

Physician Response to COVID-19–Driven Telehealth Flexibility for Opioid Use Disorder

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In early 2020, the COVID-19 pandemic and recommended physical distancing required drastic changes to the delivery of opioid use disorder (OUD) treatment. In March 2020, telehealth restrictions were loosened for the duration of the declared public health emergency. Telehealth for OUD has the potential to mitigate access barriers to evidence-based treatment.^{1,3} Although telehealth effectiveness has yet to be rigorously evaluated for this population, several studies find buprenorphine treatment via telehealth to be associated with treatment retention on par with or better than in-person treatment, suggesting that telehealth may be a feasible modality for some patients.^{1,3-6}

Telehealth regulatory restrictions were temporarily relaxed for security, licensing, prescribing, and reimbursement.⁷⁻⁹ Health Insurance Portability and Accountability Act (HIPAA) restrictions were loosened to allow for the use of platforms such as FaceTime and Zoom, although institutions imposed local restrictions on platforms.¹⁰ Prescribing across state lines became federally permissible, but state medical boards continued various restrictions on the practice.^{11,12} Many payers increased coverage, implemented reimbursement parity, and lessened modality restrictions.^{9,13-15} For example, Medicare began payment parity for telehealth and lifted location restrictions requiring patients to receive services from designated rural areas or medical facilities.^{7,9} Often, commercial payers followed suit.^{7,9} Commercial payers are also subject to reactionary state reimbursement policies.¹² Medicaid telehealth is primarily regulated by states, and most have implemented parity for coverage or payment.^{7,16} Most notably, providers are now temporarily permitted to prescribe buprenorphine to new and existing patients via telephone without first conducting an in-person examination.^{10,17} Most regulatory flexibility will expire with the declared public health emergency.^{10,11}

To determine how OUD-treating physicians adapted their practice, their perceptions of telehealth for OUD, and their preferences for policy change, we deployed a nationwide survey of physicians with the ability to prescribe buprenorphine based on the requirements of the Drug Addiction Treatment Act (DATA) of 2000.

ABSTRACT

OBJECTIVES: To learn how preferences and practices regarding telehealth have evolved during the COVID-19 pandemic for physicians who provide opioid use disorder (OUD) treatment.

STUDY DESIGN: Publicly registered physicians who provide OUD treatment were surveyed on their current and retrospective use of telehealth and how their perception of telehealth effectiveness and policy preferences have changed during the COVID-19 pandemic as telehealth regulations were loosened throughout the country.

METHODS: The primary survey data were collected in July 2020 leveraging administrative contact information for the population of publicly listed buprenorphine-prescribing physicians in the United States. A total of 1141 physicians received the survey and consented to participate.

RESULTS: Many surveyed physicians used telehealth for the first time during the early COVID-19 era (29% pre-COVID-19 use rate increased to 66%). Most respondents found telehealth to be more effective than expected (54% vs 16% who found it less effective), 85% were in favor of the temporary telehealth flexibility being permanently extended, and 77% would be likely to use telehealth after the COVID-19 pandemic, regulations permitting. Imputation exercises that leverage the linked survey and administrative data suggest that the findings are unlikely to be driven by nonrandom survey participation.

CONCLUSIONS: Physicians were asked about their OUD telehealth policy preferences. Findings suggest that the COVID-19 pandemic increased physician respondent use of telehealth technology, and this has positively shifted their perceptions of effectiveness. Respondents overwhelmingly report interest in post-COVID-19 pandemic telehealth use and support for proposed legislation to loosen telehealth restrictions.

Am J Manag Care. 2022;28(9):456-463. doi:10.37765/ajmc.2022.89221

STUDY DATA AND METHODS

Data Collection

In July 2020, we surveyed publicly listed DATA-waivered physicians via email addresses obtained via a Freedom of Information Act request from the Substance Abuse and Mental Health Services Administration (SAMHSA).¹⁸ The survey contained 30 questions about telehealth use and practice. Approximately half of the 38,000 physicians who were DATA waived by January 2018 were publicly listed, 87% of whom provided email addresses to SAMHSA. The survey was sent to 17,020 email addresses, and 15,907 were delivered successfully (eAppendix Figure [eAppendix available at ajmc.com]). The consent form was completed by 1188 physicians; 28 refused. Eligibility was determined through a screener question asking whether they had prescribed buprenorphine in 2019 for outpatient OUD treatment; 92% were eligible. The final sample consisted of 1054 physicians, with a 98% survey completion rate and an 8% response rate.

Study Variables and Outcomes

We collected the physicians' patient capacity limit per federal regulations (capacity), practice setting, specialty, payment types most often received, and average 2019 monthly census. We assessed whether telehealth for OUD buprenorphine treatment was used before and during the pandemic and whether physicians preferred that the COVID-19–driven regulatory flexibility become permanent by these characteristics. A specific definition of telehealth was not given, allowing the respondent to interpret the term. We additionally collected whether changes were made to several domains of practice, perceptions regarding the effectiveness of telehealth, and likelihood of future use.

Statistical Analysis

Changes were stratified and compared by whether physicians used telehealth during the 2 months before taking the survey, which referred to May through July 2020 (early COVID-19 era). *P* values were estimated using χ^2 tests or ordered logistic regressions for main analyses. Analyses were performed using Stata version 15 (StataCorp). The Yale University Institutional Review Board determined that the study was exempt from approval, and informed consent was obtained from all participants.

Robustness Check

We leveraged administrative data on the population of potential survey respondents to model participation. Imputation exercises were conducted to evaluate the potential for nonrandom participation to bias the main results. Imputed responses on 6 key outcome variables were compared between respondents ($n = 1125$) and nonrespondents ($n = 13,668$). One hundred imputations were used.^{19,20}

TAKEAWAY POINTS

- ▶ Access barriers contribute to the underuse of effective medication for opioid use disorder (OUD).
- ▶ Telehealth for OUD was restricted before the COVID-19 pandemic and rarely used, and policy decisions were based on limited information.
- ▶ After the COVID-19 pandemic increased exposure to telehealth for OUD, most physician respondents found telehealth to be more effective than previously expected, would like to continue telehealth use after the pandemic, and support permanently extending the temporary loosened telehealth regulations.
- ▶ Findings suggest that recent exposure to telehealth facilitated physician respondents to consider telehealth a viable treatment option for patients with OUD and provide implications for decision makers of telehealth accessibility.

The predictive model included gender²¹; years since initial DATA waiver¹⁸; patient capacity¹⁸; zip code population 2018 estimate²²; rurality²³; proportion of households with private insurance,²² with public insurance,²² and uninsured²²; proportion of households with income less than \$25,000²²; county-level proportion of COVID-19 cases²⁴ up to August 1, 2020; proportion of opioid-related fatalities²⁵; proportion of Republican votes (2000-2016 presidential elections)²⁶; and 9 Census regional division indicators.²⁷

RESULTS

Descriptive Physician Characteristics

Most surveyed physicians were in private or solo group practices ($n = 628$; 62%), one-third came from a freestanding clinic/urgent care center (17%) or a hospital-based outpatient department (16%), and 5 additional settings each composed less than 10% of the sample (Table 1). More than half of the physicians had capacity to treat 275 patients (541; 52%); these physicians averaged 108 patients per month in 2019. More than one-third of physician respondents had capacity to treat 100 patients (35%), averaging 33 monthly, and 13% of the physicians had capacity to treat 30 patients, averaging 8 monthly. Medicaid was the most frequently received payment type (48%), followed by cash (27%), Veterans Health Administration [VA] (24%), and commercial insurance (20%). Other payment types (eg, Department of Defense [DOD]) (4%) and Medicare (2%) were rarely reported as the most frequently received.

Telehealth Use

Pre-COVID-19 pandemic telehealth use. Most of the physicians reported having prescribed buprenorphine for OUD between April and July 2020 ($n = 993$; 94%) (eAppendix Figure). Of those who prescribed, most conducted a buprenorphine initiation (induction) in at least 1 patient (71%). Before the COVID-19 pandemic, few respondents had used telehealth for buprenorphine treatment; 71% had never used it and only 6% were regularly using telehealth (as opposed to rarely or occasionally) (Table 1). Physicians with a 275-patient capacity were more likely to have previous telehealth use than those with lower capacities ($P = .007$). Previous use varied by setting ($P = .007$), ranging from 23% of hospital outpatient departments having used

TABLE 1. Physician Demographics, Telehealth Use, and Policy Preferences

Characteristic	Total n (%)	Census Monthly 2019 median (IQR)	Pre-COVID-19 telehealth use ^a		Early COVID-19-era telehealth use ^b		Permanently extend telehealth regulations		
			Yes n (%)	χ^2 P	Yes n (%)	χ^2 P	Favor n (%)	Oppose n (%)	χ^2 P
Total	1053	50 (20-115)	180 (29)	<.001	652 (66)	<.001	826 (85)	78 (8)	<.001
Patient capacity				.007		<.001			.569
Total	1048	1026	629		991		972	972	
30	141 (13)	8 (3-15)	22 (26)	-	56 (50)	-	110 (87)	8 (6)	-
100	366 (35)	33 (16-54)	47 (22)	-	217 (63)	-	290 (85)	23 (7)	-
275	541 (52)	108 (60-175)	111 (34)	-	377 (71)	-	423 (84)	47 (9)	-
Setting ^c				.007		.066			.010
Total	1010	993	614		967		968	968	
Private solo or group practice	628 (62)	75 (30-145)	112 (31)	-	375 (62)	-	486 (81)	64 (11)	-
Freestanding clinic/urgent care center	172 (17)	67 (30-150)	40 (37)	-	113 (69)	-	150 (89)	10 (6)	-
Hospital outpatient department	164 (16)	30 (10-72)	27 (23)	-	111 (72)	-	144 (90)	4 (3)	-
Mental health center	93 (9)	69 (30-125)	21 (35)	-	68 (76)	-	78 (89)	4 (5)	-
Nonfederal government clinic	63 (6)	58 (13-126)	12 (28)	-	39 (68)	-	53 (91)	4 (7)	-
Federally operated clinic	37 (4)	29 (9-50)	14 (61)	-	24 (75)	-	32 (89)	1 (3)	-
Prepaid practice	12 (1)	16 (7-55)	2 (40)	-	9 (75)	-	11 (92)	0	-
Faculty practice plan	48 (5)	30 (9-58)	6 (17)	-	31 (66)	-	44 (96)	0	-
Specialty				.029		.002			.458
Total	1002	985	608		958		960	960	
Addiction	298 (30)	90 (45-159)	65 (36)	-	220 (75)	-	241 (85)	29 (10)	-
Psychiatry	180 (18)	29 (7-62)	32 (29)	-	101 (61)	-	147 (85)	15 (9)	-
Family or internal medicine	402 (40)	50 (20-101)	56 (23)	-	241 (63)	-	328 (85)	25 (7)	-
Other specialty	122 (12)	44 (20-107)	21 (28)	-	71 (63)	-	98 (83)	9 (8)	-
Payment most often received				.018		.001			.046
Total	995	978	603		955		962	962	
Commercial insurance	196 (20)	51 (17-99)	37 (30)	-	110 (58)	-	156 (82)	23 (12)	-
Medicaid	475 (48)	50 (22-125)	71 (24)	-	326 (71)	-	404 (87)	23 (5)	-
Medicare	20 (2)	83 (43-156)	2 (15)	-	13 (65)	-	15 (79)	1 (5)	-
Self-pay or cash	266 (27)	79 (30-138)	47 (32)	-	154 (61)	-	210 (83)	27 (11)	-
Other (eg, VA, DOD)	38 (4)	25 (9-55)	14 (52)	-	28 (82)	-	33 (89)	2 (5)	-

DOD, Department of Defense; VA, Veterans Health Administration.

^aThe n for pre-COVID-19 telehealth use is smaller because the question was added after the pilot phase, affecting a random sample of 434 surveys.

^bPhysicians who did not prescribe buprenorphine during the early COVID-19 era are excluded. The early COVID-19 era is from May through July 2020.

^cCategories are not mutually exclusive; respondents could select more than 1 response.

telehealth to 61% of federally operated clinics (VA, Indian Health Services, federally qualified health center). Previous use also differed by specialty ($P = .029$), ranging from 23% of physician respondents having used telehealth in family or internal medicine to 36% in addiction medicine or addiction psychiatry. It additionally differed by payment types most frequently received ($P = .018$), with 52% of those most often receiving other insurance such as VA or DOD, followed by self-pay or cash (32%), commercial insurance (30%), and Medicaid (24%). Physicians most often receiving Medicare were least likely to previously use telehealth (15%).

Early COVID-19-era telehealth use. Telehealth take-up for buprenorphine treatment was high during the early COVID-19 era

(66%) (Table 1) and the first time for most (61% of those who used telehealth). The share of responding physicians who used telehealth during the early COVID-19 era varied by patient capacity ($P < .001$), specialty ($P = .002$), and most commonly received payment type ($P = .001$) and did not differ by setting ($P = .066$). Physicians were more likely to use telehealth as their patient capacities increased, with 50%, 63%, and 71% using telehealth at capacities of 30, 100, and 275 patients, respectively. Addiction medicine physicians used telehealth at a higher rate (75%) than other specialties (61%-63%). Those most commonly receiving other insurance, such as VA or DOD, had the highest telehealth use share (82%), physicians most often receiving Medicaid had a substantial share (71%), and those

receiving Medicare (65%), self-pay/cash (61%), and commercial insurance (58%) had the lowest share.

Early COVID-19-era modality comparisons.

Most physicians opted for a combination of in-person and telehealth visits during this period; 77% of the physicians conducted visits using both modalities, with no statistically significant difference between modality shares ($P = .605$) (Figure 1). However, a significantly higher share conducted visits exclusively via telehealth (22%) than exclusively in person (8%) ($P < .001$). More physicians conducted a telehealth visit in advance of initiating new patients onto buprenorphine (induction) in person (67%) than via telehealth (57%), but more physicians exclusively used telehealth for inductions (47%) relative to exclusively in person (33%) ($P < .001$), indicating that those who tried telehealth for inductions were likely to use it exclusively (70%).

Changes Adopted in Response to the COVID-19 Pandemic

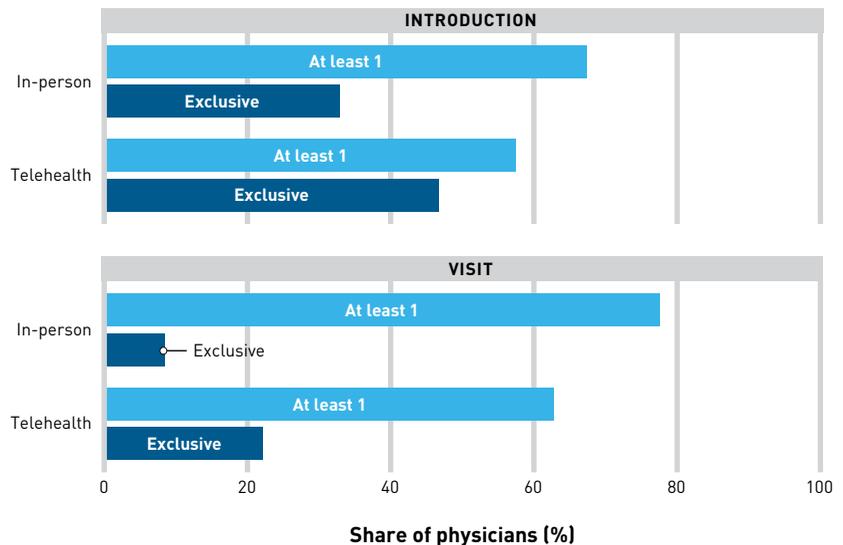
Physicians reported whether they adopted changes in how they practice in response to COVID-19 across several domains, and responses

were compared by whether physicians had used telehealth (telehealth users and nonusers) during the early COVID-19 era (Figure 2). More telehealth users than nonusers reported changes in all domains of inquiry. Telehealth users were more likely to report eliminated or decreased frequency of counseling requirements (23% for nonusers and 30% for telehealth users), a minority of respondents increased counseling requirements (11% and 10%, respectively), and most did not change ($P = .041$). Telehealth users more often reported decreases in or elimination of visits (29% vs 18%) and increases in visits (12% vs 8%) ($P = .03$). Collection of urine toxicology tests was most affected, with 76% of telehealth users and 55% of nonusers decreasing or eliminating these requirements and rarely increasing them ($< 4%$) ($P < .001$). There were also more increases than decreases in length of buprenorphine prescriptions and number of refills, with a large proportion of both reporting no change ($P = .001$). Telehealth users more often reported an increase in length (28% vs 14%) and refills (17% vs 8%), and rare decreases ($< 6%$) ($P = .012$).

Telehealth Regulation Preferences and Effectiveness Perceptions

Surveyed physicians were overwhelmingly in favor of COVID-19-driven telehealth regulatory changes becoming permanent, with 85% in favor and 68% strongly in favor; only 8% were opposed (Figure 3). Preferences did not differ by patient capacity limit or specialty. By setting, physicians in private practice found the potential law less

FIGURE 1. Buprenorphine Inductions and Visits During the Early COVID-19 Era: Comparison of In-Person and Telehealth Use^a



^aFigure 1 illustrates the share of physicians reporting buprenorphine treatment for opioid use disorder provided during May through July 2020 by modality (telehealth compared with in person), type (induction/treatment initiation compared with routine visits), and modality exclusivity (proportion of visit types conducted exclusively using telehealth or in person).

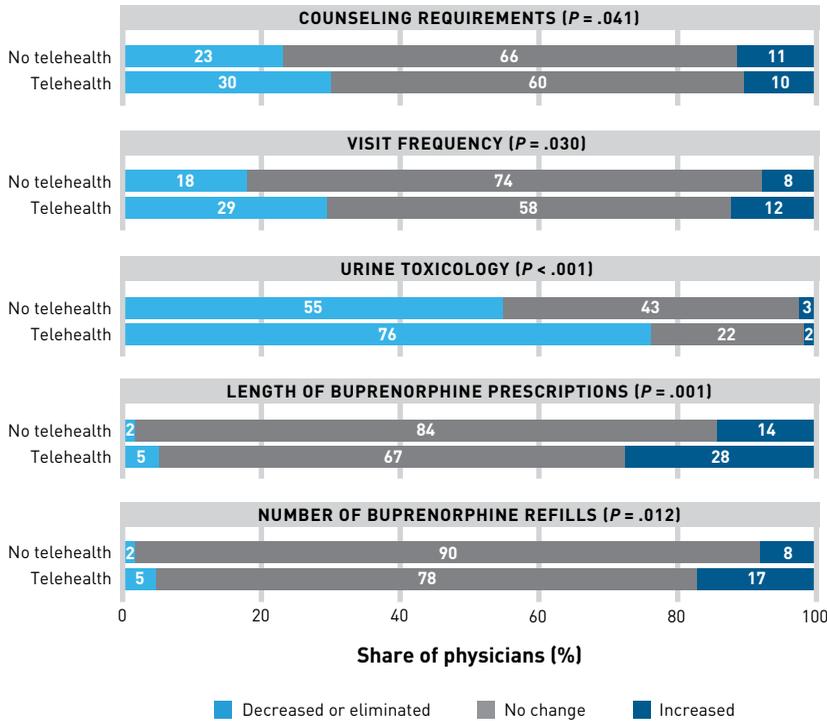
The early COVID-19 era is from May through July 2020. Exclusive is a subset of at least 1. There are 898 physicians who conducted visits and 644 who conducted inductions.

favorable, albeit with very high favorability (81%), than those in other settings (89%-96%) ($P = .010$) (Table 1). By payment types most commonly received, physicians receiving other insurance (eg, VA or DOD) and Medicaid had the highest favorability shares at 89% and 87%, respectively, and favorability was marginally lower among physicians most frequently receiving self-pay or cash, commercial insurance, and Medicare (79%-83%; $P = .046$). Physicians found telehealth more effective than anticipated (54%, more effective; 16%, less effective) (Figure 3). Most physicians are likely to use telehealth after the COVID-19 public health emergency should regulations permit, with 77% likely and 55% extremely likely. Physicians were also more likely than not to conduct buprenorphine inductions via telehealth (50%, likely; 42%, unlikely). There were gradient effects for telehealth support across those who used in-person visits exclusively, any telehealth, and exclusively telehealth for both continuation visits and inductions. More telehealth use was positively associated with support for permanently extending regulatory flexibility and likelihood of using telehealth after the pandemic (eAppendix Table 1).

Robustness Check

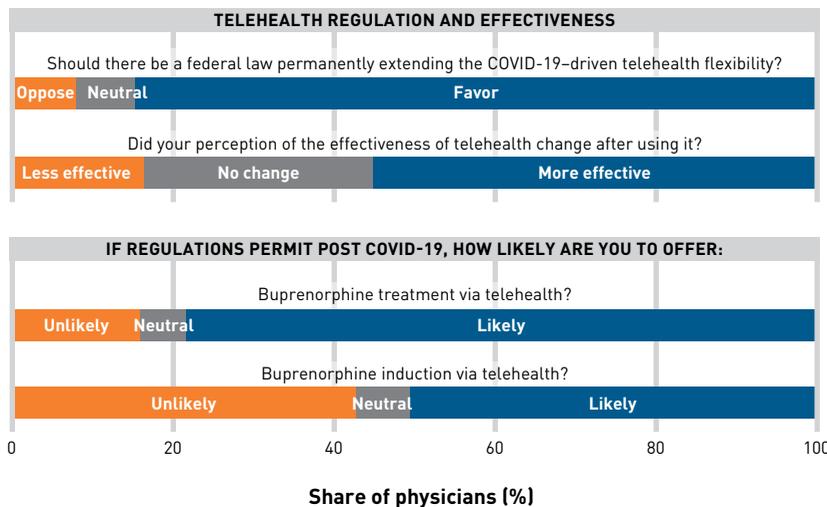
Nonrandom participation bias was assessed. Although survey participation rates were correlated with observable physician characteristics, such as gender and geographic location, estimates suggest no statistically significant difference in how respondents

FIGURE 2. Early COVID-19–Era Changes Adopted for Buprenorphine Treatment*



*Figure 2 depicts the proportion of physicians who changed their opioid use disorder buprenorphine treatment provision in May through July 2020 comparing physicians who used telehealth and physicians who practiced exclusively in person during that time. The early COVID-19 era is May to July 2020. P values were assessed using ordered logistic regression.

FIGURE 3. Telehealth for Buprenorphine Treatment: Physician Preferences and Perceptions*



*Figure 3 shows the responses to 4 questions related to telehealth for opioid use disorder buprenorphine treatment by share of physicians reporting a given response.

and nonrespondents would have answered the 6 key questions. See the Study Data and Methods section for prediction variables and the [eAppendix Table 2](#) for the prediction logit model. For all 6 survey questions estimated, proportion point estimates between respondents and nonrespondents are within 3 percentage points of one another ([Table 2](#)). Although selection on unobservable physician characteristics may still result in bias, the magnitude of the differences found and the results of this robustness exercise suggest that the main findings are not likely to be driven by nonrandom participation.

DISCUSSION

In a survey of 1054 DATA-waived buprenorphine-prescribing physicians, we found that two-thirds used telehealth during the COVID-19 pandemic for buprenorphine treatment, a substantial increase from the approximately one-fourth who had previously used telehealth. There was an exceedingly positive perception of the new COVID-19–driven telehealth flexibility for OUD. Eighty-five percent of respondents were in favor of this flexibility becoming permanent, with most finding telehealth to be more effective than expected and reporting that they were very likely to use it after the public health emergency if permitted. In a context where there is a high need for treatment, yet few are accessing it, any opportunity to reduce access barriers—particularly for underserved populations—warrants consideration. There are currently bills pending in Congress that could make some of the telehealth regulatory flexibility permanent.^{28,29}

Annually, 75% to 90% of individuals with an OUD do not receive treatment, and two-thirds of those getting treatment do not receive medications such as buprenorphine for OUD.^{30,31} Buprenorphine is an effective first-line treatment, but a minority of eligible patients receive it.³² Forty percent of US counties do not have trained clinicians, and approximately half in the highest-need areas have inadequate capacity and may not be accepting new patients.^{18,33} Given that most individuals seeking substance use disorder treatment have incomes below 200% of the poverty line and many live in rural areas, access equity may be improved by permanently implementing

Medicaid-related policy changes (eg, reimbursement coverage, parity, audio-only allowances) and more restrictive states adopting the policies of the more flexible states.³⁴

We found that most of the physicians were not providing buprenorphine to their federally permitted capacity. Providing the option to use telehealth may allow physicians to expand the geographic scope of patients they can treat. Restrictions on prescribing across state lines have been federally suspended, but state medical board restrictions remain. Relaxing restrictions may allow for improved patient-provider matching, and thus more rapid access, for rural patients and those near state borders. State-line flexibility may additionally allow for better continuity of care, and thus treatment retention, for mobile patients (eg, college students).

Although most physicians provided a combination of in-person and telehealth modalities for buprenorphine treatment, physicians were more likely to exclusively use telehealth than to exclusively conduct visits in person. Before the COVID-19 pandemic, initiating buprenorphine without an in-person visit was not permitted, yet most of the physicians who inducted a patient during the pandemic did their initial visits exclusively with telehealth, and more than half would be likely to continue this practice after the public health emergency if permitted. This finding suggests that permanent suspension of the in-person requirement may be welcomed by a substantial portion of providers. The COVID-19 pandemic spurred a quasi-exogenous increase in telehealth use, positively shifting telehealth effectiveness perceptions among physicians, and they report an interest in using telehealth when physical distancing no longer necessitates it. This mass exposure and subsequent receptivity to technology adoption presents a unique opportunity that can be leveraged to expand treatment access.

Telehealth was used by most physicians, but there was heterogeneity by physician characteristics. Groups that used telehealth during the early COVID-19 era at lower rates include physicians with the lowest patient capacity, those in private practice, and those who accept commercial insurance. Although not rigorously analyzed, some barriers to adopting telehealth for buprenorphine treatment disproportionately reported by these providers relative to other patient capacities, settings, and payment types were billing and reimbursement (not shown). This is consistent with the literature.^{8,35-37}

The discrepancy may stem from physicians in private practice shouldering more billing and reimbursement labor themselves than physicians in other settings. It also suggests that commercial insurance reimbursement and billing procedures may be more confusing, cumbersome, and heterogeneous or less generous in

TABLE 2. Multiple Imputation of Key Outcomes by Comparison of Physician Population by Survey Response^a

Key outcome variable	Imputed proportion (SE) ^b		P (Monte Carlo error) ^c
	Respondents n = 1125	Nonrespondents n = 13,668	N = 14,844
Favor permanent telehealth regulations	85 (0.012)	85 (0.017)	0.734 (0.065)
Pre-COVID-19 pandemic telehealth use	29 (0.018)	28 (0.021)	0.577 (0.055)
Early COVID-19-era telehealth use	65 (0.015)	62 (0.020)	0.097 (0.019)
Found telehealth more effective than expected	55 (0.017)	55 (0.023)	0.836 (0.060)
Likely to use telehealth after COVID-19 pandemic	77 (0.013)	78 (0.016)	0.667 (0.057)
Likely to induct using telehealth after COVID-19 pandemic	49 (0.016)	46 (0.021)	0.244 (0.038)

^aMultiple imputation was used with 100 imputations. Predictive model variables include the following: (1) individual level: gender, years since initial Drug Addiction Treatment Act waiver, patient capacity (30, 100, 275); (2) zip code level: number of population; rurality; proportion of households with private insurance, with public insurance, and uninsured; proportion of households < \$25,000 income; (3) county level: proportion of COVID-19 cases, proportion of opioid-related fatalities, proportion of Republican votes (2000-2016 presidential elections); and (4) census division level: census regional division fixed effects (9 divisions total).

^bProportions of key outcome variables were estimated by survey response with 100 pooled imputations.

^cSurvey response was regressed on pooled multiple imputed key outcome variables using a logit model. Monte Carlo *P* value error estimates are in parentheses.

parity policies than other forms of payment that are more standardized or do not require a third-party payer. Commercial payers may intentionally restrict coverage or lower reimbursement rates for telehealth for cost containment, suggesting that if not disincentivized, telehealth would improve treatment access.³⁵ Physicians with a 30-patient capacity differed from larger capacity categories on only reimbursement, which suggests that they may have smaller practices that are more sensitive to lack of reimbursement parity. Reimbursement and billing are barriers that can be addressed through policies requiring more standardization and consistency in billing and parity for reimbursement with in-person services.

Patients can face numerous barriers that may be improved with telehealth flexibility, such as difficulty finding a provider; a long, unreliable, or cost-prohibitive commute; childcare arrangement and cost; and inflexible employment. Medication delays may result in debilitating withdrawal symptoms. The option to conduct a preinduction evaluation via telehealth may reduce a substantial barrier for potential patients interested in initiating treatment, and timeliness of medication initiation is associated with mortality risk and other adverse outcomes.³⁸⁻⁴²

As policy makers consider whether COVID-19-driven telehealth flexibility should be extended beyond the public health emergency, one may see telehealth as a trade-off between possible increased access and a possible reduction in effectiveness. These results may provide information about this theoretical trade-off. Findings suggest that there is potential for improved access given that surveyed physicians have excess capacity and, if allowed, would be likely to use telehealth for inductions, potentially improving rapid access to treatment. We additionally show that most of the physicians

found telehealth for buprenorphine treatment to be more effective than expected and effective enough to continue using, even those who had not tried it before the COVID-19 pandemic. Access equity is another crucial consideration and highlights the importance of policy detail. For example, it is possible that access could decrease for those with poor technological literacy or internet service under a telehealth model, yet access improves with an audio-only option. And rather than a replacement for in-person care that is working well, telehealth should be an option available to enhance traditional care and fill access gaps.

Limitations

Although the present sample is drawn from the population of potential buprenorphine-prescribing listed physicians, survey participation may lead to a sample that is not representative of the population. The response rate is modest, but as discussed in the health services research methods literature, it is not necessarily indicative of bias; bias should be assessed regardless of response rate, although it is rarely addressed.⁴³⁻⁴⁵ In contrast to many surveys, ours benefits from access to rich data, allowing us to assess bias. In robustness checks conducted using a predictive model accounting for a broad range of observables, estimates suggest that responding to the survey is not significantly associated with the outcome variables, indicating that findings are unlikely to qualitatively change with a higher response rate. This provides a health services research example of the application of methods that may be particularly useful for important questions where high response rates are infeasible but rich data are accessible. Similar to all surveys without full response, the CIs do not represent nonresponse. Finally, advanced practitioners and physician assistants are excluded because their contact information was unavailable, although these are a small proportion of total providers.

CONCLUSIONS

Amid an opioid overdose epidemic exacerbated by the COVID-19 pandemic and evidence-based treatment access challenges, telehealth is rarely used but has the potential to mitigate barriers to in-person treatment, such as transportation, employment, and childcare. In a unique context, physicians are temporarily being exposed to this technology en masse, and most surveyed are interested in continuing use. Legislators are actively considering permanent changes in access to telehealth services for substance use disorder, and findings can directly inform ongoing policy discussions. ■

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Source of Funding: Ms Beetham was supported with funding from the Agency for Healthcare Research and Quality (T32HS017589) and the National Institute on Drug Abuse (P50DA046351) through an Opioid Policy Tools and Information Center of Excellence (OPTIC) Pilot Project award. The funding organization had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; or decision to submit the manuscript for publication.

Author Disclosures: Ms Beetham reports receiving honoraria from the US Department of Justice. Dr Fiellin reports consultancies on a National Institutes of Health (NIH) grant for University of New South Wales, Tufts University, and the American Academy of Addiction Psychiatry; NIH and Patient-Centered Outcomes Research Institute grants to Yale; honoraria from Springer Nature, Boston Medical Center, Boston University, and the US Department of Justice; and serving as a K award reviewer for the University of Alabama Birmingham, a textbook editor for the American Society of Addiction Medicine, and a speaker at the University of Kentucky. Dr Busch reports no relationship or financial interest with any entity that would pose a conflict of interest with the subject matter of this article.

Authorship Information: Concept and design (TB, DAF, SHB); acquisition of data (TB, DAF, SHB); analysis and interpretation of data (TB, DAF, SHB); drafting of the manuscript (TB); critical revision of the manuscript for important intellectual content (TB, DAF, SHB); statistical analysis (TB); provision of patients or study materials (TB); administrative, technical, or logistic support (TB, DAF, SHB); and supervision (DAF, SHB).

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Physician Response to COVID-19-Driven Telehealth Flexibility for Opioid Use Disorder

ONLINE APPENDIX

eAppendix Table 1: Gradient Effects of Telehealth Support by Telehealth Use Frequency

	Likely to use telehealth post-pandemic† b (se)	Favor flexible telehealth regulations becoming permanent b (se)
Continuation visits n	880	851
Exclusively in-person	-1.27*** (0.29)	-1.51*** (0.30)
Any telehealth	0.65** (0.21)	0.57* (0.25)
Exclusively telehealth	0.90** (0.27)	1.27** (0.37)
Inductions n	629	616
Exclusively in-person	-0.13 (0.34)	0.85** (0.31)
Any telehealth	1.50*** (0.39)	3.18*** (0.77)
Exclusively telehealth	2.54*** (0.33)	2.72*** (0.39)

Note: Cell entries are estimated logistic regression coefficients and (standard errors). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

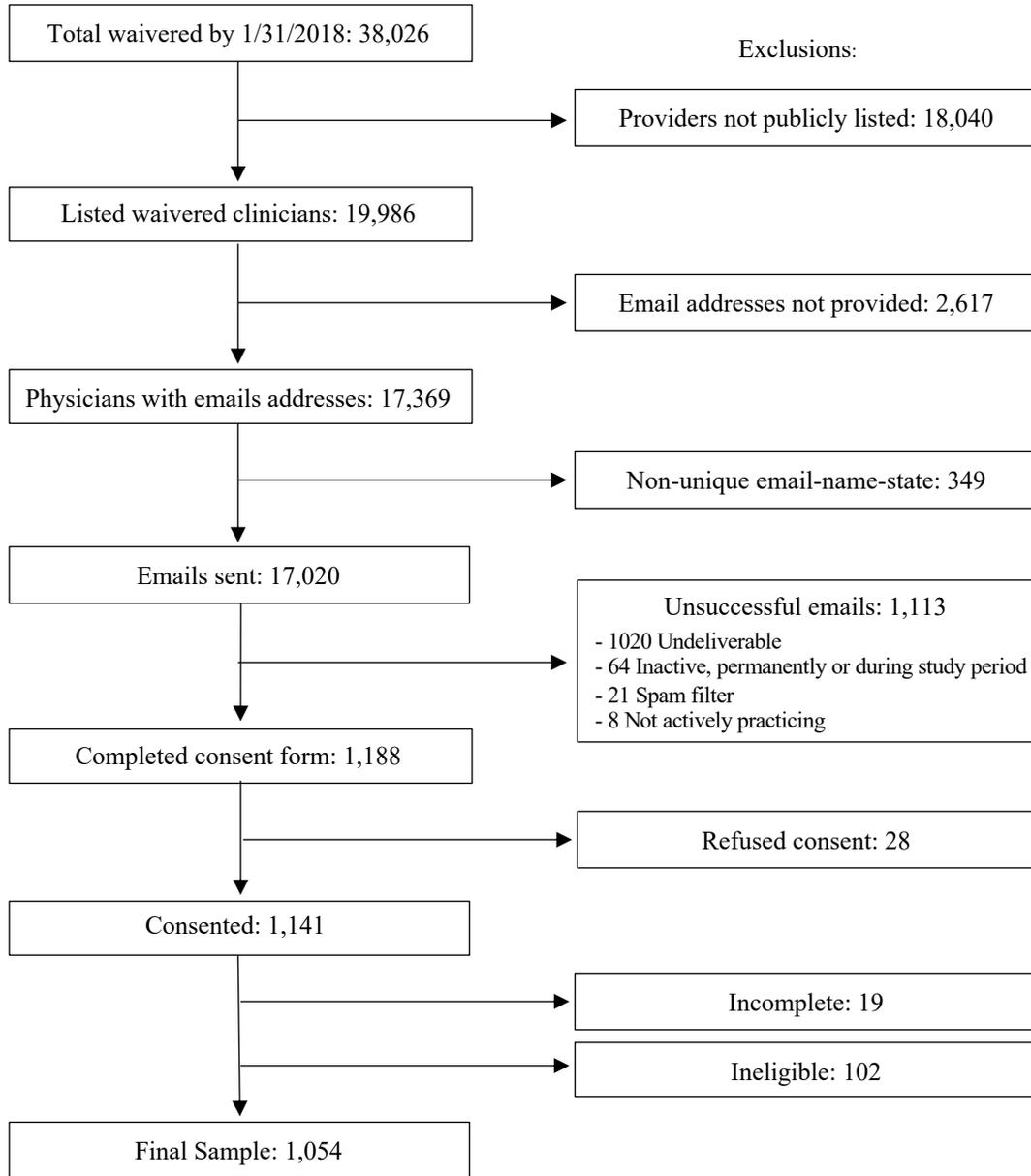
† Likely to use telehealth is specific to using telehealth for continuation visits and telehealth for inductions for their respective stratifications.

eAppendix Table 2: Prediction of Physicians Responding to Survey

Responded to Survey	(Model 1)	(Model 2)	(Model 3)	(Model 4)
	Individual Level	Zip Code Level	County Level	Census Division Level
	b (se)	b (se)	b (se)	b (se)
Female	0.367*** (5.42)	0.360*** (5.10)	0.311*** (4.32)	0.304*** (4.21)
Years with DATA Waiver	-0.00951 (-1.16)	-0.00972 (-1.14)	-0.0121 (-1.40)	-0.0122 (-1.40)
30 Patient Capacity	-0.786*** (-10.01)	-0.833*** (-10.08)	-0.862*** (-10.11)	-0.852*** (-9.91)
275 Patient Capacity	0.575*** (7.90)	0.563*** (7.55)	0.583*** (7.70)	0.587*** (7.73)
Population in Zip Code		-0.000002 (-0.97)	-0.000002 (-0.79)	-9.36e-08 (-0.04)
Rurality		0.0600 (0.61)	0.135 (1.27)	0.130 (1.22)
Households under \$25,000		1.014* (2.01)	1.199* (2.33)	1.497** (2.85)
Proportion with Public Insurance		-1.391 (-1.68)	-0.906 (-1.04)	-0.498 (-0.55)
Proportion with Private Insurance		-0.792 (-0.81)	-0.0138 (-0.01)	0.697 (0.66)
Proportion Uninsured		-2.113 (-1.55)	-0.265 (-0.18)	1.012 (0.66)
COVID-19 Cases			-10.32* (-2.22)	-9.598 (-1.88)
Opioid-Related Fatalities			179.4 (0.98)	225.6 (1.07)
Share Republican Votes			-1.267*** (-4.87)	-1.122*** (-3.76)
Midwest Region: East North Central				-0.170 (-1.06)
South Region: East South Central				-0.309 (-1.80)
Northeast Region: Middle Atlantic				-0.190 (-1.22)
West Region: Mountain				-0.387* (-2.03)
Northeast Region: New England				0.220 (1.29)
West Region: Pacific				-0.167 (-0.99)
South Region: South Atlantic				-0.277 (-1.89)
Midwest Region: West North Central				0.157 (0.75)
South Region: West South Central				0 (.)
Intercept	-2.426*** (-23.84)	-1.340 (-1.21)	-1.549 (-1.35)	-2.319 (-1.91)
<i>N</i>	16020	15202	14845	14844

Note: Cell entries are estimated logistic regression coefficients and (standard errors). DATA, Drug Addiction Treatment Act. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

eAppendix Figure. Consort Flow Diagram



Note: Unsuccessful email categories are defined as follows.

- (1) Undeliverable: error message or email bounced;
- (2) Inactive address: recipient no longer works for the employer, now using an alternative address, out-of-office dates listed for all days of survey distribution and reminders, or the away message is from April or earlier,
- (3) Spam filter: automatic response requiring sender to request recipient approval to bypass spam filter,
- (4) Not actively practicing: autoreply that intended recipient is deceased, retired, or otherwise not practicing.