



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



The next wave? Mental health comorbidities and patients with substance use disorders in under-resourced and rural areas

Sara C. Warfield, PhD, MPH^{a,b,c,*}, Robert P. Pack, PhD, MPH^{d,e}, Louisa Degenhardt, PhD^f, Sarah Larney, PhD^{f,g,h}, Chianna Bharat^f, Lisham Ashrafioun, PhD^{b,i}, Brandon D.L. Marshall, PhD^j, Robert M. Bossarte, PhD^{a,b,c}

^a Injury Control Research Center, West Virginia University, United States of America

^b Center of Excellence for Suicide Prevention, Department of Veterans Affairs, United States of America

^c Department of Behavioral Medicine and Psychiatry, West Virginia University, United States of America

^d Department of Community & Behavioral Health, College of Public Health, East Tennessee State University, United States of America

^e Addiction Science Center, East Tennessee State University, United States of America

^f National Drug and Alcohol Research Centre, UNSW Sydney, Australia

^g Department of Family Medicine and Emergency Medicine, Université de Montréal, Canada

^h Université de Montréal Centre de Recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM), Canada

ⁱ Department of Psychiatry, University of Rochester, United States of America

^j Department of Epidemiology, School of Public Health, Brown University, United States of America

ARTICLE INFO

Keywords:

COVID-19

Rural

Under-resourced

Substance use disorder

Treatment

ABSTRACT

The rapid spread of the coronavirus disease (COVID-19) has impacted the lives of millions around the globe. The COVID-19 pandemic has caused increasing concern among treatment professionals about mental health and risky substance use, especially among those who are struggling with a substance use disorder (SUD). The pandemic's impact on those with an SUD may be heightened in vulnerable communities, such as those living in under-resourced and rural areas. Despite policies loosening restrictions on treatment requirements, unintended mental health consequences may arise among this population. We discuss challenges that under-resourced areas face and propose strategies that may improve outcomes for those seeking treatment for SUDs in these areas.

The COVID-19 pandemic has been a chaotic and stressful event across the world. The sudden disruption to economies, health care, community and social events, interpersonal interaction, and myriad other systems has led to heightened mental health distress among people of all ages (Holmes et al., 2020; Organization, 2020; Torales et al., 2020). Increased stress is a particular concern for those with mental health conditions, especially among those with a co-occurring substance use disorder (SUD; Grant et al., 2004; Lai et al., 2015; Mericle et al., 2012). While there are more than 20 million people in the United States with a diagnosed SUD, there is evidence of disproportionately high prevalence of OUD, polysubstance use, and other mental health comorbidities in economically distressed areas such as Appalachia (Meit et al., 2017; Moody et al., 2017; SAMHSA, 2019; Schalkoff et al., 2020).

Despite common co-occurrence of SUDs and psychiatric conditions, treatments often utilize a one-size-fits-all approach, and often interventions involve targeting either the SUD or associated mental health

disorders, but not both. This separate treatment becomes more pronounced given the typically siloed systems for SUD and mental health treatment, yet treatment of SUD in conjunction with other comorbid mental health conditions is essential, especially if patients are experiencing heightened distress or severe symptomatology (Bergman et al., 2019).

SUD treatment saves lives, but disruption of treatment can trigger relapse, placing individuals at high risk for overdose and death (Davoli et al., 2007; Mathers et al., 2013). Anticipating this potential crisis, the Substance Abuse and Mental Health Services Administration (SAMHSA) and the Drug Enforcement Administration (DEA) acted to facilitate access to opioid agonist treatment (OAT) with buprenorphine, the medication used at office-based opioid treatment (OBOT) facilities, while also allowing patients to adhere to social distancing guidelines. Historically, providers could not prescribe buprenorphine via telehealth, nor could outpatient treatment services admit patients without a physical

* Corresponding author at: West Virginia University, Injury Control Research Center, P.O. Box 9151, Morgantown, WV 26506, United States of America.
E-mail address: sara.warfield@hsc.wvu.edu (S.C. Warfield).

examination. The regulatory modifications allow for the use of audio and/or video appointments for admission into treatment, counseling services, and providing a continued supply of buprenorphine. The current pandemic helped to largely expand OAT treatment. Discussing the new reality of telehealth-based OUD treatment, a collaborating addiction medicine physician stated:

“Over the past three weeks telehealth has helped me build relationships that are so much better in rural areas because I can have consistent meetings with my patients. ... I hate missing the in-person connection, but I have increased my contacts with them by at least a third with the best coverage in a rural area, ever. I don't have to worry about securing transportation for them, and I have a pharmacy that's awesome that delivers!”¹

While changes allowed public health and clinical systems to focus on reducing morbidity and mortality associated with COVID-19 infection, we do not yet know the impact of these changes on delivery of counseling services and success in treatment. In fact, research has understudied and is without consensus on the topic of counseling services in support of OUD treatment (Blanco & Volkow, 2019; Dugosh et al., 2016). Patients receiving telehealth SUD treatment may find themselves isolated, without social support, and with diminished interpersonal contacts, which may exaggerate risk for relapse and missed opportunities for clinical intervention for existing or new onset mental health disorders. Such a scenario would result in gaps in care when it is needed most. New strategies for treatment delivery may serve as ways to reduce barriers to care during the COVID-19 emergency response. However, future research should evaluate the extent to which such strategies are effective or create unintended consequences for patients with need for enhanced mental health services.

Prior to the COVID-19 pandemic, rural areas had a scarcity of mental health resources, including limited access to psychiatrists, psychologists or other behavioral health specialists (Kirby et al., 2019). Moreover, there has also been a scarcity of methadone clinics in these areas, resulting in a continued gap in access to an effective and relatively low-cost medication for treatment of OUD (Calcaterra et al., 2019; Lister et al., 2020). Reductions in clinical service, policy changes, and diminished resources resulting from the pandemic response are now further straining these under-resourced areas. Increased gaps in care could potentially lead to a ripple effect among those with an SUD. We have early evidence of the impact of COVID-19 on marginalized and under-resourced communities as the pandemic exposes underlying vulnerabilities long associated with health disparities (Pareek et al., 2020; Wadhwa et al., 2020). We can reasonably assume that persons with SUD may live in vulnerable communities with many experiencing limited economic resources, histories of infectious and chronic disease, high prevalence of psychiatric comorbidities, lack of public transportation, limited access to educational resources, and histories of housing instability (Jenkins et al., 2020). Personal stressors may also be higher among people with SUDs. Individuals may be experiencing increased stress and anxiety due to isolation, home life, or other psychosocial factors, such as unemployment, social support, or encounters with the criminal justice system. (Columb et al., 2020; Greig et al., 2006; Volkow, 2020; Wilk et al., 2006).

Given the likely general increases in emotional distress during and after the pandemic, along with changes in system-wide capacity to meet the mental health needs of the population, a subsequent wave of the COVID-19 pandemic will likely result in an increase in the burden of mental health disorders among the most vulnerable members of our communities. This pandemic provides an opportunity to rethink our approach to treatment of other mental health disorders among persons with SUDs while we also work to reduce the harm resulting from the

current opioid epidemic.

This is a critical moment in time. States and local communities should be innovators when considering changes to SUD and mental health treatment. People with SUDs living in under-resourced areas may find value in further reducing barriers to SUD treatment through the use of mobile treatment or reducing in-person requirements, including urine drug screening requirements that facilities often use but lack evidence of therapeutic benefit (Krawczyk et al., 2019; McEachern et al., 2019; Sigmon, 2019). Clinicians could use systematic methods to identify patients at risk during this time, to proactively alert health care providers about patients that may need additional services. Further, real-time surveillance systems could help to expand services and improve the scope of recovery for those seeking SUD treatment (Krawczyk et al., 2019; Sigmon, 2019). For instance, an overdose surveillance system could provide a way for rural or under-resourced communities to quickly detect and respond to areas of need using targeted public health strategies, such as enhanced naloxone distribution to reduce mortality (Marshall et al., 2017; Wayne et al., 2018). Other complementary strategies that clinicians should further support include enhancing, adapting, and evaluating the use of behavioral therapies, especially within under-resourced areas where treatment is already scarce. Research should establish clear and meaningful outcome measures that are consistent with best practices in the industry, such that effectiveness can be compared across sites and contexts.

As systems realign to address this pandemic, treatment for SUD and co-occurring mental health conditions must be expanded rather than weakened, especially for those already living in differentially impacted communities. The pandemic underscores the need to support innovative treatment solutions that reduce barriers and provide necessary treatment, especially in under-resourced and rural areas. In addition, researchers and practitioners should systematically evaluate and share the impact of changes, especially when those changes reduce barriers to treatment. The systematic evaluation and refinement of strategies to reduce barriers to and enhance SUD treatment in under-resourced areas during this pandemic will provide insights and a much-needed evidence base for allocation of resources to and support for programs that are best positioned to meet the needs of those with an SUD. Individuals deserve access to treatment that is responsive to their complex needs.

CRediT authorship contribution statement

Sara Warfield: Conceptualization, Writing-Original draft preparation, Coordination responsibility **Rob Pack:** Writing- Reviewing and Editing **Louisa Degenhardt:** Writing- Reviewing and Editing **Sarah Larney:** Writing- Reviewing and Editing **Chrianna Bharat:** Writing- Reviewing and Editing **Lisham Ashrafioun:** Writing- Reviewing and Editing **Brandon Marshall:** Writing- Reviewing and Editing **Robert Bossarte:** Conceptualization, Writing-Original draft preparation, Oversight and leadership responsibility.

Declaration of competing interest

None.

References

- Bergman, B. G., Fallah-Sohy, N., Hoffman, L. A., & Kelly, J. F. (2019). Psychosocial approaches in the treatment of opioid use disorders. In *Treating opioid addiction* (pp. 109–138). Springer.
- Blanco, C., & Volkow, N. D. (2019). Management of opioid use disorder in the USA: Present status and future directions. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(18\)33078-2](https://doi.org/10.1016/S0140-6736(18)33078-2).
- Calcaterra, S., Bach, P., Chadi, A., Chadi, N., Kimmel, S., Morford, K., ... Samet, J. (2019). Methadone matters: What the United States can learn from the global effort to treat opioid addiction. *Journal of General Internal Medicine*, 34(6), 1039–1042.
- Columb, D., Hussain, R., & O'Gara, C. (2020). Addiction psychiatry and COVID-19-impact on patients and service provision. *Irish Journal of Psychological Medicine*, 37(3), 164–168.

¹ Personal text communications with Stephen Loyd, MD, April 2, 2020.

- Davoli, M., Bargagli, A. M., Perucci, C. A., Schifano, P., Belleudi, V., Hickman, M., ... Faggiano, F. (2007). Risk of fatal overdose during and after specialist drug treatment: The VEdeTTE study, a national multi-site prospective cohort study. *Addiction, 102*(12), 1954–1959.
- Dugosh, K., Abraham, A., Seymour, B., McLoyd, K., Chalk, M., & Festinger, D. (2016). A systematic review on the use of psychosocial interventions in conjunction with medications for the treatment of opioid addiction. *Journal of Addiction Medicine, 10*(2), 91–101.
- Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Dufour, M. C., Compton, W., ... Kaplan, K. (2004). Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: Results from the national epidemiologic survey on alcohol and related conditions. *Archives of General Psychiatry, 61*(8), 807–816.
- Greig, R. L., Baker, A., Lewin, T. J., Webster, R. A., & Carr, V. J. (2006). Long-term follow-up of people with co-existing psychiatric and substance use disorders: Patterns of use and outcomes. *Drug and Alcohol Review, 25*(3), 249–258.
- Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... Everall, I. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: A call for action for mental health science. *The Lancet Psychiatry, 7*(6), 547–560.
- Jenkins, W. D., Bolinski, R., Bresett, J., Van Ham, B., Fletcher, S., Walters, S., ... Schneider, J. (2020). COVID-19 during the opioid epidemic—exacerbation of stigma and vulnerabilities. *The Journal of Rural Health, 10.1111/jrh.12442*. <https://doi.org/10.1111/jrh.12442>.
- Kirby, J. B., Zuvekas, S. H., Borsky, A. E., & Ngo-Metzger, Q. (2019). Rural residents with mental health needs have fewer care visits than urban counterparts. *Health Affairs, 38*(12), 2057–2060.
- Krawczyk, N., Buresh, M., Gordon, M. S., Blue, T. R., Fingerhood, M. L., & Agus, D. (2019). Expanding low-threshold buprenorphine to justice-involved individuals through mobile treatment: Addressing a critical care gap. *Journal of Substance Abuse Treatment, 103*, 1–8.
- Lai, H. M. X., Cleary, M., Sitharthan, T., & Hunt, G. E. (2015). Prevalence of comorbid substance use, anxiety and mood disorders in epidemiological surveys, 1990–2014: A systematic review and meta-analysis. *Drug and Alcohol Dependence, 154*, 1–13.
- Lister, J. J., Weaver, A., Ellis, J. D., Himle, J. A., & Ledgerwood, D. M. (2020). A systematic review of rural-specific barriers to medication treatment for opioid use disorder in the United States. *The American Journal of Drug and Alcohol Abuse, 46*(3), 273–288.
- Marshall, B. D., Yedinak, J. L., Goyer, J., Green, T. C., Koziol, J. A., & Alexander-Scott, N. (2017). Development of a statewide, publicly accessible drug overdose surveillance and information system. *American Journal of Public Health, 107*(11), 1760–1763.
- Mathers, B. M., Degenhardt, L., Bucello, C., Lemon, J., Wiessing, L., & Hickman, M. (2013). Mortality among people who inject drugs: A systematic review and meta-analysis. *Bulletin of the World Health Organization, 91*, 102–123.
- McEachern, J., Adye-White, L., Priest, K. C., Moss, E., Gorfinkel, L., Wood, E., ... Klimas, J. (2019). Lacking evidence for the association between frequent urine drug screening and health outcomes of persons on opioid agonist therapy. *International Journal of Drug Policy, 64*, 30–33.
- Meit, M. H. M., Tanenbaum, E., & Hoffman, T. (2017). *Appalachian diseases of despair* (pp. 1–28). The Walsh Center for Rural Health Analysis: NORC at the University of Chicago.
- Mericle, A. A., Park, V. M. T., Holck, P., & Arria, A. M. (2012). Prevalence, patterns, and correlates of co-occurring substance use and mental disorders in the United States: Variations by race/ethnicity. *Comprehensive Psychiatry, 53*(6), 657–665.
- Moody, L. N., Satterwhite, E., & Bickel, W. K. (2017). Substance use in rural Central Appalachia: Current status and treatment considerations. *Journal of Rural Mental Health, 41*(2), 123–135.
- Organization, W. H. (2020). *Mental health and psychosocial considerations during the COVID-19 outbreak*, 18 March 2020. World Health Organization.
- Pareek, M., Bangash, M. N., Pareek, N., Pan, D., Sze, S., Minhas, J. S., ... Khunti, K. (2020). Ethnicity and COVID-19: An urgent public health research priority. *The Lancet, 395*(10234), 1421–1422.
- Schalkoff, C. A., Lancaster, K. E., Gaynes, B. N., Wang, V., Pence, B. W., Miller, W. C., & Go, V. F. (2020). The opioid and related drug epidemics in rural Appalachia: A systematic review of populations affected, risk factors, and infectious diseases. *Substance Abuse, 41*(1), 35–69.
- Sigmon, S. C. (2019). Innovations in efforts to expand treatment for opioid use disorder. *Preventive Medicine, 128*, 105818.
- Substance Abuse and Mental Health Services Administration. (2019). *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health (HHS Publication No. PEP19-5068, NSDUH Series H-54)*. Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>.
- Torales, J., O'Higgins, M., Castaldelli-Maia, J. M., & Ventriglio, A. (2020). The outbreak of COVID-19 coronavirus and its impact on global mental health. *International Journal of Social Psychiatry, 66*(4), 317–320, 0020764020915212.
- Volkow, N. D. (2020). *Collision of the COVID-19 and addiction epidemics*. American College of Physicians.
- Wadhera, R. K., Wadhera, P., Gaba, P., Figueroa, J. F., Maddox, K. E. J., Yeh, R. W., & Shen, C. (2020). Variation in COVID-19 hospitalizations and deaths across New York City boroughs. *JAMA, 323*(21), 2192–2195.
- Waye, K. M., Yedinak, J. L., Koziol, J., & Marshall, B. D. (2018). Action-focused, plain language communication for overdose prevention: A qualitative analysis of Rhode Island's overdose surveillance and information dashboard. *International Journal of Drug Policy, 62*, 86–93.
- Wilk, J., West, J. C., Rae, D. S., & Regier, D. A. (2006). Relationship of comorbid substance and alcohol use disorders to disability among patients in routine psychiatric practice. *American Journal on Addictions, 15*(2), 180–185.