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Short communication

Utilizing telemedicine during COVID-19 pandemic for a low-threshold, street-based buprenorphine program

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ABSTRACT

Background: Changes in federal policy during the COVID-19 pandemic allowing for the use of telemedicine to treat opioid use disorder (OUD) have facilitated innovative strategies to engage and retain people in treatment. Since 2018, the Baltimore City Health Department has operated a mobile street medicine program called Healthcare on The Spot (The Spot) that provides treatment for OUD and infectious diseases. This study describes the transition of The Spot's buprenorphine service to telemedicine during the COVID-19 pandemic and one year treatment retention.

Methods: Patients actively engaged in care at the time of transition to telemedicine and patients newly engaged in buprenorphine services through telemedicine were included in this descriptive analysis and assessed at one year for retention.

Results: From March 16, 2020 to March 15, 2021, The Spot provided voice-only buprenorphine treatment services to 150 patients, 70.7% (n = 106) male and 80.0% (n = 120) Black; 131 were patients who transitioned from in person services and 19 were newly engaged via telemedicine. 80.7% (n = 121) of patients remained engaged in treatment at one year, 16.0% (n = 24) were lost to follow-up, and 3.3% (n = 5) were deceased. Patients newly engaged via telemedicine were more likely to be female and white than those retained from in person services.

Conclusion: The Spot's transition of patients from a street medicine program to telemedicine during the COVID-19 pandemic has implications for future practice. Increased flexibility of service delivery, extended prescription length, and decreased UDT likely contributed to high retention rates and should inform the future structure of low-threshold buprenorphine programs.

1. Introduction

Temporary changes to U.S. federal regulations allowing for the use of telemedicine, including voice-only technology (Drug Enforcement Agency, 2020), during the COVID-19 pandemic has led to clinical practice and service delivery innovation in the treatment of opioid use disorder (OUD) (Samuels et al., 2020; Nordeck et al., 2020). Though seldomly used in addiction medicine prior to the pandemic, telemedicine has been shown to be effective at engaging and retaining patients on medications for opioid use disorder (MOUD), including buprenorphine (Eibl et al., 2017; Weintraub et al., 2018; Nordeck et al., 2020). As fatal

overdoses continue to surge nationally (Mattson et al., 2021), and access to MOUD remains limited (Creedon and Cook, 2016; Lagisettey et al., 2019), research is needed to better understand the implications of these policy changes on patient outcomes.

Baltimore City has the ninth highest overdose rate of any jurisdiction in the U.S. and had 814 opioid-related overdose deaths in 2018 (Maryland Department of Health, 2019). In response, the Baltimore City Health Department (BCHD) started a street-based mobile clinic called Healthcare on the Spot (The Spot) in 2018 to provide integrated, low-threshold OUD and infectious disease treatment in communities experiencing high rates of opioid-related overdose (Rosecrans et al.,

Abbreviations: PWUD, people who use drugs; OUD, opioid use disorder; MOUD, medication for opioid use disorder; UDT, urine drug testing; BCHD, Baltimore City Health Department; STI, sexually transmitted infections.

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2021). In the first fifteen months of The Spot, 420 patients were engaged in buprenorphine treatment, with three-month retention of 27%. More than three-quarters of patients were Black, and retention in this group was higher than for white patients. This demonstrated the feasibility of public health departments to provide integrated street-based buprenorphine treatment and successfully engage populations that traditionally have barriers to buprenorphine treatment (Hollander et al., 2021).

As the COVID-19 pandemic began in March 2020, The Spot’s clinical operations transitioned from in-person visits to telemedicine in order to mitigate risk of COVID-19 transmission. This study describes how The Spot’s buprenorphine service adapted practices into a telemedicine model, the characteristics of individuals served, and retention rate in buprenorphine treatment after one year of telemedicine service.

2. Material and methods

2.1. Transition from in person to telemedicine

Prior to COVID-19, the Spot in-person services followed a low-threshold model with same-day medication start, home induction, no required therapy sessions, and allowance for ongoing substance use (Rosecrans et al., 2021). As COVID-19 cases increased nationally in March of 2020, The Spot mobile clinic transitioned from in person services to telemedicine for patients on buprenorphine. To facilitate the transition, the mobile clinic continued its normal schedule from March 2nd to 16th with brief visits performed outside of the vehicle. Patients were provided extended four-week prescriptions (previously 1–4 weeks depending on patient stability). Cell phone numbers for all team members were distributed to patients and local pharmacy partners. Urine drug testing (UDT) was discontinued, and providers developed care plans for patients receiving HIV and hepatitis C treatment. Patients who missed in person visits during the transition weeks were called at least three times, and a seven-day bridge prescription was sent to the pharmacy if a patient was unable to be reached. Over subsequent weeks, several staff members including The Spot medical director were redeployed to COVID-related work for the BCHD, significantly limiting program capacity to accept any new patients.

2.2. Description of telemedicine service delivery

Four providers (a total of 0.8 full-time equivalent) maintained panels of patients in conjunction with a case manager. Providers performed telemedicine visits with patients and reviewed Maryland’s prescription drug monitoring program prior to each buprenorphine prescription. Due to limited patient access to technology, all visits were voice-only. Visit frequency ranged from one to eight weeks, with most patients on a four-week cycle. Laboratory tests previously obtained at the mobile clinic (e.g. UDT and HIV, STI, and HCV screening tests) were not offered during this period. To determine visit frequency and prescription length, providers assessed the patient’s stability including the number of requested early refills, reported frequency of illicit drug use, and consistency of engagement with the care team. Case managers connected with patients weekly, biweekly, or monthly based on patient need. Prescriptions were called in or electronically prescribed to the patient’s pharmacy of choice, along with a prescription for naloxone if needed. If the provider did not connect with the patient and their prescription was due, a one-week prescription was sent to the pharmacy with instructions for the patient to call the provider. Providers and case managers attempted to reach patients at least three times before considering them lost to follow-up. There was no active recruitment for new patients during the study period, but referrals from existing patients were accepted from June through September 2020 due to limited provider capacity.

2.3. Data management, variable definitions, and statistical analysis

Demographic and clinical data were captured in the electronic

medical record (INSIGHT) as part of routine clinical care. Patient characteristics were examined using descriptive statistics. Patients were considered active prior to the transition to telemedicine if they had received a prescription for buprenorphine in the five weeks preceding March 16, 2020. Patients receiving in person services who had at least one telemedicine encounter with a buprenorphine prescription after March 16, 2020, were considered to have transitioned to telemedicine. To account for patients who received prescriptions for four weeks of buprenorphine with one refill, active retention in treatment at the end of the study period was defined as having a prescription for buprenorphine within the nine weeks before March 15, 2021. Chart review was performed to confirm all categorizations of retention status. Pearson’s χ^2 tests compared demographic characteristics between those who transitioned to telemedicine from in person services to those who were lost to follow up from in person services. Additionally, Pearson’s χ^2 tests compared demographic and retention characteristics of those who transitioned to telemedicine from in person services to those who were newly engaged via telemedicine. Johns Hopkins institutional review board determined this study to be quality improvement and exempt from human subjects research.

3. Results

The Spot provided telemedicine OUD treatment services to 150 patients from March 16, 2020, to March 15, 2021 (Table 1). The majority were male (70.7%), Black (80.0%), and between 50 and 59 years old

Table 1
Characteristics of patients receiving care from The Spot mobile clinic via telemedicine from March 16, 2020 to March 15, 2021.

Characteristic	Total N = 150	Engagement Method		p- value	
		Transitioned from in- person N = 131	Started via telemedicine N = 19		
	n (%)	n (%)	n (%)		
Demographics					
Age	< 30 years	17 (11.3%)	15 (11.5%)	2 (10.5%)	0.473
	30–49 years	55 (36.7%)	47 (35.9%)	8 (42.1%)	
	50–59 years	62 (41.3%)	54 (41.2%)	9 (47.4%)	
	> =60 years	16 (10.7%)	15 (11.5%)	0 (0.0%)	
	Gender	Female	44 (29.3%)	34 (26.0%)	
Male	106 (70.7%)	97 (74.0%)	9 (47.4%)		
Race	Black/ African American	120 (80.0%)	111 (84.7%)	9 (47.4%)	< 0.001
	White	28 (18.7%)	18 (13.7%)	10 (52.6%)	
	Other	2 (1.3%)	2 (1.5%)	0 (0.0%)	
	Ethnicity	Hispanic/ Latinx	1 (0.7%)	1 (0.8%)	
Not Hispanic/ Latinx	149 (99.3%)	130 (99.2%)	19 (100.0%)		
Telemedicine Retention Status					
Retention Status	Active*	121 (80.7%)	108 (82.4%)	13 (68.4%)	0.109
	Lost to follow-up	24 (16.0%)	18 (13.7%)	6 (31.6%)	
	Deceased	5 (3.3%)	5 (3.8%)	0 (0.0%)	

* Active retention defined as having any telemedicine visit with a buprenorphine script within the last 9 weeks before March 15, 2021, confirmed by chart review.

(41.3%). In the five weeks prior to March 16 (pre-transition), there were 176 active patients receiving in person OUD treatment on The Spot. Of those, 129 (73.2%) patients had at least one subsequent telemedicine encounter and 47 (26.7%) who were lost to follow up in the transition. Two patients who had been previously engaged in The Spot's OUD treatment but were inactive during the inclusion period were re-engaged via telemedicine. There was no statistically significant difference in age, gender, race or ethnicity between patients who transitioned from in person to telemedicine services compared to those who were lost to follow up (data not displayed).

The remaining 19 of 150 patients were newly engaged through telemedicine. Greater proportions of patients engaged via telemedicine were female (52.6% vs 29.3%, $p = 0.017$) and white (52.6% vs 13.7%, $p < 0.001$) compared to patients who transitioned from in person services.

At the end of the study period, 121 (80.7%) of patients remained actively engaged in OUD treatment, 24 (16.0%) were lost to follow-up, and five (3.3%) were deceased. Of the 121 patients retained, 3 (2.5%) had periods of one month or longer without an active prescription. There was no statistically significant difference in one year retention status comparing patients newly engaged via telemedicine to those who transitioned from in person services. Of those lost to follow up, the median time engaged in the telemedicine service was 13.5 weeks.

4. Discussion

Working under U.S. federal policy changes that allowed for the use of voice-only technology in the treatment of OUD, The Spot was able to transition almost 75% of patients who were initiated in a low-threshold, street-based mobile clinic to telemedicine services during the COVID-19 pandemic. Of the 150 patients served through telemedicine, 80% were retained in buprenorphine treatment at one year. This is notably higher than The Spot's retention rates with in person services of 56% at one month and 26% at three months (Rosecrans et al., 2021). Another street-based buprenorphine program has reported similarly high engagement and one month retention rates with telemedicine during the pandemic (Nordeck et al., 2020). To our knowledge, this is the first study to track retention in a telemedicine buprenorphine program for one year, and adds to the growing evidence for continuation of telemedicine as part of addiction medicine service delivery.

The transition to telemedicine services dramatically changed the structure of service delivery for The Spot. Provider visits and prescription lengths were extended to every four weeks as the standard, with the option to decrease interval length as needed for patients who required additional support. The convenience of the lengthened visit intervals and brief telephone calls without waiting in line to be seen on the van have reduced the burden of participation in The Spot's buprenorphine program. Frequent and time-consuming visits can be challenging for patients to balance with other needs such as employment and may lead to disengagement in treatment (Silverstein et al., 2020). Providing lengthened visit intervals in conjunction with the benefits of telemedicine including eliminating wait times, transportation needs, and need for childcare, has the potential for removing barriers and improving access to buprenorphine treatment.

Another change that may have contributed to high retention rates was the removal of routine UDT. Routine toxicology screening has been recommended as a component in the identification, treatment, and management of OUD, yet its frequency and overall benefit in OUD treatment outcomes are unclear (Jarvis et al., 2017). Prior to the pandemic, patients on The Spot submitted samples for UDT at every visit. Patients were not discharged for illicit substance use and the information from UDT was used to engage in patient-centered strategies to facilitate recovery goals. Approximately 20% of patients were discharged for persisting evidence of buprenorphine non-adherence, or sample adulteration; oftentimes within weeks of their induction visit (Rosecrans et al., 2021). Frequent UDT can reinforce punitive social structures and introduce a power differential in the provider-patient

relationship (Incze, 2021). Implementing a less frequent and more focused UDT protocol has the potential to improve therapeutic relationships (Pytell and Rastegar, 2021). More research is needed to better understand if reduced utilization of UDT can have a positive impact patient engagement. Additionally, standardized assessment tools that focus on patient outcomes rather than UDT are needed to gauge engagement and success in treatment including personal goal achievement, quality of life, and engagement in other services (Incze, 2021).

There are drawbacks to this model. Some patients may prefer the routine of coming to the mobile clinic and interacting with their care team and other patients. Second, a telemedicine-only model could not provide an objective measure of medication adherence, and models that include telemedicine should include access to UDT for this purpose. Third, while telemedicine may provide patients more flexible access to providers than traditional clinic hours, there is a risk of burnout for providers who may feel like they are almost constantly "on call." Lastly, transitioning to a telemedicine model limited access to much needed services for people with substance use disorder, such as wound care, PrEP, and testing and treatment for HIV, HCV, and sexually transmitted infections.

There are limitations to this study. First, data are collected for routine medical care and may be incomplete. Second, given our limited ability to accept new patients, the potential for new patient engagement via telemedicine cannot be determined in this study. Third, retention in telemedicine services for patients previously engaged via in-person services may not be comparable to other populations and may not be generalizable.

5. Conclusion

New strategies that expand access to OUD treatment remain a critical public health need. The Spot's successful transition of patients in a low-threshold street medicine program to telemedicine during the COVID-19 pandemic has implications for future practice. Increased flexibility of service delivery, extended prescription length, and decreased UDT likely contributed to high retention rates and should inform the future structure of low-threshold buprenorphine programs.

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CRedit authorship contribution statement

Robert Harris, Amanda Rosecrans: Developed and implemented the program, Designed the study, Drafted the manuscript. **Meredith Zoltick, Catherine Willman, Joy Bell, Ingrid Blackwell:** Contributed to development and implementation of the program, as well as manuscript content. **Ronald Saxton:** Performed data analysis. **Kathleen Page:** Contributed to program development and implementation, Study design, Manuscript content. All authors have reviewed and approved the final version of the manuscript.

Conflicts of Interest

None.

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