

The DEA, Telehealth Care, and the Opioid Crisis

Author: Robert Stern, MD (rjsternmd@gmail.com)

Former Medical Director, Johns Hopkins University School of Medicine Addiction Medicine Clinic

Retired faculty member:

- New York University School of Medicine
- Case Western Reserve University School of Medicine
- Cleveland Clinic Lerner College of Medicine
- Johns Hopkins University School of Medicine

Available, affordable, and reliable medication for opioid use disorder (MOUD) remains elusive for many Americans suffering from opioid use disorder (OUD). Consequently, in 2021 more than 107,000 overdose deaths occurred in the United States, with more than 70,000 of these deaths being recorded as opioid related.¹ This represents a >15% increase in opioid related deaths from 2020, and a nearly 50% increase from 2019.² However, despite the 2022 U.S. National Drug Control Strategy calling for expanding access to MOUD, the recent Drug Enforcement Administration (DEA) announcement proposing permanent rules for the prescribing of buprenorphine via telemedicine³, may have the opposite effect.

Despite the opioid epidemic being declared a US national emergency in October 2017, a significant number of patients diagnosed with OUD remain untreated. The explanations for this treatment gap are complex and include multiple barriers, including an insufficient number of buprenorphine prescribers available to provide outpatient treatment,⁴ long waiting times, geographic distance to the nearest MOUD prescribing healthcare provider, high out-of-pocket payments, and stigma against providers and patients.^{5,6,7} Fortunately, the limits on the number of patients that an individual provider can treat with buprenorphine, an effective MOUD, have been eliminated via the U.S. Congress' recent legislation repealing the 'X-waiver' to the Drug Addiction Treatment Act of 2000 (DATA 2000). More changes to US policies are needed, however, as as recently as 2019, only about 28% of individuals with OUD had ever received MOUD.⁸

Medications for Opioid Use Disorder (MOUD)

MOUD has been extensively studied, and there is convincing evidence demonstrating improved outcomes with decreases in both morbidity and mortality in patients with OUD treated with appropriate medications.⁹ A report released by the National Academies of Sciences, Engineering, and Medicine emphatically concluded that, "A wealth of evidence about medications to treat OUD has been amassed over the past half century from clinical studies, randomized controlled trials, systematic reviews, and meta-analyses. The verdict is clear: effective agonist medication used for an indefinite period of time is the safest option for treating OUD. According to a recent review of medications to treat OUD, 'the evidence for efficacy both in reducing opioid use and retaining patients in care is strongest for agonist treatment.'"¹⁰

Opioid agonist treatment (OAT) for OUD includes treatment with either methadone (a full mu opioid receptor agonist) or buprenorphine (a partial mu opioid receptor agonist). A recent systematic review and meta-analysis has found the rate of all-cause mortality during OAT (opioid agonist treatment) to be

approximately half the rate seen during time out of OAT for people with OUD (Relative Risk [RR] 0.47)¹¹ This association was consistent across a variety of patient ages, geographic locations, genders, HIV status, hepatitis C virus status, and whether drugs were taken through injection. Risks of all-cause mortality were similarly reduced with methadone treatment (RR 0.47) and buprenorphine treatment (RR 0.34). Additionally, this study showed a significant reduction in suicide (RR 0.48), drug-related deaths (RR 0.41), alcohol-related deaths (RR 0.59), and even cardiovascular-related (RR 0.69) mortality during treatment with OAT.¹¹

Of the two currently available OATs, methadone is certainly more challenging to manage. Methadone for MOUD must be dosed periodically at an opioid treatment program (OTP) or 'methadone clinic' which requires registration as an accredited OTP with the Substance Abuse and Mental Health Service Administration (SAMHA) and the DEA, with periodic renewals, before methadone can be dispensed.¹² In addition, methadone increases the risk of overdose if the dose is raised too quickly or combined with other illicit drugs before tolerance has fully set in.¹³ Conversely, the partial opioid receptor agonist buprenorphine can be successfully prescribed by many healthcare providers in a variety of outpatient settings.⁹ For these, and other patient-centric reasons, many providers and patients opt for buprenorphine as their preferred method of MOUD.

Additionally, buprenorphine treatment during the year following a non-fatal overdose has been shown to be associated with a 37% reduction in all-cause mortality.¹⁴ A prior opinion writer concluded that this reduction in mortality with MOUD in the year following a non-fatal opioid overdose is "larger than the reduction in mortality associated with treatment with any blood-pressure medication, diabetic medication, or statin, and also larger than the reduction associated with aspirin after an ST-segment elevation myocardial infarction."¹⁵

Also, prescribing buprenorphine for OUD has been found to be highly cost-effective. Estimates show that prescription opioid misuse alone contributes to an annual economic burden exceeding \$78 billion in the US.¹⁶ However, outpatient buprenorphine treatment has been shown to be highly cost-effective compared to no treatment when considered from a healthcare perspective, and cost saving when the reduction in criminal justice costs is considered.¹⁷

Expansion of Telehealth for Opioid Use Disorder

Despite increasing interest in the use of evidence-based treatment practices that improve clinical outcomes, adoption of MOUD for OUD has remained modest.¹⁸ As recently as 2017, less than 10% of primary care physicians had received a waiver to prescribe buprenorphine, and even fewer were active prescribers.¹⁹ I am doubtful that the elimination of the X-waiver alone will entice physicians to prescribe buprenorphine at the volume needed to care for the large number of patients seeking MOUD.

Prior to the COVID-19 pandemic, the Ryan-Haight Act of 2008 placed barriers to the treatment of OUD with OAT. Following the passage of this law of 2008, a prescription for OAT could not be filled without an in-person medical evaluation by a buprenorphine waived (X-License via DATA2000) provider with additional in-person evaluations every 24 months. This made telephone and other telehealth encounters insufficient for the initial prescribing and renewal of buprenorphine prescriptions.

Early in the COVID-19 pandemic (January 2020), the DEA announced that they were loosening remote prescribing restrictions of Schedule II through Schedule V controlled substances, including buprenorphine, for the duration of the public health emergency. In effect, this allowed the prescribing of buprenorphine via telemedicine without a prior or subsequent in-person medical evaluation.

Concurrent to this change, telehealth usage surged as consumers and providers sought ways to safely access and deliver healthcare. In April 2020, overall telehealth utilization for office visits and outpatient care was 78 times higher than in February 2020. Telehealth utilization has since stabilized at levels 38X higher than before the pandemic.²⁰ This new telehealth access to buprenorphine has allowed many hundreds of thousands of patients to be treated with buprenorphine during the COVID-19 Public Health Emergency (PHE) using audio-only telephone appointments or audio-visual video appointments.^{21,22,23} A report by McKinsey found that among 23 different specialties examined for care delivered by telehealth, addiction treatment was the second most common type of service accessed, second only to psychiatry, and ahead of such specialties such as endocrinology, rheumatology, gastroenterology, and neurology, which all seem especially appropriate for TH appointments.²⁰ As such, placing limits on the availability of telehealth services for MOUD with OAT should be carefully considered.

Unfortunately, the new proposal by the DEA concerning the prescribing of MOUD by telehealth,³ while an improvement from the pre-COVID-19 time period, is not the right policy decision considering the seriousness and magnitude of the current opioid epidemic. I fear many current patients receiving effective MOUD will lose access to this life-saving therapy, and many other people suffering from OUD will lose the availability to begin MOUD, the most effective treatment for OUD. Under the policy proposed by the DEA,³ all patients without a prior in-person medical evaluation by the prescribing medical practitioner or a referral from a medical practitioner who conducted a prior in-person medical evaluation can no longer be prescribed buprenorphine after 180 days, until an in-person medical appointment is completed. For new patients trying to obtain a first buprenorphine prescription, only a 30 day supply of buprenorphine may be prescribed, with refills not permitted until an in-person appointment is completed. While this proposal may seem reasonable initially, its implementation will be quite problematic for a great number of patients. This is especially true as buprenorphine to treat OUD is known to save lives, and long-term retention on medication for OUD is associated with improved outcomes.¹⁰

As noted previously, there are a great number of barriers for patients to overcome to be treated with buprenorphine, and adding this new barrier (compared to the COVID-19 PHE period) is not warranted and is likely to cause more harm than benefit. Some of the most common barriers encountered by patients seeking treatment include lack of appointment availability, long wait times, and high costs. These are specifically the barriers that may be overcome through telehealth prescribing of buprenorphine. Recent research documents that the buprenorphine treatment system has inadequate capacity to meet even existing demand. At most, 62% of callers seeking buprenorphine treatment can obtain any in-person appointment for MOUD.²⁴ In the 10 states with the highest OUD rates, three quarters of buprenorphine providers did not have any available in-person appointments, and the remainder had an average waitlist of over 2 weeks.²⁵ This is concerning because appointments scheduled as little as 2 days after first contact are associated with significantly higher no-show risk than same- or next-day appointments.²⁶ There are numerous same day and next day appointments available

via telehealth for MOUD, however these will be unavailable to most patients if the new DEA proposed rules come into effect.²⁷

As a result, many people with OUD currently receiving successful and effective treatment with buprenorphine will lose their ability to continue with this treatment and develop opioid withdrawal. It follows that many patients will either relapse on full agonist opioids or buy buprenorphine privately to alleviate their debilitating symptoms. Thus, the exact outcomes the DEA is trying to prevent (an increase in active OUD and an increase in diversion of full and partial opioid agonists to the private market) will become inevitable. This is likely to have long-lasting and/or dire outcomes for patients, including a resumption of active OUD, and an increased risk of death from overdose because mortality increases significantly in the period immediately after MOUD stops.^{28,29} In fact, all-cause mortality is known to be six times higher in the four weeks after OAT cessation compared to the time during active treatment (RR 6.01), and the risk of death remains nearly double the baseline rate for the remainder of time not receiving OAT (RR 1.81).¹¹

During the COVID-19 pandemic when telehealth prescribing of buprenorphine containing medications was permitted, studies suggest that telemedicine is a comparable alternative to in-person OUD care and MOUD prescribing from an effectiveness and safety perspective.³ Comparing telehealth to in-person appointments, there were no differences found in the number OUD visits within 90 days of an index visit, no difference in buprenorphine prescribing, and no difference OUD-related clinical events (including drug overdose, inpatient detoxification and rehabilitation center stay, or injection drug use–related infections). Overall, based on measures observable in claims data, telemedicine was comparable to in-person care, with no evidence of differential harm or benefit to patients.³⁰ Other studies demonstrated that buprenorphine delivered virtually had comparable patient retention and medication adherence to buprenorphine delivered in person.^{10,31}

Additionally, telehealth prescribing of buprenorphine helps avoid barriers to care other than availability of appointments. Many patients prefer appointments via telehealth as buprenorphine can be prescribed discreetly, diminishing the stigma and social barriers that may be associated with in person appointments. Patients' anonymity in their community is enhanced via telehealth treatment of their OUD, without patients fear of being seen going into specific healthcare offices or seeing their neighbors in waiting rooms. For others, it is the financial barrier to treatment that is most difficult to overcome. Many patients go to in-person clinics catering to patients with OUD, with a great number of these clinics accepting only cash payments, which greatly exceed the costs of telehealth buprenorphine prescribers. Likewise, many patients who are paid based on hourly wages must miss a half-day of work to go for an in-person appointment, while a telehealth appointment can be completed during a routine 15–30-minute work break. Other patients live great distances from the offices of buprenorphine prescribers and have limited transportation options. These patients may have great difficulty in attending even a single appointment in-person with a buprenorphine prescriber, thus placing their sobriety at risk. As ensuring access to and availability to evidence-based treatment for OUD is paramount and as buprenorphine treatment significantly reduces morbidity and mortality among individuals with OUD,^{32,33,34} it is imperative that barriers to care be lowered as much as is feasible.

As a result of these barriers to obtaining in-person MOUD treatment, I fear that a great number of patients will be unable to schedule even a single, timely, in-person appointment with any provider who

prescribes buprenorphine and may have numerous difficulties in keeping such an appointment if one can be scheduled. It has been noted in the Journal of Addiction Medicine that the two most effective policies to reduce opioid overdose deaths over the next decade (by up to 18.6%) are increasing the number of physicians who treat OUD with MOUD and to increase the duration of treatment for each OUD patient.³⁵ Unfortunately, the current DEA proposal is likely to have the opposite effect compared to the prescribing rules during the COVID-19 PHE

Buprenorphine Misuse and Diversion

The impetus for the DEA tightening buprenorphine prescribing rules after the COVID-19 PHE is their view that a continuation of the current status quo would increase buprenorphine misuse and diversion. I do not believe this is true. Firstly, addiction researchers have found that buprenorphine has a lower misuse potential than other opioid compounds. In the U.S., buprenorphine is infrequently described as the primary drug of misuse among individuals seeking treatment for misuse of prescription drugs (<3%)³⁶ and patients very rarely report buprenorphine as their primary drug of misuse.³⁷ Additionally, buprenorphine misuse has decreased over time since its release as a treatment for OUD. Analysis of the National Forensic Laboratory Information System (NFLIS-Drug), a DEA database, shows that among adults with OUD, prevalence of buprenorphine misuse trended downward from 2015 to 2019.³⁸ Also, buprenorphine's lack of euphorogenic properties (for most patients) makes it an unpopular drug for misuse.³⁷ Attempting, but failing, to obtain a legal prescription for buprenorphine has been prospectively identified as a predominant risk factor for use of diverted buprenorphine, especially in areas with many barriers to accessing OAT as documented by the American Society of Addiction Medicine.³⁹

The demand for illicit buprenorphine is rare for users attempting intoxication, but instead often represents an attempt to manage opioid withdrawal symptoms or achieve or maintain abstinence from other opioids. As such, government regulations may be best directed toward increasing access to MOUD treatment, as a lack of easy access to legal buprenorphine treatment may promote, rather than discourage, illicit buprenorphine use.^{40,41,42} The most common reported reasons for illicit buprenorphine use were consistent with therapeutic use: to prevent withdrawal (79%), maintain abstinence (67%), or self-wean off drugs (53%).⁴³ 33% of individuals who had ever used diverted buprenorphine reported that they had difficulties finding a doctor or obtaining a legal prescription for buprenorphine on their own. Most (81%) of these participants indicated they would prefer using prescribed buprenorphine, if available.⁴³

Currently, pharmaceutical constraints are already in place to decrease the misuse of buprenorphine. The most common formulation of buprenorphine in the US is as a combination product containing buprenorphine and the opioid receptor antagonist naloxone. Use of naloxone (which has little or no sublingual bioavailability and, thus, is essentially inert when taken by the sublingual route) would lead to precipitated opioid withdrawal in an opioid dependent individual when the medication is misused by injection or intranasal administration.³⁶ This acts as a major deterrent to taking buprenorphine-naloxone medications by a non-sublingual route. Additionally, buprenorphine alone frequently causes precipitated withdrawal in opioid-dependent individuals because its high affinity for the mu opioid receptor. This high affinity for the mu opioid receptor combined with its limited, partial agonist activity,

allows buprenorphine to displace other opioids previously occupying the receptor, while exerting lower agonist activity than the displaced opioid's full agonist action. This, too, causes a high degree, precipitated opioid withdrawal.³⁶ Precipitated withdrawal from buprenorphine can largely be avoided only by initiating buprenorphine therapy after a patient is experiencing moderate opioid withdrawal.³⁶ Having to experience at least moderate opioid withdrawal symptoms prior to taking buprenorphine serves as a major deterrent to people who wish to take buprenorphine for uses other than its intended pharmaceutical effects.

Despite the risks of precipitated withdrawal, the use of diverted buprenorphine remains common among people who use opioids.⁴⁴ This likely reflects the severe shortage in treatment capacity and inaccessibility of existing services, rather than attempts at intoxication. Those attempting intoxication can achieve their goals more easily at a lower expense by using other, full agonist, opioids frequently available for private purchase. As such, I believe the risk of diversion and misuse, cited by the DEA as the reason for requiring in-person appointments to be treated with buprenorphine, are unfounded.

The other reasons cited by the DEA for necessitating in-person appointments is to *“enhance treatment by enabling the practitioner to conduct tests which make sure that buprenorphine is safe and appropriate for the patient. These include, but are not limited to, drug and toxicology screenings, liver enzyme tests, screenings for infectious diseases such as hepatitis, etc. Additionally, practitioners are able to assess conditions which may or may not be available in audio-only or even audio-video telemedicine encounters, such as signs of opioid intoxication or withdrawal, physical signs of opioid use, as well as the medical consequences of opioid use. Thus, this required medical evaluation can result in enhanced treatment in some circumstances.”*

This section of the proposed DEA rule change fails to recognize both the capabilities of telehealth as a health delivery system and contradicts President Biden’s statements on ‘harm reduction’ policies to meet the needs of populations at greatest risk for overdose and substance use disorder. The first part of the DEA statement calls for laboratory tests for urine toxicology, infectious diseases, and tests to ensure the safe prescribing of buprenorphine. These can all be ordered by telehealth providers to be performed either as video-witnessed point-of-care testing, or at a local commercial laboratory. Other aspects of in-person evaluations can usually be well-approximated by conscientious audio or audio-visual telehealth encounters, and patients deemed at risk for severe consequences related to their OUD or the initiation of OAT can be denied care via TH, and referred to an in-person evaluation at an emergency department or urgent care center. Additionally, the principles of harm reduction require that evidence-based care should be directed at minimizing the negative consequences of drug use, understanding that elimination of negative consequences cannot be expected, even with ideal, in-person care.

Other practices can be included in telehealth delivered MOUD to lower the risks inherent in prescribing any opioid receptor agonist. An assessment for misuse and diversion of buprenorphine is recommended at each appointment, whether via telehealth or an in-person clinical visit. It is imperative, however that any such occurrences be addressed therapeutically, rather than punitively.³⁶ Additionally, it is a requirement of each State to review the prescription drug monitoring program (PDMP) database prior to prescribing any controlled medication, including buprenorphine, whether in-person or via telehealth.

Patients may not disclose medication misuse and diversion; however, some clinical practice behaviors such as monitoring urine drug test outcomes, including for buprenorphine and norbuprenorphine, are

recommended and may be helpful. Inexpensive CLIA-waived urine and saliva tests for buprenorphine are now readily available in the US. These tests are currently being used for video-assisted, witnessed testing, by telehealth MOUD prescribing physicians as required by law in some States and as ordered by individual physicians when warranted in other circumstances. A test that is positive for buprenorphine but negative for its primary metabolite, norbuprenorphine, would also be incongruent with daily medication use.

State prescription monitoring reports (via PDMPs) are useful in detecting multiple buprenorphine prescribers simultaneously (e.g., doctor shopping) as well as receipt of other controlled substances. Random medication counts can also be done via audio-video telehealth appointments in order to screen for potential diversion and misuse, although there are no data on the sensitivity or specificity of this approach.⁴⁴

Even with participation in illegal diversion activities, benefit still accrues to many patients with OUD. Those currently engaging in treatment with MOUD, despite continued injection drug use, had significantly fewer non-fatal overdoses (odds ratio [OR] 0.5), committed fewer thefts (OR 0.6) and reported selling drugs (OR 0.7) less often in the prior month. They were also less likely to use opioids daily or near daily (OR 0.3).³⁶

Conclusion

Due to the current opioid epidemic and its catastrophic outcomes, we must use every tool available to decrease the negative consequences of OUD and lower the increasing number of deaths attributed to opioids annually. The elimination of the 'X-waiver' and the elimination on the limits of buprenorphine prescriptions were needed changes to US policy that will increase the number of patients treated with buprenorphine. I firmly believe that a permanent suspension of the laws governing the need for in-person appointments to qualify for a prescription for buprenorphine should likewise be permanently eliminated. I fear that the implementation of the proposed DEA rules on buprenorphine prescribing will cause many patients currently treated with buprenorphine to lose their accessibility to this lifesaving medication, and will complicate the initiation of treatment for new patients entering treatment for OUD. Patients' lives are at stake.

References:

1. Ahmad, F.B., Cisewski, J.A., Rossen, L.M., Sutton, P., 2022, Provisional drug overdose death counts. National Center for Health Statistics. Accessed February 24, 2023. <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>.
2. CDC, National Center for Health Statistics, Office of Communication. U.S. Overdose Deaths In 2021 Increased Half as Much as in 2020 – But Are Still Up 15%. May 11, 2022. Accessed March 3, 2023. https://www.cdc.gov/nchs/pressroom/nchs_press_releases/2022/202205.htm#print.
3. Drug Enforcement Administration. Docket No.-DEA 407. Expansion of Induction of Buprenorphine via Telemedicine Encounter. Federal Register, Vol. 88, No. 40, March 1, 2023.
4. Saitz R, Daaleman TP. Now is the time to address substance use disorders in primary care. Ann Fam Med 2017;15:306–8.

5. Humphreys, K., Shover, C.L., Andrews, C.M., et al., 2022. Responding to the opioid crisis in North America and beyond: recommendations of the Stanford-Lancet Commission. *Lancet* 399 (10324), 555–604.
6. Mackey, K., Veazie, S., Anderson, J., Bourne, D., Peterson, K., 2020. Barriers and facilitators to the use of medications for opioid use disorder: a rapid review. *J. Gen. Intern Med* 35 (Suppl 3), 954–963.
7. Amiri, S., Lutz, R., Socias, M.E., et al., 2018. Increased distance was associated with lower daily attendance to an opioid treatment program in Spokane County Washington. *J. Subst. Abuse Treat.* 93, 26–30.
8. Mauro, P.M., Gutkind, S., Annunziato, E.M., Samples, H., 2022. Use of medication for opioid use disorder among US adolescents and adults with need for opioid treatment, 2019. *JAMA Network. Open.* 5 (3), e223821.
9. Sordo L, Barrio G, Bravo MJ, et al. Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies. *BMJ* 2017;357:j1550.
10. National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Health Sciences Policy; Committee on Medication-Assisted Treatment for Opioid Use Disorder; Mancher M, Leshner AI, editors. Medications for Opioid Use Disorder Save Lives. Washington (DC): National Academies Press (US); 2019 Mar 30. 2, The Effectiveness of Medication-Based Treatment for Opioid Use Disorder.
11. Santo T Jr, Clark B, Hickman M, Grebely J, Campbell G, Sordo L, Chen A, Tran LT, Bharat C, Padmanathan P, Cousins G, Dupouy J, Kelty E, Muga R, Nosyk B, Min J, Pavarin R, Farrell M, Degenhardt L. Association of Opioid Agonist Treatment With All-Cause Mortality and Specific Causes of Death Among People With Opioid Dependence: A Systematic Review and Meta-analysis. *JAMA Psychiatry.* 2021 Sep 1;78(9):979-993.
12. "Medications for Opioid Use Disorder – Pharmacotherapy for Opioid Use Disorder (Part 3 of 5)". Treatment Improvement Protocol. 63. February 2018 – via Center for Substance Abuse Treatment, Substance Abuse and Mental Health Services Administration (SAMHSA).
13. Shulman M, Wai JM, Nunes EV. Buprenorphine treatment for opioid use disorder: an overview. *CNS Drugs* 2019;33:567–80.
14. Larochelle MR, Bernson D, Land T, et al. Medication for opioid use disorder after nonfatal opioid overdose and association with mortality: a cohort study. *Ann Intern Med* 2018;169:137–45.
15. Poorman E. The Number Needed to Prescribe - What Would It Take to Expand Access to Buprenorphine? *N Engl J Med* 2021;384:1783–4.
16. Florence CS, Zhou C, Luo F, Xu L. The Economic Burden of Prescription Opioid Overdose, Abuse, and Dependence in the United States, 2013. *Med Care.* 10 2016; 54(10):901–6.
17. Qian G, Rao I, Humphreys K, Owens DK, Brandeau ML. Cost-effectiveness of office-based buprenorphine treatment for opioid use disorder. *Drug Alcohol Depend.* 2023 Feb 1;243:109762.
18. Knudsen HK, Abraham AJ, Oser CB. Barriers to the implementation of medication-assisted treatment for substance use disorders: the importance of funding policies and medical infrastructure. *Eval Program Plann.* 2011 Nov;34(4):375-81.
19. McBain RK, Dick A, Sorbero M, Stein BD. Growth and distribution of buprenorphine waived providers in the United States, 2007–2017. *Ann Intern Med* 2020; 172: 504-6.

20. Bestsennyy O, Gilbert G, Harris A, Rost J. Telehealth: A quarter trillion-dollar post-COVID-19 reality? McKinsey and Company. July 2021.
21. Lin LA, Zhang L, Kim HM, Frost MC. Impact of COVID-19 Telehealth Policy Changes on Buprenorphine Treatment for Opioid Use Disorder. *Am J Psychiatry*. 2022 Oct;179(10):740-747.
22. Frost MC, Zhang L, Kim HM, Lin LA. Use of and Retention on Video, Telephone, and In-Person Buprenorphine Treatment for Opioid Use Disorder During the COVID-19 Pandemic. *JAMA Netw Open*. 2022 Oct 3;5(10):e2236298.
23. Jones CM, Shoff C, Hodges K, Blanco C, Losby JL, Ling SM, Compton WM. Receipt of Telehealth Services, Receipt and Retention of Medications for Opioid Use Disorder, and Medically Treated Overdose Among Medicare Beneficiaries Before and During the COVID-19 Pandemic. *JAMA Psychiatry*. 2022 Oct 1;79(10):981-992.
24. Beetham T, Saloner B, Wakeman SE, et al. Access to office-based buprenorphine treatment in areas with high rates of opioid-related mortality: An audit study. *Ann Intern Med*. 2019;171(1):1–9.
25. Flavin L, Malowney M, Patel NA, et al. Availability of buprenorphine treatment in the 10 states with the highest drug overdose death rates in the United States. *J Psychiatr Pract*. 2020;26(1):17–22.
26. Roy PJ, Choi S, Bernstein E, et al. Appointment wait-times and arrival for patients at a low-barrier access addiction clinic. *J Subst Abuse Treat*. 2020; 114:108011.
27. Private communication with Chief Operating Officer of QuickMD, a prominent telehealth company.
28. Kimber J, Larney S, Hickman M, Randall D, Degenhardt L. Mortality risk of opioid substitution therapy with methadone versus buprenorphine: a retrospective cohort study. *Lancet Psychiatry* 2015;2:901-8.
29. Degenhardt L, Bucello C, Mathers B, et al. Mortality among regular or dependent users of heroin and other opioids: a systematic review and meta-analysis of cohort studies. *Addiction* 2011;106:32-51.
30. Hailu R, Mehrotra A, Huskamp HA, Busch AB, Barnett ML. Telemedicine Use and Quality of Opioid Use Disorder Treatment in the US During the COVID-19 Pandemic. *JAMA Netw Open*. 2023 Jan 3;6(1):e2252381.
31. Guille C, Simpson AN, Douglas E, et al. Treatment of opioid use disorder in pregnant women via telemedicine: a nonrandomized controlled trial. *JAMA Netw Open*. 2020;3(1):e1920177.
32. Centers for Disease Control and Prevention. Increase in fatal drug overdoses across the United States driven by synthetic opioids before and during the COVID-19 pandemic. Published December 17, 2020. <https://emergency.cdc.gov/han/2020/han00438.asp>. Accessed February 24, 2023.
33. Santo T Jr., Clark B, Hickman M, et al. Association of opioid agonist treatment with all-cause mortality and specific causes of death among people with opioid dependence: A systematic review and meta-analysis. *JAMA Psychiat*. 2021;78(9):979–993.
34. Sordo L, Barrio G, Bravo MJ, et al. Mortality risk during and after opioid substitution treatment: Systematic review and meta-analysis of cohort studies. *BMJ*. 2017;357:j1550.
35. Stringfellow EJ, Lim TY, DiGennaro C, Zhang Z, Paramasivam P, Bearnot B, Humphreys K, Jalali MS. Long-Term Effects of Increasing Buprenorphine Treatment Seeking, Duration, and Capacity on Opioid Overdose Fatalities: A Model-Based Analysis. *J Addict Med*. 2023 Feb 16.

36. Lofwall MR, Walsh SL. A review of buprenorphine diversion and misuse: the current evidence base and experiences from around the world. *J Addict Med*. 2014 Sep-Oct;8(5):315-26.
37. Cicero, T. J., Surratt, H. L., & Inciardi, J. Use and misuse of buprenorphine in the management of opioid addiction. *J Opioid Manag*. 2007 Nov-Dec 3(6),302-8.
38. Han B, Jones CM, Einstein EB, Compton WM. Trends in and Characteristics of Buprenorphine Misuse Among Adults in the US. *JAMA Netw Open*. 2021 Oct 1;4(10):e2129409.
39. American Society of Addiction Medicine (ASAM). Advancing Access to Addiction Medications: Implications for Opioid Addiction Treatment. A Project of the ASAM. 2013.
40. Schuman-Olivier, Z., et al. Self-treatment: illicit buprenorphine use by opioid-dependent treatment seekers. *J Subst Abuse Treat* 2010;39(1): 41-50.
41. Howard D. Chilcoat, Halle R. Amick, Molly R. Sherwood, Kelly E. Dunn,
42. Chilcoat HD, Amick HR, Sherwood MR, Dunn KE. Buprenorphine in the United States: Motives for abuse, misuse, and diversion. *J Subst Abuse Treat*. 2019 Sep;104:148-157.
43. Cicero TJ, Ellis MS, Chilcoat HD. Understanding the use of diverted buprenorphine. *Drug Alcohol Depend*. 2018 Dec 1;193:117-123.
44. Carroll JJ, Rich JD, Green TC. The More Things Change: Buprenorphine/naloxone Diversion Continues While Treatment Remains Inaccessible. *J Addict Med*. 2018 Nov/Dec;12(6):459-465.
45. Lofwall MR, Wunsch MJ, Walsh SL. Pharmacy willingness to partner with office-based opioid dependence treatment providers in conducting random buprenorphine pill counts. *Am J Addict*. 2010; 19:195–196.