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Innovations in efforts to expand treatment for opioid use disorder

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ABSTRACT

Fewer than 20% of Americans with opioid use disorder receive empirically-supported treatment. There is a critical need for innovative approaches to support expansion of evidence-based opioid treatment, particularly in rural geographic areas so impacted by the current opioid public health crisis. Doing so will require more diverse pathways into treatment, novel pharmacological tools, improved integration and efficiency among treatment modalities, and harm reduction when treatment is not available. In this invited commentary, we review exciting recent efforts to accomplish these aims as well as offer additional considerations for future clinical and research efforts to increase the availability of treatment for opioid use disorder.

The focus of this Special Issue and our annual scientific conference which preceded it is on the current opioid public health crisis and the need for innovative approaches for addressing it, particularly in rural geographic areas with insufficient treatment availability. We are fortunate that effective, life-saving treatments currently exist for opioid use disorder. However, only about 20% of people with opioid use disorder receive treatment, and far fewer actually receive the treatment options that are most supported by empirical evidence (e.g., methadone, buprenorphine) (Saloner and Karthikeyan, 2015). Contrast this with the treatment rates for other serious medical conditions. Among patients with early stage (I or II) breast cancer, for example, about 1% do not receive any treatment; among those with late-stage (III or IV) breast cancer, 10% go untreated (National Cancer Database, 2013). Similarly low rates of non-treatment are seen with Stage I and II colon (2%), rectal (3%), bladder (3%), uterine (1%), and non-small cell lung (9%) cancers. While socioeconomic factors still exert substantial influence on cancer treatment access, utilization and outcomes (Vona-Davis and Rose, 2009), it is striking to realize that about 90% of Americans with cancer receive treatment while 90% of Americans with opioid use disorder do not.

To bend the curve on the ongoing opioid public health crisis, we can no longer limit the entry points for treatment to specialty methadone clinics and the handful of buprenorphine providers available at any one time in a community. Toward this end there have been outstanding recent efforts to initiate buprenorphine treatment in more diverse settings, including emergency departments, hospitals, criminal justice settings and syringe exchanges (Bachhuber et al., 2018; D'Onofrio et al., 2015; Fanucchi and Lofwall, 2016; Gordon et al., 2014). Innovative telemedicine and mobile treatment platforms are being developed and used to support the remote delivery of low-threshold medication and associated psychosocial and medical services in underserved areas (Eibl et al., 2017; Krawczyk et al., 2019; Weintraub et al., 2018). Another important recent development is the 2018 Federal Opioid legislation to expand buprenorphine waivered prescribing beyond physicians to include nurse practitioners and physician assistants (Lee and McNeely, 2019).

In addition to expanding treatment access into new settings, more can also be done to leverage recently-available novel formulations of existing pharmacotherapies. Sustained-release buprenorphine formulations, for example, can produce steady-state blood levels for weeks and even months following a single administration (Lofwall et al., 2018; Nasser et al., 2016; Rosenthal et al., 2016; Sigmon et al., 2004). This could eliminate the need for daily medication taking and dispensing of take-home doses, thereby reducing concerns of patient nonadherence, misuse and diversion (Sigmon and Bigelow, 2017). Reductions in provider burden and their concerns about diversion risk could improve physicians' willingness to prescribe buprenorphine. Reductions in frequency of clinic visits and thus burdens of time and travel would also benefit patients, particularly those in rural areas without nearby providers.

We also must identify new ways to decompress the opioid treatment programs (OTPs) that currently exist. In many areas of the country OTPs are at maximum capacity and unable to provide treatment on demand (Blevins et al., 2018). In an effort to address this issue in

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Vermont, we developed a hub-and-spoke system whereby patients initiate treatment in a more intensive OTP setting with on-site counseling, urine toxicology testing and medical management (i.e., hub) (Brooklyn and Sigmon, 2017). Once stabilized in treatment, the patient is then transitioned to an office-based buprenorphine provider in their community (i.e., spoke) for continuation of care in a primary care setting. Initial evaluations of our model suggest good outcomes thus far (Rawson et al., 2019). Efforts to support this type of partnership between specialty clinics and office-based providers may also help improve integration of substance use treatment services in communities more generally.

We can also be doing more to reduce risk for overdose and other harms when delays to treatment entry are unavoidable. Individuals needing treatment can remain on waitlists for weeks or months, during which they are at significant risk for continued illicit drug use, criminal activity, infectious disease, overdose and death (Peles et al., 2013). Offering low-barrier or interim dosing to bridge these delays can significantly reduce these risks when conventional treatment with the full array of counseling and other services is unavailable. We recently developed a technology-assisted interim dosing regimen, involving computerized buprenorphine dispensing and phone-based monitoring and random call-backs, and demonstrated its efficacy in reducing illicit opioid use and injection drug use behavior and improving psychiatric distress during waitlist delays (Sigmon et al., 2016; Streck et al., 2018). While treatment on demand is the goal, efforts to expand treatment system capacity should include a concurrent focus on reducing morbidity and mortality during the lapses that persist until treatment access becomes consistently available.

Efforts to expand opioid treatment capacity may also benefit from comprehensive real-time surveillance systems to track treatment availability. In many areas, programs and providers keep their own waitlist (if they keep one at all), have varying inclusion criteria, and there is little if any cross-talk among programs. The end result is a fragmented, inefficient system that likely results in underutilization of some providers, the overwhelming of other providers, a time waste for patients and providers alike, and suboptimal pairing between some patients and modalities that results in poor treatment outcomes for the patient and a poor experience for the provider. A centralized triage unit could receive the calls from all individuals interested in opioid treatment. It could maintain an up-to-the-minute database of information on all available providers and their respective entry criteria. An excellent example of this is the FindHelpNowKY.org website, a real-time substance use disorder treatment availability locator that was established in February 2018 by the Kentucky Department for Public Health and University of Kentucky. The professionally-supported system contains comprehensive information on treatment providers and treatment openings statewide and is searchable by patient characteristics (e.g., sex, age, payment options, type of treatment desired). Such systems could also utilize brief assessments to prospectively identify whether the person is a better candidate for intensive, wrap-around care of an opioid treatment program versus the lighter touch of office-based treatment. In Vermont we have been trying to move in this direction by developing a brief screener, the Treatment Needs Questionnaire, which we are using in our efforts to pair patients with the most appropriate OUD treatment modality (Brooklyn and Sigmon, 2017), but much more remains to be done in terms of collecting and disseminating information about available treatment options in a timely and efficient way.

Overall, our aim should be to bring rates of opioid treatment utilization more in line with those for other chronic life-threatening medical conditions. This will require more diverse pathways into treatment, novel pharmacological tools, improved integration and efficiency among treatment modalities, and harm reduction when treatment is not available. It also will require a better understanding of the complex social and economic barriers that can undermine patients' ability to seek and maintain life-saving treatment.

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Declaration of competing interest

No conflicts of interest reported.

References

Bachhuber, M.A., Thompson, C., Prbylowski, A., Benitez, J., Mazzella, S., Barclay, D., 2018. Description and outcomes of a buprenorphine maintenance treatment program integrated within Prevention Point Philadelphia, an urban syringe exchange program. Subst. Abus. https://doi.org/10.1080/08897077.2018.1443541.

Blevins, C.E., Rawat, N., Stein, M.D., 2018. Gaps in the substance use disorder treatment referral process: provider perceptions. J. Addict. Med. 12 (4), 273–277.

Brooklyn, J.R., Sigmon, S.C., 2017. Vermont hub-and-spoke model of care for opioid use disorders: development, implementation and impact. J. Addict. Med. 11 (4), 286–292.

D'Onofrio, G., O'Connor, P.G., Pantalon, M.V., Chawarski, M.C., Busch, S.H., Owens, P.H., Bernstein, S.L., Diellin, D.A., 2015. Emergency department-initiated buprenorphine/naloxone treatment for opioid dependence: a randomized clinical trial. JAMA 313 (16), 1636–1644.

Eibl, J.K., Gauthier, G., Pellegrini, D., Daiter, J., Varenbut, M., Hogenbirk, J.C., Marsh, D.C., 2017. The effectiveness of telemedicine-delivered opioid agonist therapy in a supervised clinical setting. Drug Alcohol Depend. 176, 133–138.

Fanucchi, L., Lofwall, M.R., 2016. Putting Parity into Practice – Integrating Opioid-use Disorder Treatment Into the Hospital Setting. 1 Center for Health Services Research Faculty Publications. https://uknowledge.uky.edu/chsr_facpub/1.

Gordon, M.S., Kinlock, T.W., Schwartz, R.P., Fitzgerald, T.T., O'Grady, K.E., Vocci, F.J., 2014. A randomized controlled trial of prison-initiated buprenorphine: prison outcomes and community treatment entry. Drug Alcohol Depend. 142, 33–40.

Krawczyk, N., Buresh, M., Gordon, M.S., Blue, T.R., Fingerhood, M.I., Agus, D., 2019. Expanding low-threshold buprenorphine to justice-involved individuals through mobile treatment: addressing a critical care gap. J. Subst. Abus. Treat. 103, 1–8.

Lee, J.D., McNeely, J., 2019. Buprenorphine and the glass half full- why can't we prescribe more of it, and will nurse practitioners and physician assistants fulfill a chronic unmet need? Addiction 114 (3), 483–484.

Lofwall, M.R., Walsh, S.L., Nunes, E.V., Bailey, G.L., Sigmon, S.C., Kampman, K.M., Frost, M., Tiberg, F., Linden, M., Sheldon, B., Oosman, S., Peterson, S., Chen, M., Kim, S., 2018. Weekly and monthly subcutaneous buprenorphine depot formulations vs daily sublingual buprenorphine with naloxone for treatment of opioid use disorder: a randomized clinical trial. JAMA Intern. Med. 178 (6), 764–773.

Nasser, A.F., Greenwald, M.K., Vince, B., Fudala, P.J., Twumasi-Ankrah, P., Liu, Y., Jones, J.P., Heidbreder, C., 2016. Sustained-release buprenorphine (RBP-6000) blocks the effects of opioid challenge with hydromorphone in subjects with opioid use disorder. J. Clin. Psychopharmacol. 36 (1), 18–26.

National Cancer Database, American College of Surgeons Commission on Cancer, 2013. 2011 Data Submission. American College of Surgeons.

Peles, E., Schreiber, S., Adelson, M., 2013. Opiate-dependent patients on a waiting list for methadone maintenance treatment are at high risk for mortality until treatment entry. J. Addict. Med. 7, 177–182.

Rawson, R., Cousins, S.J., McCann, M., Pearce, R., Van Donsel, A., 2019. Assessment of medication for opioid use disorder as delivered within the Vermont hub and spoke system. J. Subst. Abus. Treat. 97, 84–90.

Rosenthal, R.N., Lofwall, M.R., Kim, S., Chen, M., Beebe, K.L., Vocci, F.J., PRO-814 Study Group, 2016. Effect of buprenorphine implants on illicit opioid use among abstinent adults with opioid dependence treated with sublingual buprenorphine: a randomized clinical trial. JAMA 316 (3), 282–290.

Saloner, B., Karthikeyan, S., 2015. Changes in substance abuse treatment use among individuals with opioid use disorders in the United States, 2004-2013. JAMA 314 (14), 1515–1517.

Sigmon, S.C., Bigelow, G.E., 2017. Food and Drug Administration approval of sustained-release buprenorphine for treatment of opioid dependence: realizing its potential. Addiction 112 (3), 386–387.

Sigmon, S.C., Wong, C.J., Chausmer, A.L., Liebson, I.A., Bigelow, G.E., 2004. Evaluation of an injection depot formulation of buprenorphine: placebo comparison. Addiction 99 (11), 1439–1449.

Sigmon, S.C., Ochalek, T.A., Meyer, A.C., Hruska, B., Heil, S.H., Badger, G.J., Rose, G., Brooklyn, J.R., Schwartz, R.P., Moore, B.A., Higgins, S.T., 2016. Interim buprenorphine vs waiting list for opioid dependence. N. Engl. J. Med. 375 (25), 2504–2505.

Streck, J.M., Ochalek, T.A., Badger, G.J., Sigmon, S.C., 2018. Interim buprenorphine treatment during delays to comprehensive treatment: changes in psychiatric symptoms. Exp. Clin. Psychopharmacol. 26 (4), 403–409.

Vona-Davis, L., Rose, D.P., 2009. The influence of socioeconomic disparities on breast cancer tumor biology and prognosis: a review. J. Women's Health 18, 883–893.

Weintraub, E., Greenblatt, A.D., Chang, J., Himelhoch, S., Welsh, C., 2018. Expanding Access to Buprenorphine Treatment in Rural Areas With the Use of Telemedicine. 27(8). pp. 612–617.