

Substance Use Disorders: Confronting Addiction From Prevention to Recovery

Kathleen T. Brady, M.D., Ph.D., Ned H. Kalin, M.D.

This special issue of the *Journal* is focused on the latest developments in the understanding and treatment of substance use disorders (SUDs). The papers provide a reminder of how far the field of psychiatry has come in understanding the neurobiology and sociodemographic underpinnings of SUDs and how this understanding has advanced recognition and treatment. We have progressed in thinking about SUDs as psychiatric disorders and in the recognition of the profound and devastating impact of SUDs on society, families, and individuals. In addition, the comorbidity of SUDs with other psychiatric disorders is all too common and has an impact on diagnosis, prognosis, and treatment in critical ways. It is imperative that psychiatrists fully understand this problem and are motivated to integrate the treatment of SUDs along with other comorbid psychiatric illnesses.

Dr. Volkow's commentary (1) highlights scientific advancements in the field—many the result of research funded by the National Institute on Drug Abuse—over the past 50 years. These include advances in molecular, neuroimaging, and computational tools that have helped our understanding of brain networks involved in reward, interoceptive cues, executive function, and emotional processing. These findings have advanced the understanding of neuroplastic changes that are relevant to the pathophysiology of SUDs as well as to many other psychiatric disorders. Additionally, this work has emphasized the commonalities across psychiatric disorders and has furthered our understanding of the complexities of comorbidity with SUDs. It is important to note that better understanding of these neurobiologic mechanisms has the potential for the development of targeted and individualized treatment approaches, which could have a demonstrable impact in addressing the public health crisis of SUDs.

The study by Morley and colleagues (2) explores the idea of “personalized” medicine in SUDs by using a genotype-stratified controlled trial comparing two medications in the treatment of alcohol use disorders (AUDs), in part motivated by the wide variability in response to medications for AUD (3). Although the polymorphisms studied did not appear to impact treatment response, this promising line of research has the potential to guide individualized treatment approaches.

As there has been considerable interest and hope in developing vaccines for the treatment and prevention of SUDs,

Dr. Kosten (4) reviews pre-clinical and clinical trials of vaccine therapies for SUDs. Significant advances in vaccine technology over the past 50 years have led to the development of anti-fentanyl vaccines, which show promise in fighting the current epidemic of fentanyl deaths in the United States.

Many of the early studies in the SUD field included only men. Over the past 20 years, there have been an increasing number of studies focused on SUDs in women and/or gender differences in SUDs. This issue presents two data-based studies with a gender focus. In one of them, Radoman and colleagues (5) report that sex differences in response to stress and alcohol cues in the cortico-striatal-limbic network have clear implications for sex-specific therapeutics, another promising direction in the exploration of “personalized” medicine in the treatment of SUDs. In fact, SUD medication treatment studies that are adequately powered to assess sex differences generally find sex differences in treatment response (6).

Studies focused on gaining a better understanding of the underpinnings and progression of SUDs to inform prevention efforts are of critical importance. Green and colleagues (7) use data, including sociodemographic, hormonal, neurocognitive, and neuroimaging data from the Adolescent Brain Cognitive Development Study. The study was conducted to determine predictors of substance use initiation and provides data that can be useful in streamlining and tailoring prevention and early intervention efforts. The commentary by Hinckley and colleagues (8) explores the impact of the changing cannabis use landscape for adolescents, emphasizing the increased risks for early cannabis users to develop cannabis use disorder and other psychiatric illnesses due to the higher potency and availability of cannabis.

The opioid overdose epidemic, now in its fourth wave (9), continues to have devastating effects on the U.S. population. It is crucial to broaden our perspective on measuring outcomes beyond drug use and overdose deaths, as highlighted by Ellis and colleagues (10). This approach will improve our

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ability to assess the effectiveness of harm reduction strategies and treatment interventions more comprehensively. Humphreys and colleagues (11) remind us that, even when we have efficacious treatments, treatment accessibility is a major problem in the United States, particularly for individuals with limited financial means. Additionally, and importantly, Friedman and colleagues (12) bring attention to the persistent health disparities and racial inequities that exist within the opioid overdose epidemic and the broader field of psychiatry. It is essential to address these inequities to provide equitable access to care and improve outcomes for all individuals impacted by SUDs and other psychiatric illnesses. We need relentless advocacy and policy change so that advances in science and the delivery of care can positively impact the health of all U.S. citizens.

In conclusion, we are proud to present this special issue focused on SUDs. We look forward to continuing to use the *Journal* as a vehicle to help support and promote research and advancements in the field of addiction science, with the ultimate goal of improving outcomes for all individuals with SUDs. We thank the aforementioned authors and our other contributors (13–16) for their contributions to the field in general and specifically to this issue. The work assembled here provides hope for new advances in the field that will improve the lives of those suffering with addictions and SUDs.

AUTHOR AND ARTICLE INFORMATION

Send correspondence to Dr. Brady (bradyk@musc.edu).

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REFERENCES

1. Volkow ND: Drugs and addiction science: NIDA celebrates 50 years of research and looks to the future. *Am J Psychiatry* 2024; 181:349–352
2. Morley KC, Kranzler HR, Luquin N, et al: Topiramate versus naltrexone for alcohol use disorder: a genotype-stratified double-blind randomized controlled trial. *Am J Psychiatry* 2024; 181:403–411
3. Lohoff FW: Pharmacotherapies and personalized medicine for alcohol use disorder: a review. *Pharmacogenomics* 2020; 21:1117–1138
4. Kosten TR: Vaccines as immunotherapies for substance use disorders. *Am J Psychiatry* 2024; 181:362–371
5. Radoman M, Fogelman N, Lacadie C, et al: Neural correlates of stress and alcohol cue-induced alcohol craving and of future heavy drinking: evidence of sex differences. *Am J Psychiatry* 2024; 181:412–422
6. McKee SA, McRae-Clark AL: Consideration of sex and gender differences in addiction medication response. *Biol Sex Differ* 2022; 13:34
7. Green R, Wolf BJ, Chen A, et al: Predictors of substance use initiation by early adolescence. *Am J Psychiatry* 2024; 181:423–433
8. Hinckley JD, Ferland JMN, Hurd YL: The developmental trajectory to cannabis use disorder. *Am J Psychiatry* 2024; 181:353–358
9. Ciccarone D: The rise of illicit fentanyls, stimulants and the fourth wave of the opioid overdose crisis. *Curr Opin Psychiatry* 2021; 34:344–350
10. Ellis JD, Dunn KE, Huhn AS: Harm reduction for opioid use disorder: strategies and outcome metrics. *Am J Psychiatry* 2024; 181:372–380
11. Humphreys K, Andrews C, Frank RG: Progress and challenges in Medicaid-financed care of substance use disorder. *Am J Psychiatry* 2024; 181:359–361
12. Friedman JR, Nguemini Tiako MJ, Hansen H: Understanding and addressing widening racial inequalities in drug overdose. *Am J Psychiatry* 2024; 181:381–390
13. De Aquino JP, Sloan ME, Nunes JC, et al: Alcohol use disorder and chronic pain: an overlooked epidemic. *Am J Psychiatry* 2024; 181:391–402
14. Blalock DV, Berlin SA, Berkowitz T, et al: Associations between a primary care-delivered alcohol-related brief intervention and subsequent opioid-related outcomes. *Am J Psychiatry* 2024; 181:434–444
15. Hoffmann S, Gerhardt S, Mühle C, et al: Associations of menstrual cycle and progesterone-to-estradiol ratio with alcohol consumption in alcohol use disorder: a sex-separated multicenter longitudinal study. *Am J Psychiatry* 2024; 181:445–456
16. Williams AR, Mauro CM, Huber B, et al: Defining discontinuation for buprenorphine treatment: implications for quality measurement. *Am J Psychiatry* 2024; 181:457–459