alcohol and drug addiction, according to new research published in the Journal of the Endocrine Society. These drugs, called Glucagon-Like Peptide-1 Receptor Agonists (GLP-1RAs), are showing potential as a novel way to address alcohol and other substance use disorders. "Early research in both animals and humans suggests that these treatments may help reduce alcohol and other substance use," said lead researcher Lorenzo Leggio, M.D., Ph.D., of the National Institute on Drug Abuse (NIDA) and the...

GLP-1 drugs may delay alcohol's effects in the bloodstream

There's mounting evidence that popular drugs prescribed for diabetes management and weight loss—better known by trade names like Ozempic and Wegovy—could be effective in reducing alcohol use. A study from the Fralin Biomedical Research Institute at VTC, released in Scientific Reports, found that these types of GLP-1 agonists slow the speed at which alcohol enters the bloodstream, which also slows the effects on the brain. "People who drink know there's a difference between nursing a glass of wine and downing a shot of whiskey," said Alex DiFeliceantonio, assistant professor and interim...

Scientists find brain circuit that traps alcohol users in the vicious cycle of addiction

What compels someone to keep engaging in alcohol use, even if it damages their health, relationships and wellbeing? A new study from Scripps Research offers an important clue: a small midline brain region plays a key role in how animals learn to continue drinking to avoid the stress and misery of withdrawal. In a new study, published in Biological Psychiatry: Global Open Science on August 5, 2025, the Scripps Research team zeroed in on a set of brain cells in the paraventricular nucleus of the thalamus (PVT) in rats. They found that this region becomes more active, driving strong relapse behavior, when rats learn to associate...

Spanish-language counseling cuts heavy drinking among Latinx adults by 22%, study finds

A culturally adapted behavioral intervention delivered in Spanish by community health workers significantly reduced unhealthy alcohol use among Latinx adults, according to new research led by the University of California San Diego. The peer-

reviewed study, published in the Journal of Studies on Alcohol and Drugs on Oct. 8, 2025, found that participants receiving the three-session program showed nearly twice the reduction in heavy drinking days compared to those who received an educational booklet with tools to reduce drinking. "Our findings highlight the importance of meeting people where they are—both linguistically...

One in four transplant hepatologists shows signs of unhealthy alcohol use, new survey finds

One in four hepatologists in the United States screened positive for unhealthy alcohol use in a survey study conducted by UCLA. Researchers say the findings underscore the critical need for accessible physician wellness programs and reduced stigma around doctors seeking help. The research, published in the journal Hepatology Communications, surveyed 185 practicing transplant hepatologists across the U.S. Of these, 26.3% screened positive for unhealthy alcohol use, a rate nearly identical to the 25.5% rate for the U.S. general population. Meanwhile, general hepatologists had lower rates of unhealthy alcohol use (11.2%)...

Think light drinking protects your brain? Think again

Drinking any amount of alcohol likely increases the risk of dementia, suggests the largest combined observational and genetic study to date, published online in BMJ Evidence Based Medicine. Even light drinking -- generally thought to be protective, based on observational studies -- is unlikely to lower the risk, which rises in tandem with the quantity of alcohol consumed, the research indicates. Current thinking suggests that there might be an 'optimal dose' of alcohol for brain health, but most of these studies have focused on older people and/or didn't differentiate between former and lifelong non-drinkers, complicating...

Global analysis shows hidden damage from men's alcohol use

A global analysis led by La Trobe University has highlighted the hidden harms to women and children caused by men's alcohol use and calls for urgent gender-responsive and alcohol policy action worldwide and in Australia. The paper, "Harms to Women and Children from Men's Alcohol Use: An Evidence Review and Directions For Policy," analyzes findings including three recent reviews of 78 papers. Globally, up to one in three women in some countries report living with a heavy-drinking partner and children exposed to men's harmful alcohol use face increased risk of violence, neglect, poor health and reduced life...

Many Young Adults Use Cannabis or Booze as a Sleep Aid

More than one in five young adults said they used cannabis or alcohol to help them sleep, with cannabis use being more common, according to data from the 2022-2023 Monitoring the Future Panel Study. Among nearly 1,500 young adults, the weighted prevalence of using cannabis and/or alcohol to get to sleep was 22.4%, with 18.3% using cannabis and 7.2% using alcohol, reported Megan E. Patrick, PhD, of the Institute for Social Research at the University of Michigan in Ann Arbor, and

co-authors in a research letter in JAMA Pediatrics. Of those who reported past 12-month use of either substance to help them sleep, 41.4% said they used...

Cannabis Use Increasing in People With Psychosis

Cannabis use increased among people with psychosis after states legalized the substance for recreational use, according to a longitudinal cohort study. In states where recreational cannabis was legalized, 30-day cannabis use increased by 9.53 percentage points (95% CI 3.05-16.00, $P=0.004$) among people with psychosis, reported Andrew S. Hyatt, MD, of Harvard Medical School in Boston, and co-authors in JAMA Psychiatry. That increase was well above the 3.3-percentage point increase in past-month cannabis use among the general population observed in a recent study. Sensitivity analyses in the current study showed no significant...

Regular cannabis use poses risks to those over 65, experts caution

As more people explore marijuana for medical use, Stanford Medicine scientists warn that older adults should be particularly mindful of potential health concerns. Geriatric nurse practitioner with a specialty in cannabis therapy at Stanford Medicine, Eloise Theisen, turned to cannabis when nothing else was working for chronic pain resulting from a serious car accident more than a decade ago. Once she was back to work at an oncology clinic, she saw a need with her patients as well—many kept asking her about medical uses of marijuana, and, at the time, little professional advice was available. "I found that our patients were going...

Brain stimulation may reduce cannabis addiction in people with multiple sclerosis

A noninvasive device that delivers weak electrical currents to the brain may help those with multiple sclerosis cut back on excessive cannabis use, a new NYU Langone Health study of women with the condition shows. More than half of people with multiple sclerosis use cannabis products to ease sleep problems, chronic pain, and muscle spasms, among other common symptoms. Experts say up to 20% may develop cannabis use disorder, a condition marked by disruptive, hard to control, and often heavy use. In the pilot study, the research team investigated the effects of the at-home transcranial direct current stimulation...

Addiction Policy Forum Webinar: Extent of Cannabis Use: Trends, Risks, and Policy Landscape

October 23, 1pm ET

Cannabis use in the United States has increased significantly in recent years, alongside rapidly evolving state policies that permit medical or recreational use. These shifts raise important questions about public health, including the impact on mental health and substance use disorder risk, adolescent brain development, and the potential harms associated with regular or high-potency use. Variations in state laws create a complex landscape that can influence access, perceptions of risk, and patterns of use across different populations. This webinar will explore the current

policy landscape of cannabis use across the country, highlighting laws and regulations for medical and non-medical consumption and their public health implications. Speakers will also discuss emerging research on the latest trends, potential risks, and harms, with a focus on adolescent use.

WHO tobacco trends report: 1 in 5 adults still addicted to tobacco

The world is smoking less, but the tobacco epidemic is far from over. A new WHO global report shows the number of tobacco users has dropped from 1.38 billion in 2000 to 1.2 billion in 2024. Since 2010, the number of people using tobacco has dropped by 120 million – a 27% drop in relative terms. Yet, tobacco still hooks one in five adults worldwide, fuelling millions of preventable deaths every year.

“Millions of people are stopping, or not taking up, tobacco use thanks to tobacco control efforts by countries around the world,” said Dr Tedros Adhanom Ghebreyesus, WHO Director-General. “In response to this strong progress, the...

Teens in distress turn to tobacco but need more help to quit

A new study based on the 2022 National Youth Tobacco Survey has uncovered a concerning gap in how health professionals support young people dealing with mental health challenges and tobacco use. The published research by UC Davis found that nearly half of middle and high school students reported experiencing some psychological distress—such as feeling anxious or depressed—in the past 15 days. These students were more likely to be asked about tobacco use during visits to doctors, nurses or other health professionals. However, they were not more likely to receive advice to avoid tobacco, despite being at higher risk of using...

Ex-smokers who relapse may simply be tired of the effort of not smoking

The most reliable predictor of an ex-smoker's relapse isn't strong urges to smoke or low confidence in the ability to stay off tobacco—it's weariness with the efforts to remain a non-smoker, according to a new study published in *Addiction*. Ex-smokers appear to return to smoking most often because they're exhausted from the constant vigilance needed to remain a non-smoker. This effect is called psychological cessation fatigue, and its influence on ex-smokers is not affected by how long someone has been an ex-smoker or whether they vape to reduce cravings. Even after years of not smoking, after withdrawal symptoms and...

Study confirms it's 'never too late' to see survival benefits from quitting smoking—even with late-stage cancer

New research published online in the *Journal of the National Comprehensive Cancer Network* finds that people with cancer who quit smoking had a much lower risk of dying within two years compared to those who kept smoking. The paper is titled "Smoking Cessation and Mortality Risk in Cancer Survivorship: Real-World Data From a National Cancer Institute–Designated Cancer Center." The researchers followed more than 13,000 individuals with cancer, tracking whether they quit

smoking in the first six months after being seen in clinic. The survival benefit was seen across all cancer types and stages, including stages III...

Risks of Tramadol Likely Outweigh Benefit for Chronic Pain

The opioid analgesic tramadol reduced chronic pain levels compared with placebo, but appeared to double the risk of harm, a review of 19 clinical trials suggested. In a meta-analysis and trial sequential analysis, tramadol improved chronic pain on the numerical rating scale (NRS) with low certainty of evidence (mean NRS difference - 0.93 points, 97.5% CI -1.26 to -0.60, $P < 0.0001$), said Jehad Ahmad Barakji, MD, of the Centre for Clinical Intervention Research at Rigshospitalet in Copenhagen, Denmark, and co-authors. The effect size was below the predefined minimal important difference of 1.0 point, Barakji and colleagues...

Fentanyl-Linked Overdose Deaths Among Seniors Soar 9,000% in 8 Years

TUESDAY, Oct. 14, 2025 (HealthDay News) — Fentanyl overdose deaths are surging among seniors, particularly in cases where the powerful opioid is mixed with stimulants like cocaine or methamphetamine, a new study says. Fentanyl-stimulant overdose (OD) deaths skyrocketed by an astonishing 9,000% during the past eight years, approaching rates found in younger adults, researchers reported Saturday at an American Society of Anesthesiologists' meeting in San Antonio, Texas. "A common misconception is that opioid overdoses primarily affect younger people," lead researcher Gab Pasia, a medical student at the University of...

Pain during opioid addiction treatment tied to worse outcomes

Though rarely considered during treatment for opioid use disorder, uncontrolled pain is strongly linked to less success in treatment outcomes, a lower quality of life, and mental health issues, a new study led by a Virginia Tech addiction researcher found. The findings, published recently in *Drug and Alcohol Dependence*, could inform improvements in treatment of opioid use disorder. "We found that pain experienced during treatment and long-term recovery is a significant predictor of continued opioid misuse," said Allison Tegge, the paper's lead and corresponding author. "Although pain commonly co-occurs with...

Chiropractic care associated with reduction in opioid use disorder in patients with low back pain

A new multi-institutional study, led by University Hospitals Connor Whole Health, found that adults with newly diagnosed low back pain with or without sciatica who initially received spinal manipulative therapy administered by a chiropractor were significantly less likely to be diagnosed with opioid use disorder over a two-year follow-up compared to those prescribed ibuprofen. The study suggests an association between spinal manipulative therapy and a lower risk of opioid use disorder in this population, highlighting its potential value as a first-line nonpharmacological option for low back pain amid the ongoing opioid...

In the US, rising temperatures may increase overdose deaths

Across the United States, rising temperatures due to climate change pose a growing threat to public health. Extreme heat exposure has been linked to increases in premature deaths, cardiovascular and respiratory diseases, suicide rates, and violent crime. A growing body of research additionally points to a connection between heat and fatal drug overdoses. A new study led by researchers at Yale School of Public Health (YSPH) and Yale School of Medicine (YSM) and published in *Addiction* on October 6, 2025, investigated the association between heat exposure and drug overdose deaths on a national scale. People who use drugs...

New study reveals alarming mental health and substance use disparities among LGBTQ+ youth

New research from the University of Delaware finds that LGBTQ+ adolescents in Delaware face strikingly higher rates of mental health challenges and substance use compared to their peers. In one of the first state-level studies conducted after the COVID-19 pandemic, Assistant Professor Eric Layland and colleagues in UD's College of Education and Human Development analyzed responses from more than 17,000 eighth- and eleventh-grade students collected through the 2022–2024 Delaware School Surveys. About one in four students identified as LGBTQ+ and these youth reported substantially higher rates of anxiety, depression and...

Why people are watching livestreams of influencers gambling, and how it could be fueling addiction

Every night, millions of people across the world tune in to watch influencers spin slot machines, chase jackpots and ride emotional rollercoasters of wins and losses. Online viewers erupt with cheers, emojis and pleas for "one more spin." But behind the flashy graphics and charismatic streamers, lies a complex web of psychological triggers, parasocial relationships where fans feel like friends with creators who don't know they exist, and normalized risk-taking. New research by my colleagues and I into gambling livestreams reveals how these broadcasts are reshaping the landscape of online betting, and...

Funding Opportunities



GRANTS & FUNDING

NIH Central Resource for Grants and Funding Information

UC Foundation Funding Opportunities

Please contact Carol Russell at (513) 556-6169 or russeccg@foundation.uc.edu at **least 5 business days before the deadline**, prior to applying to the below opportunities, to ensure coordination and to facilitate assistance with approaches.

Sparks Grants Fund Research in Mental Health Interventions for First Responders

Deadline: October 23, 2025

The American Psychological Foundation (APF) invites applications for the John and Polly Sparks Grant for Rural First-Responders Mental Health Interventions. Two grants of \$34,000 will be awarded in support of research to examine evidence-based interventions to protect the mental health of first responders in rural areas, conducted by psychologists. APF seeks projects whose results can be replicated within the targeted demographic, as well as projects that will have an impact on the field and can produce a “multiplier effect,” that is, the ability of researchers to leverage the John and Polly Sparks grant by identifying further funding to expand their projects and increase the impact. To be eligible, applicants must have a doctoral degree in psychology or a related field. For complete program guidelines and application instructions, see the American Psychological Foundation website.

Direct Action Grants Aid Psychological Research, Care for Marginalized Populations

Deadline: October 23, 2025

The American Psychological Foundation (APF) invites applications for its Direct Action Visionary Grants program. Grants of up to \$60,000 will be awarded in support of innovative interventions, based on psychological knowledge, that directly address pressing needs of communities. Research is critical to advancing the field of psychology, but communities also need care right now. APF is uniquely positioned to accomplish both. For the APF Direct Action Visionary Grants program, the foundation is particularly interested in supporting communities and populations dealing with prejudice, bias, intolerance, and all forms of bigotry, including racism, antisemitism, homophobia, and misogyny. Projects should support the foundation’s four visionary priorities: serve marginalized communities, prevent violence, end prejudice and stigma, and explore mind-body health connections. Projects must be clearly supported by evidence-based psychological principles and have demonstrated competence and capacity to execute the proposed work. APF encourages innovative projects that utilize evidence-based psychological principles in new and impactful ways to reach those in need.

Project applicants may be individuals or organizations and are not required to be psychologists or mental health professionals. However, an expert in the relevant evidence-based foundation used for the project must be centrally involved throughout the funding timeline. Projects are not limited to clinical or academic settings. Letters of intent will be accepted on a rolling basis throughout the year. Upon review, selected applicants will be invited to submit full applications.

Klingenstein Fellowship Awards Support Basic and Clinical Research in Neuroscience

Deadline: February 1, 2026

The Esther A. & Joseph Klingenstein Fund provides the Fellowship Awards in Neuroscience to support early career investigators engaged in basic or clinical research that may lead to a better understanding of neurological and psychiatric disorders. Awardees receive \$150,000 per year for three years (\$450,000 total) beginning July 1. To qualify, investigators must hold a Ph.D. and/or an M.D., and have completed all research training, including post-doctoral training. Candidates must also meet these four qualifications at the time of the application deadline: the candidate must have a tenure track appointment or equivalent; the candidate must be an independent investigator at a university, medical center, or research institute with a maximum of four years between the completion of last postdoc and the application deadline; applicants must have a primary tenure track position at an institution in the US; and applicants must inform the Esther A. & Joseph Klingenstein Fund of other sources of funding. Although there's no strict prohibition against holding more than one fellowship at one time, the Fund may take other funding into account when deciding whether to grant an Award. The research should have relevance for understanding the mechanisms underlying neurological and behavioral disorders, that may lead to improvements in the diagnosis and treatment of these disorders. This includes basic research. Priority is given to candidates who may not have received substantial funding from other private awards yet have highly promising scientific careers. Neuroscientists from underrepresented and minoritized groups are encouraged to apply. The Klingenstein Fellowship Awards in Neuroscience gives recognition to outstanding scientists who have made valuable contributions in their early research efforts, and who show the greatest promise for a successful research career. More than one application from a single institution may be submitted. Several areas within neuroscience are of particular interest: Cellular and molecular neuroscience. Studies of the mechanisms of neuronal excitability and development, and of the genetic basis of behavior; Neural systems. Studies of the integrative function of the nervous system; and Translational research. Studies to improve our understanding of the causes, prevention, diagnosis, and treatment of neurological and psychiatric disorders. More details are available on the website.

CAR Member New Publications

Overdose risk profiles in pregnancy: Latent class analysis of pregnant individuals with opioid use disorder

Elysha Cash, Gerald Cochran, Marcela C. Smid, Jasmin E. Charles, Grace Humiston, Yingjia Wei, Nicole Mauerman, Kristi Carlston, Grace Broussard, Britnee Sengpraseut, Peter R. Martin, T. John Winhusen

Journal of Substance Use and Addiction Treatment

ABSTRACT

Introduction: Given the continued rise in opioid exposed pregnancies and overdose during the postnatal period, it is critical to identify risk characteristics among this population to enable clinicians to better tailor interventions. This exploratory study sought to develop a deeper understanding of overdose risk characteristics among pregnant people with opioid use disorder and which characteristics may contribute to differing risk profiles.

Method: Design and participants. This exploratory secondary analysis utilized baseline data from a large-scale national multi-site randomized controlled trial that compared two buprenorphine formulations among treatment seeking pregnant individuals with opioid use disorder. Assessments. For risk group identification, the Personal Opioid-Overdose Risk Survey was used. Trauma history experience was assessed using the Trauma History Screen and substance use history was captured using the DSM-5 Checklist and Treatment Services Review V6. Analyses. Latent class analysis identified unique subgroups of participants based on overdose risk factors. Latent class group membership was associated with trauma history and substance use characteristics using logistic and stepwise logistic regression.

Results: Three distinct classes of overdose risk emerged: the tolerance and polysubstance/alcohol use (HIGH-ALC) class ($n = 14$, 10 %), synthetic opioid and polysubstance use (LOW-ALC/FENT) class ($n = 65$, 46.4 %), and the low risk (LOW-RISK) class ($n = 61$, 43.6 %). The HIGH-ALC class reported the most (non-opioid) substance use in the last 12 months with 6 times higher odds of marijuana use (95 % CI, 1.01–35.67) and 17.48 times higher odds of cocaine use (95 % CI, 3.45–88.48) compared to the LOW-RISK class. The LOW-ALC/FENT class ($n = 65$, 46.4 %) had the highest reports of childhood physical abuse, greater odds of experiencing intimate partner violence regarding recovery (OR = 4.82, 95 % CI = 1.90–12.26), and greater odds of a threat to safe living (OR = 3.35, 95 % CI = 0.72–15.66). The LOW-RISK class ($n = 61$, 43.6 %) had the lowest reports of polysubstance use in the last 12 months and the least reports of both childhood sexual trauma and adulthood sexual trauma.

Conclusions: Through better understanding distinct patient overdose risk profiles, healthcare providers can deliver more targeted prevention interventions to address individual needs and improve maternal outcomes.

Scoping review of associations between cytochrome P450 3A4/5 single nucleotide polymorphisms and risk factors for fentanyl overdose

Dan Petrovitch, Katie P. Himes, Jason J. Bischof, Robert S. Braun, Jennifer L. Brown, Isaiah C. Eleda, Caroline E. Freiermuth, Shaopeng Gu, O. Trent Hall, Julie A. Johnson, David F. Kisor, Joshua W. Lambert, Michael S. Lyons, Morgan V. Maloney, Brittany E. Punches, Emma Quarles, Andrew K. Littlefield & Jon E. Sprague

Pharmacogenomics

DOI: <https://doi.org/10.1080/14622416.2025.2562796>

ABSTRACT

Introduction: Fentanyl overdose is a public health crisis in the United States, as fentanyl was implicated in nearly 70% of drug overdose deaths in 2023. To provide insight into genetic factors that may influence risk of fentanyl overdose, we conducted a scoping review of associations between cytochrome P450 3A4 (CYP3A4) and 3A5 (CYP3A5) genetic variants and relevant phenotypes.

Areas Covered: We searched databases through August 2025 for peer-reviewed studies of human subjects or postmortem samples, and integrated evidence from 64 genetic association studies that analyzed single nucleotide polymorphisms in CYP3A4 or CYP3A5. We considered a diverse range of phenotypes relevant to fentanyl overdose, including opioid overdose, fentanyl pharmacokinetics and pharmacodynamics, opioid use (disorder), and pharmacotherapy response.

Expert Opinion and Commentary: Evidence from 64 studies suggested that the no-function CYP3A5 * 3 (rs776746) allele contributes to increased fentanyl overdose risk, with strongest support coming from studies of fentanyl pharmacokinetics in clinical settings. There was less robust evidence for the role of CYP3A4 variants (e.g. rs2242480). Future research should prioritize prospective genotyping of at-risk populations, development of models that integrate pharmacogenetics with psychiatric genetics, and large-scale harmonization of relevant datasets.

Plain Language Summary: Fentanyl is an extremely strong opioid that is involved in most drug overdose deaths in the U.S. One reason some people may be at greater risk of fentanyl overdose is that their bodies do not process the drug as well. This could be caused by differences in certain genes. In particular, two genes called CYP3A4 and CYP3A5 may help the body break down fentanyl into an inactive form. We reviewed scientific studies that looked at changes in these genes and how they may be linked to how the body processes and clears fentanyl. Most studies came from medical settings, such as patients receiving fentanyl for surgery or cancer pain. We also reviewed studies looking at these genes and other risk factors for fentanyl overdose, such as using opioids or having an addiction. Overall, the strongest evidence pointed to a genetic variant called CYP3A5 * 3. In some studies, people with this variant generally cleared fentanyl more slowly, leading to higher fentanyl levels in the blood. This could increase their risk of overdosing if high levels of fentanyl are given. These results suggest that genetics may help explain why some people are more vulnerable to fentanyl overdose. However, most of the studies were small, included only certain populations (for example, Japanese or Chinese patients), and focused on medical rather than illicit fentanyl use. More research is needed in larger and more diverse groups, especially in people at high risk of overdose. Understanding how genes affect fentanyl response could eventually help improve overdose prevention, including for recreational drug use that occurs outside of medical settings.

