Pacini Editore & AU CNS

Regular Article

Heroin Addict Relat Clin Probl 2020; 22(x): xx-xx

HEROIN ADDICTION & RELATED CLINICAL PROBLEMS

www.europad.org
www.wftod.org

Outcomes for patients receiving telemedicine-delivered medication-based treatment for Opioid Use Disorder: A retrospective chart review

Eric Weintraub [1], Aaron D. Greenblatt [1], Joy Chang [1], Christopher J. Welsh [1], Alexandra P. Berthiaume [2], Shelby R. Goodwin [3], Rachel Arnold [3], Seth S. Himelhoch [4], Melanie E. Bennett [3], and Annabelle M. Belcher [1]

1. *Division of Addiction Research and Treatment, Department of Psychiatry, University of Maryland School of Medicine, Baltimore, MD 21201, USA*
2. *Medical School Training Program, University of Maryland School of Medicine, Baltimore, MD 21201, USA*
3. *Division of Psychiatric Services Research, Department of Psychiatry, University of Maryland School of Medicine, Baltimore, MD 21201, USA*
4. *Department of Psychiatry, University of Kentucky College of Medicine, Lexington, KY 40509, USA*

Summary

This report builds on a previous study that describes the collaboration between an urban academic medical center and a rural drug treatment center, the goal of which is to provide medication-based treatment to individuals with OUD via videoconferencing. We describe results of a retrospective chart review of 472 patients treated in the program between August 2015 and April 2019. We examined several demographic and substance use variables for individuals who consented to telemedicine treatment, retention in treatment over time, and opioid use over time to understand further the impact of prescribing buprenorphine and naltrexone via telemedicine to patients in a rural OUD treatment setting. Our findings support the effectiveness of prescribing medications via telemedicine. The inclusion of more than three times as many patients as in our prior report revealed retention rates and toxicology results that are comparable to face-to-face treatment. These findings have implications for policymakers and clinicians considering implementation of similar programs.

Key Words: Medication-Based Treatment; Medication-Assisted Treatment; buprenorphine; telemedicine; telebehavioral health

1. Introduction

The United States is in the midst of an opioid epidemic resulting in a public health emergency. Since 1999 there has been an almost six-fold increase in opioid related overdose deaths [1]. Rural America has been disproportionally impacted by the misuse of illicit and prescribed opioids [11]. From 2006 through 2015 the per capita rate of overdose deaths in rural areas exceeded those in urban centers [8]. Additionally, rates of new Hepatitis C infections and newborns with Neonatal Opioid Withdrawal Syndrome have risen more rapidly in rural areas [22, 23].

Effective evidence-based treatments for Opioid Use Disorder (OUD) exist. Methadone, buprenorphine, and naltrexone are all FDA approved for the treatment of OUD. When compared to counseling alone, both methadone and buprenorphine decrease opioid use, increase retention in treatment, and significantly reduce deaths from overdose [5, 15]. However, due to a lack of access to treatment and stigma, it is estimated that only 20-40 percent of the more than 2 million individuals with OUD in the United States receive these life-saving treatments [10, 14, 18].

There are numerous barriers to accessing medications for OUD in rural areas. Any licensed physician can prescribe naltrexone, but naltrexone is challenging to initiate in patients with active opioid use. Opioid Treatment Programs (OTPs), overwhelmingly located in urban areas, are highly regulated by the

Correspondence: Annabelle M. Belcher, Division of Addiction Research and Treatment, Department of Psychiatry, University of Maryland School of Medicine, Baltimore, MD, USA.
Phone: 443-462-3400; Mobile: 949-307-3813; E-mail: abelcher@som.umaryland.edu

federal government and require daily attendance during the early phases of treatment [6]. Residents in rural areas with OUDs often lack the means of transportation to consistently attend OTPs [17].

Buprenorphine for OUD addresses some of the clinical and logistical issues associated with methadone and naltrexone treatment. The Drug Addiction Treatment Act of 2000 (DATA 2000) allows buprenorphine to be prescribed by physicians in office-based settings after they obtain a waiver from the Substance Abuse and Mental Health Services Administration and a special identification number from the Drug Enforcement Agency (DEA). The Comprehensive Addiction and Recovery Act of 2016 and the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities Act of 2018 extended this prescribing authority to nurse practitioners, physician assistants, and more recently to clinical nurse specialists, certified nurse midwives, and certified registered nurse anesthetists with the goal of increasing access to medication-based treatments particularly in underserved areas. Despite these efforts, many US counties lack a single waivered prescriber and many providers that have a waiver are treating very few patients or none at all [2]. The dearth of waivered providers is particularly prominent in small and remote rural counties [7].

Telemedicine, or the remote delivery of health care using telecommunications technology, has been demonstrated to be as effective in the diagnosis and assessment of mental health disorders in a variety of populations across different settings [19]. Videoconferencing, a type of telemedicine, has the potential to increase access to medication-based treatment for OUD in underserved, remote rural areas by providing direct-to-patient or specialty consultation services from a distance. However, financial, legal, and regulatory barriers have prevented the widespread adoption of delivering medication-based treatment by telemedicine [3]. As a result, there are limited data about the effectiveness of this treatment approach.

This report builds on a previous study that describes the collaboration between an urban academic medical center and a rural drug treatment center that provides medication-based treatment with buprenorphine and naltrexone to individuals with OUD via videoconferencing. In the original study, we examined outcomes of 177 patients treated with buprenorphine. The current study expands the chart review to examine three-month outcomes over a longer time period of the program's operation (patients treated between August 2015 and April 2019), for both medication modalities (buprenorphine and naltrexone). Specifically, we examined several baseline demographic and substance use variables, three-month retention and opioid use during treatment. Our goal was to use these data to further understand the impact of prescribing buprenorphine and naltrexone via telemedicine to patients with OUD in a rural OUD treatment setting.

2. Methods

2.1. Treatment location

The development and structure of the telemedicine program in the Division of Addiction Research and Treatment at the University of Maryland Baltimore (UMB) has been described previously [25]. Briefly, the Division has partnered with several behavioral health treatment centers located in rural Maryland to provide telemedicine-based delivery of addiction psychiatric and medication-based services for OUD. One of these includes an American Society of Addiction Medicine (ASAM) treatment Level 2.1/3.1 treatment center with locations in Frederick and Hagerstown, MD. Most patients are enrolled in either an intensive outpatient program (IOP) paired with transitional housing, or in a group-based outpatient program (OP), and are treated with sublingual buprenorphine, extended-release naltrexone injections, or daily oral naltrexone if they have an OUD. Many of the patients are admitted directly from an ASAM Level 3.5 or 3.7 residential treatment program or a correctional institution. They come from all over the state of Maryland as well as from southern Pennsylvania. Some have been started on buprenorphine or naltrexone prior to admission, some have undergone medically-managed withdrawal, and some are actively using opioids upon admission.

Given the residential setting, requirements for participation in this level of treatment are high; for example, patients who submit two consecutive positive urine screens are referred to a higher level of care. Patients wishing to remain in care after three months in IOP are enrolled in the OP program. Some of these individuals live in supportive housing affiliated with the treatment program while others live in their own housing. Discharge from the 3-month residential program, however, provides a natural completion point of treatment for many patients. In continuous operation since August 2015, the telemedicine partnership with this program serves as the basis for the current chart review, conducted between July and August 2019.

Between August 2015 and April 2019, the Division had 523 new intake telemedicine encounters with OUD-diagnosed individuals receiving services at the above sites. Fifty-two of the 523 documented encounters were treatment re-admissions; these data are considered separately in another manuscript (in preparation). Four-hundred and forty-three patients were treated with buprenorphine, twenty-five patients were treated with daily (25 or 50 mg, P.O., N=5) or extended-release (380 mg, I.M., N=20) naltrexone, and three were not treated with any medication. Thus, data from a total of 468 patients is included in this report. Treatment outcome data (retention and opioid toxicology screens) are reported only for individuals who were treated with buprenorphine (N=443) or naltrexone (N=25).

2.2. Data elements

The study was determined to be exempt from review by the UMB's Human Research Protection Office. Some of these data have been reported in an initial chart review17; the current chart review serves to expand on those preliminary data by including more individuals and extracting more comprehensive data. Two investigators worked separately to conduct the chart review (A.P.B. and S.R.G.) and de-identified data were compiled after review of both handwritten and electronic health records. Basic demographic information extracted from chart review included age, gender, race, medical insurance, referral to treatment, and level (IOP or OP) and medication prescribed (buprenorphine- or naltrexone-based medications) at treatment entry. Several aspects of drug use-related history were collected from the charts, including history of prescription opioid use, intravenous (IV) drug use and number of prior medication-based treatment attempts. Buprenorphine doses were standardized based on manufacturer dosing guidelines and were extracted from the medical record at four different time points: time of initial telemedicine treatment evaluation, week 1, month 1 and month 3. Retention in treatment was calculated as the absolute number of days between the first and last dates of telemedicine treatment. Urine toxicology was confirmed at treatment initiation and at approximate 2-to-4-week intervals by liquid chromatography-tandem mass spectrometry (LC-MS/MS) testing for the presence of opioids, cocaine, marijuana and benzodiazepines.

2.3. Data analysis

De-identified chart data were entered into REDCap [9], a secure data collection and management application hosted at UMB. Missing variables were verified as missing by an independent observer, and the resulting database was imported into SPSS v.25 for frequency and descriptive analyses.

3. Results

3.1. Sample baseline characteristics

The mean (+S.E.M.) age for the sample of 468 patients was 34.5 (+0.43), 88.9% (416/468) were male, 80.4% (354/440) self-identified as Caucasian, 92.7% (381/411) reported having Medicaid insurance, and 25% (94/377) were court-mandated for treatment. 91.1% (410/450) of the sample was admitted into intensive outpatient treatment. In terms of drug use-specific baseline characteristics, 68.4% (320/447) had a history of using both heroin/fentanyl and prescription opioids, 75.6% (343/454) had a history of IV drug use, and 76% (335/441) had tried medication-based treatment programs prior to their intake into the telemedicine program (60%, 32% and 5% of the total population for buprenorphine, methadone and naltrexone, respectively). All baseline characteristics are listed in **Table 1.**

3.2. Treatment outcome data

Of the 468 individuals in this sample, approximately 94% (443/472) were prescribed buprenorphine. Twenty individuals were treated with extended-release naltrexone (once-monthly 380 mg IM injection), 5 individuals were treated with oral naltrexone (daily pill, PO) and 3 individuals were not treated with any medication. Given the known differences between naltrexone- and buprenorphine-based medication treatment outcomes [16] as well as the fact that only a minority (less than 6%) were treated with naltrexone, we conducted separate analyses of treatment outcomes for the two medication types.

3.3. Buprenorphine outcome data

The average initial dose of buprenorphine was 10.8 mg, which was titrated to an average dose of 13.5 mg at week 1, 15.4 mg at month 1, and 16.7 mg by the third month of treatment. By the end of three months of treatment, 50% (220/443) remained

Table 1. Baseline patient characteristics

	N	%
Age at intake (years)		
Average (+S.E.M.)	35.4 (±0.43)	
Range	18-63	
Gender		
Male	416	88.9
Female	52	11.1
Race		
Caucasian/White	354	75.6
African-American/Black	71	15.2
Other	15	3.2
Unknown	28	6.0
Insurance coverage (n=411)		
Medicaid	381	92.7
Medicare	8	1.9
Private	9	2.2
No insurance	13	3.2
Opioid use history (n=447)		
Heroin/fentanyl only	100	22.4
Prescription opioids only	27	6.0
Heroin and prescribed opioids	320	71.6
IV drug use (n=454)		
History of IVDU	343	75.6
No history of IVDU	111	24.4
Legal mandate (n=377)		
Not court ordered	283	75.1
Court ordered	94	24.9
Level of care (n=450)		
Intensive Outpatient	410	91.1
Outpatient	40	8.9
History of prior MAT treatment (n=441)		
Prior Rx	335	76.0
No prior Rx	106	24.0
Time in care prior to initial psychiatrist evaluation (n=453)		
<1 week	147	32.5
1-4 weeks	232	51.2
>4 weeks	74	16.3
Self-reported opioid abstinence at initial evaluation (n=420)		
Abstinent	383	91.2
Not Abstinent	37	8.8
Initial urine toxicology screen*		
Opioid positive	84	18.9
Opioid negative	361	81.1
Cocaine positive	65	13.9
Cocaine negative	403	86.1
THC positive	27	5.8
THC negative	441	94.2
Benzodiazepine positive	43	9.2
Benzodiazepine negative	425	90.8

Unless otherwise noted, n=468. Percentages exclude missing data.
*n for opioid screen only=422.

Table 1. Baseline patient characteristics

	N	%
Initial medication prescribed		
Buprenorphine	443	94.7
Extended-release naltrexone	20	4.3
Oral naltrexone	5	1.1

Unless otherwise noted, n=468. Percentages exclude missing data.
*n for opioid screen only=422.

engaged in treatment. Toxicological screening for use of illicit substances revealed that 81% (341/421) of buprenorphine-prescribed patients were opioid negative at baseline (day of treatment initiation). Follow-up toxicology screens showed that of the patients who remained engaged in treatment, 93%, 91% and 93% maintained an opioid-negative status at the one-week, one-month and 3-month timepoints, respectively (**Table 2**).

3.4. Naltrexone outcome data

By the end of the third month of treatment, 48% (12/25) of treated individuals were engaged in treatment. One week, one-month and three-month follow-up toxicology screens revealed that most engaged patients maintained an opioid-negative status (90%, 82% and 100%, respectively, for each of the time points analyzed; **Table 3**).

4. Discussion

Our findings confirm the effectiveness of prescribing buprenorphine via telemedicine to patients in a rural OUD treatment setting and lend support to the effectiveness of naltrexone used in this way as well. The inclusion of approximately 3 times as many patients than in our prior report again revealed retention rates and toxicology results that are comparable to face-to-face treatment [4, 26]. There is a striking concordance of outcomes data with our initial findings. It is worth noting that while nearly 50% engagement at 3 months is comparable to non-telemedicine treatment models, it is not resoundingly superior to these; the quest to design interventions with even greater effectiveness must continue. One notable opportunity would be to improve the patient-centeredness of the residential site interventions; rather than discharging or transferring patients who have not achieved sobriety, it would be preferable to take steps to keep patients in treatment. As our urban-rural telemedicine collaboration with this site has matured, we have adapted and implemented telemedicine models alongside other rural community partners which may better prioritize retention and engagement. We will describe these other implementations in a forthcoming publication.

Another strength of this dataset is the inclusion of treatment outcomes with naltrexone, albeit on a limited scale; we are not aware of any other studies reporting on the effectiveness of naltrexone prescribed via telemedicine. Although the small number of patients receiving naltrexone precludes definitive conclusions, naltrexone-treated patients seem to have had similar outcomes to those receiving buprenorphine. This lends credence to recent studies demonstrating comparable effectiveness of buprenorphine and injectable naltrexone in patients who have successfully initiated naltrexone [13, 20].

The greatest limitation of this study is the amount of potentially relevant data that is missing about reasons for treatment discharges, transfers, and aftercare plans. At present, the housing component of treatment typically ends after 3 months, and this provides a natural transition point to other care providers. As a result, longer-term data are not necessarily a reliable index of success and engagement in further treatment.

Table 2. Treatment outcome variables for buprenorphine-treated patients

	Time in telemedicine treatment			
	Baseline	1 week	1 month	3 months
Percent (n) engaged	100%	89% (393)	79% (350)	50% (220)
% noncumulative negative urine opioid screens of engaged patients	81% (341/421)	93% (359/387)	90.2% (324/359)	93% (209/225)

Patient engagement reported on total n of 443.

Table 3. Treatment outcome variables for naltrexone-treated patients

	Time in telemedicine treatment			
	Baseline	1 week	1 month	3 months
Percent (n) engaged	100%	92% (23)	80% (20)	48% (12)
% noncumulative negative urine opioid screens of engaged patients	71% (17/24)	90% (18/20)	82% (14/17)	100% (9/9)

Patient engagement reported on total n of 25.

In addition, we lack data on continuity of addiction care for patients who leave the program early; these individuals may well be engaged in care elsewhere (or are maintaining sobriety without treatment) but are not counted as treatment successes as gauged by retention. The ability to access Prescription Drug Monitoring Program (PDMP) data to follow patients who left treatment could provide some measure of continued engagement, but access to this data is restricted and cumbersome and would, in any case, not include data regarding enrollment in Opioid Treatment Programs. Moreover, the outcome measures we tracked are highly circumscribed; while urine toxicology and retention statistics have long been a standard in addictions research, there is increasing recognition that measures of quality of life, vocational reengagement, comorbid medical illnesses, and ongoing risk behaviors carry at least equal importance [12].

While there is high generalizability about the possibility of creating cross-institutional collaborations similar to this one, some aspects of this treatment setting and patient population limit generalizability to other patient populations. The patient population at the rural treatment site is mostly male, largely opioid abstinent at the time of treatment initiation, primarily Caucasian, young, and publicly-insured. The treatment setting is able to provide a high level of care (ASAM 2.1/3.1); while this likely benefits patients who meet ASAM criteria for this level of treatment, outcomes might not be the same in different implementation settings. In particular, these findings cannot be extrapolated to telemedicine care delivered via personal mobile device; this approach may become more widespread depending on the implementation of Center for Medicaid Services (CMS) and DEA regulations governing the provision and reimbursement for home-based telemedicine care [21, 24].

5. Conclusions

Our findings and clinical experience confirm the viability and sustainability of delivering buprenorphine via telemedicine to patients enrolled in a rural drug treatment program. It is essential that other models and settings for SUD treatment via telemedicine be evaluated and disseminated; of particular interest are home-based models (if permitted by DEA and CMS regulations), treatment for patients who are actively using at the beginning of treatment, incarcerated persons, and integrated treatment and prevention of comorbid infectious complications of drug use such as HCV and HIV.

References

1. Ahmad F, Escobedo L, Rossen L, Spencer M, Warner M, Sutton P. (2019): Provisional drug overdose death counts [Internet]. National Center for Health Statistics, Centers for Disease Control and Prevention. Available from: https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm#source
2. Andrilla CHA, Coulthard C, Patterson DG. (2018): Prescribing Practices of Rural Physicians Waivered to Prescribe Buprenorphine. *Am J Prev Med*. 54(6):S208–S214.
3. Chakrabarti S. (2015): Usefulness of telepsychiatry: A critical evaluation of videoconferencing-based approaches. *World J Psychiatry*. 5(3):286.
4. Eibl JK, Gauthier G, Pellegrini D, Daiter J, Varenbut M, Hogenbirk JC, Marsh DC. (2017): The effectiveness of telemedicine-delivered opioid agonist therapy in a supervised clinical setting. *Drug Alcohol Depend*. 176:133–138.
5. Fiellin DA, Pantalon MV, Chawarski MC, Moore BA, Sullivan LE, O'Connor PG, Schottenfeld RS. (2006): Counseling plus Buprenorphine–Naloxone Maintenance Therapy for Opioid Dependence. *N Engl J Med*. 27;355(4):365–374.
6. Dick AW, Pacula RL, Gordon AJ, Sorbero M, Burns RM, Leslie D, Stein BD. (2015): Growth In Buprenorphine Waivers For Physicians Increased Potential Access To Opioid Agonist Treatment, 2002–11. *Health Aff*

(Millwood). 34(6):1028–1034.
7. Ghertner R. (2019): U.S. trends in the supply of providers with a waiver to prescribe buprenorphine for opioid use disorder in 2016 and 2018. *Drug Alcohol Depend.* 204:107527.
8. Guy GP, Zhang K, Bohm MK, Losby J, Lewis B, Young R, Murphy LB, Dowell D. (2017): Vital Signs: Changes in Opioid Prescribing in the United States, 2006–2015. *MMWR Morb Mortal Wkly Rep*. 66(26):697–704.
9. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. (2009): Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 1;42(2):377–381.
10. Jones CM, Campopiano M, Baldwin G, McCance-Katz E. (2015): National and State Treatment Need and Capacity for Opioid Agonist Medication-Assisted Treatment. *Am J Public Health*. 105(8):e55–e63.
11. Keyes KM, Cerdá M, Brady JE, Havens JR, Galea S. (2014): Understanding the Rural–Urban Differences in Nonmedical Prescription Opioid Use and Abuse in the United States. *Am J Public Health*. 104(2):e52–e59.
12. Kiluk BD, Fitzmaurice GM, Strain EC, Weiss RD. (2019): What defines a clinically meaningful outcome in the treatment of substance use disorders: reductions in direct consequences of drug use or improvement in overall functioning?: Overall functioning versus consequences. *Addiction*. 114(1):9–15.
13. Lee JD, Nunes EV, Novo P, Bachrach K, Bailey GL, Bhatt S, Farkas S, Fishman M, Gauthier P, Hodgkins CC, King J, Lindblad R, Liu D, Matthews AG, May J, Peavy KM, Ross S, Salazar D, Schkolnik P, Shmueli-Blumberg D, Stablein D, Subramaniam G, Rotrosen J. (2018): Comparative effectiveness of extended-release naltrexone versus buprenorphine-naloxone for opioid relapse prevention (X:BOT): a multicentre, open-label, randomised controlled trial. *The Lancet*. 391(10118):309–318.
14. Lembke A, Chen JH. (2016): Use of Opioid Agonist Therapy for Medicare Patients in 2013. *JAMA Psychiatry*. 73(9):990.
15. Mattick RP, Breen C, Kimber J, Davoli M. (2009): Methadone maintenance therapy versus no opioid replacement therapy for opioid dependence. Cochrane Drugs and Alcohol Group, editor. Cochrane Database Syst Rev. Available from: http://doi.wiley.com/10.1002/14651858.CD002209.pub2
16. Minozzi S, Amato L, Vecchi S, Davoli M, Kirchmayer U, Verster A. (2011): Oral naltrexone maintenance treatment for opioid dependence. In: The Cochrane Collaboration, editor. Cochrane Database Syst Rev [Internet]. Chichester, UK: John Wiley & Sons, Ltd. Available from: http://doi.wiley.com/10.1002/14651858.CD001333.pub4
17. Rosenblum A, Cleland CM, Fong C, Kayman DJ, Tempalski B, Parrino M. (2011): Distance Traveled and Cross-State Commuting to Opioid Treatment Programs in the United States. *J Environ Public Health*. pp. 1–10.
18. 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.
19. Shigekawa E, Fix M, Corbett G, Roby DH, Coffman J. (2018): The Current State Of Telehealth Evidence: A Rapid Review. *Health Aff* (Millwood). 37(12):1975–1982.
20. Tanum L, Solli KK, Latif Z-H, Benth JŠ, Opheim A, Sharma-Haase K, Krajci P, Kunøe N. (2017): Effectiveness of Injectable Extended-Release Naltrexone vs Daily Buprenorphine-Naloxone for Opioid Dependence: A Randomized Clinical Noninferiority Trial. *JAMA Psychiatry*. 74(12):1197.
21. U.S. Department of Justice - Drug Enforcement Administration. (2018): Use of Telemedicine While Providing Medication Assisted Treatment (MAT) [Internet]. Available from: https://www.deadiversion.usdoj.gov/mtgs/pract_awareness/resources/Telemedicine_MAT.pdf
22. Van Handel MM, Rose CE, Hallisey EJ, Kolling JL, Zibbell JE, Lewis B, Bohm MK, Jones CM, Flanagan BE, Siddiqi A-E-A, Iqbal K, Dent AL, Mermin JH, McCray E, Ward JW, Brooks JT. (2016): County-Level Vulnerability Assessment for Rapid Dissemination of HIV or HCV Infections Among Persons Who Inject Drugs, United States. *J Acquir Immune Defic Syndr* (1999). 73(3):323–331. PMCID: PMC5479631
23. Villapiano NLG, Winkelman TNA, Kozhimannil KB, Davis MM, Patrick SW. (2017): Rural and Urban Differences in Neonatal Abstinence Syndrome and Maternal Opioid Use, 2004 to 2013. *JAMA Pediatr*. 171(2):194.
24. Walden G. (2018): SUPPORT for Patients and Communities Act. H.R.6-115th Congress.
25. Weintraub E, Greenblatt AD, Chang J, Himelhoch S, Welsh C. (2018): Expanding access to buprenorphine treatment in rural areas with the use of telemedicine: Buprenorphine in Rural Areas With Telemedicine. *Am J Addict*. 27(8):612–617.
26. Zheng W, Nickasch M, Lander L, Wen S, Xiao M, Marshalek P, Dix E, Sullivan C. (2017): Treatment Outcome Comparison Between Telepsychiatry and Face-to-face Buprenorphine Medication-assisted Treatment for Opioid Use Disorder: A 2-Year Retrospective Data Analysis. *J Addict Med*. 11(2):138–144.

Acknowledgements

The authors would like to acknowledge Amna Zehra and Thomas O. Cole, MA, for contributions to the chart review implementation.

Role of the funding source

Authors state that this study was financed with internal funds. No sponsor played a role in study design; in the collection, analysis and interpretation of data; in the writ-

ing of the report; and in the decision to submit the paper for publication.

Contributors

All authors were involved in the study design, had full access to the survey data and analyses, and interpreted the data, critically reviewed the manuscript and had full control, including final responsibility for the decision to submit the paper for publication.

Conflict of interest

All authors have no conflict of interest.

Ethics

This chart review was reviewed and determined to be Non-Human Subjects Research by the University of UMB (See above) and thus, no ICF process was required to extract the data reported in this manuscript.

Received January 24, 2020 - Accepted March 16, 2020