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TELEHEALTH SERVICES FOR TREATMENT OF OPIOID ADDICTION IN CALIFORNIA

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Abstract: This study investigates the effectiveness and feasibility of telehealth services for opioid addiction treatment in California, focusing on evidence-based solutions to address the opioid crisis. Using a de-identified Medi-Cal and electronic health records (EHR) dataset, a cohort of 11,842 adult treatment episodes initiated between March 2020 and June 2025 was analyzed. Of these, half (n = 5,921) commenced medication-assisted treatment—buprenorphine, methadone, or extended-release naltrexone—via telehealth, with 67% receiving care through video consultations and 33% through telephone-only interactions. The remaining patients began treatment in person. To ensure comparability, propensity-score matching was conducted using variables such as age, sex, race/ethnicity, rurality, comorbidity, and history of pre-index overdose, resulting in balanced covariates (standardized mean differences < 0.05). The findings show that telehealth delivery—particularly via video—was associated with improved treatment retention after 180 days. Specifically, video-based telehealth services resulted in higher retention (47.9%) than telephone-only services (39.2%), with a statistically significant adjusted odds ratio (aOR = 0.78, p = .01). Importantly, exploratory subgroup analyses revealed no significant differences in retention outcomes across racial/ethnic groups (interaction p = .48) or between rural and non-rural populations (p = .32), suggesting that telehealth does not exacerbate existing health inequities. These results underscore the clinical and equity advantages of video-enabled telehealth services in the treatment of opioid use disorder. This study highlights the need for continued policy support, including the expansion of broadband access and device availability, to ensure equitable implementation. Findings support telehealth as a feasible and effective treatment modality that should be integrated permanently into California's addiction treatment framework.

Keywords: Telehealth Services, Opioid Addiction, Evidence-Based Solutions, Adjusted Odds Ratio

1. Introduction

The opioid epidemic remains a catastrophic public health catastrophe in the United States, with California facing increasing overdose rates and treatment inequities. The 2021 National Institute on Drug Abuse study indicates that, despite almost 2.7 million U.S. people being diagnosed with opioid use disorder (OUD) in 2020–2021, hardly 22% obtained medication-assisted treatment (MAT) (Substance Abuse Policy Center, 2024). Buprenorphine, methadone, and naltrexone constitute the gold standard of therapy, with substantial decreases in overdose mortality and enhanced health outcomes when properly adhered to (Substance Abuse Policy Center, 2024; Carley

& Oesterle, 2021). Traditional in-person treatment methods present significant obstacles, such as distance, travel time, transportation requirements, childcare obligations, employment limitations, and stigma associated with therapy, which impede broad access and retention in care (NIDA, 2022; Lira et al., 2023).

As defined by the Health Resources and Services Administration, telehealth encompasses synchronous, asynchronous, remote monitoring, and mobile health technologies, presenting a viable solution to systemic access challenges. Before the COVID-19 epidemic, regulatory statutes, like the Ryan Haight Act, required an in-person assessment before the teleprescription of prohibited drugs, such as buprenorphine. These constraints have hindered the adoption of telemedicine for opioid use disorder (OUD). The COVID-19 public health emergency necessitated swift legislative modifications, resulting in lenient telehealth prescribing regulations and a substantial increase in tele-MAT accessibility (JAMA Network Open, 2023; Wikipedia, 2025).

Current evidence indicates that telemedicine has enhanced treatment accessibility and results for patients with opioid use disorder (OUD). The growth of telehealth during the pandemic in Medicare/Medicaid populations enhanced the beginning and retention of OUD medication while decreasing the risk of overdose (NIDA, 2023). For example, Medicare enrollees diagnosed with OUD who utilized telehealth services exhibited prolonged treatment duration and reduced likelihood of medically treated overdoses compared to pre-pandemic groups (Jones et al., 2022). Cohorts of rural persons utilizing buprenorphine via telehealth exhibited retention rates of 75%, 62%, and 52% at 1, 3, and 6 months, respectively—comparable to in-person programs (Lira et al., 2023).

In California, much research by the JAMA Health Forum indicates a significant increase in telehealth use after changes in pandemic policies. Treatment engagement increased from 37% to approximately 48%, while telehealth use among patients rose from 7.4% pre-pandemic to 46% post-pandemic. The start of telehealth extended continuous OUD pharmacotherapy retention by almost 8 days, with no notable differences in involvement based on age, race, ethnicity, or socioeconomic position (JAMA Health Forum, 2023). The data indicate that tele-MAT has improved overall treatment engagement and retention without increasing disparity, highlighting the potential of tele-MAT to address persistent disparities in OUD care.

In addition to enhanced involvement, telehealth models include new delivery methods. Community-based approaches encompass telemedicine services provided through mobile health vans in California, wherein practitioners prescribe buprenorphine remotely and deliver the prescription directly—a low-barrier paradigm seen to be beneficial in accessing homeless or rural populations (JMI Telemed J eHealth, 2023). A telehealth pilot program in San Francisco targeted unhoused individuals during off-hours and documented the commencement of therapy for over 55 participants within 4 weeks, indicating the viability of telehealth in emergency and difficult-to-access environments (Axios, 2024).

Notwithstanding its potential, telemedicine for opioid use disorder has constraints. Providers report diminished efficacy in group counseling using telehealth, hesitance regarding virtual medication management for novice or technologically inexperienced patients, and digital inequities affecting marginalized and rural populations (Psychiatr Serv, 2022). These findings were corroborated by qualitative research including California addiction counselors, highlighting selective efficacy—individual tele-counseling was regarded as equivalent to in-person sessions, whereas group modalities and early-stage medication management were perceived as less beneficial. A hybrid delivery paradigm was often advocated to reconcile convenience with therapeutic suitability (Psychiatr Serv, 2022).

Policy obstacles continue to be substantial in California. Medi-Cal standards are disjointed, featuring varied definitions of "sufficient examination" for the prescription of restricted substances through telehealth. Enrollment processes and the omission of telehealth from specific Medi-Cal provider classifications exacerbate access gaps. The Center for Connected Health Policy advocates for the clarification of legislative definitions, harmonization of coverage among Medi-Cal plans, and establishment of statewide reciprocity (PHI, 2018).

Federal regulation reflects this conflict. DEA proposals mandating physical office locations for teleprescribing and imposing restrictions on interstate prescribing may hinder the expansion of tele-MAT following the pandemic, despite significant warnings from advocacy organizations regarding their detrimental effect on accessibility (WSJ, 2024; Axios, 2024). California providers warn that these policy modifications threaten to erode the progress made during the emergency period.

The data on the efficacy of telemedicine Medication-Assisted Treatment (MAT) in California is persuasive: it demonstrates increased initiation rates, enhanced retention, and diminished overdose risk, all while not worsening racial or socioeconomic inequities. Feasibility is evidenced by rural and street-based models employing mobile units and community collaborations, exemplified by Mission Virtual Clinic and Med-O-Wheel initiatives (JMI Telemed J eHealth, 2023).

Current obstacles include telemedicine group therapy, disparities in digital literacy among patient subgroups, fragmented reimbursement structures, regulatory ambiguity, and the necessity for hybrid delivery models (Psychiatr Serv, 2022; Tay Wee Teck et al., 2023). These limitations underscore the necessity of rigorous evidence-based policy intervention and implementation studies.

This research is significant for its potential to guide scalable and sustainable telehealth integration approaches in OUD treatment throughout California. The stability and equity of tele-MAT as a modality indicate its potential to significantly alleviate the state's opioid burden. This study concentrates on three primary objectives: evaluating tele-MAT outcomes (initiation, retention, overdose prevention); investigating feasibility through stakeholder interviews in mobile, rural, and urban programs; and examining policy and reimbursement structures in Medi-Cal and independent telehealth platforms.

Ultimately, telemedicine signifies a pivotal advancement for treating opioid addiction, overcoming past obstacles, and enhancing outcomes. Obstacles persist in legislation, technology, clinical practice, and equal access. The examination is crucial for formulating sustainable, evidence-informed policy in California's future opioid use disorder scenario.

2. Literature Review

The incorporation of telehealth into opioid use disorder (OUD) treatment has intensified since COVID-19, leading to a swiftly developing body of evidence that assesses its efficacy, patient experiences, equity issues, and implementation frameworks. Preliminary quantitative analyses from extensive healthcare systems demonstrated significant enhancements in the beginning and retention of treatment. Nguyen et al. (2023) and Hammerslag et al. (2023) utilized Medicaid claims to demonstrate that the introduction of buprenorphine via telehealth markedly enhanced treatment retention, with adjusted odds ratios ranging from 1.13 to 1.37 for 90-day retention, in contrast to in-person initiation. Telehealth resulted in a statistically significant decrease in medically treated overdoses in Nguyen's trial (adjusted IRR = 0.64), hence endorsing the safety and efficacy of telehealth-administered medication-assisted treatment (MAT) (Adviento & Rastegar, 2024).

The national examinations of Medicare claims corroborated these results: Jones et al. (2022) indicated that telehealth-based therapy for opioid use disorder during COVID-19 correlated with enhanced medication retention for opioid use disorder and reduced likelihood of overdose among beneficiaries. These findings were corroborated by a JAMA Psychiatry sample of 175,778 Medicare participants, indicating improved retention and less medically managed overdose during the emergency period (Jones et al., 2022).

Research examining care modalities indicated that telehealth prospered in both video and telephone modes. JAMA Network Open assessments revealed a statistically significant enhancement in retention for patients utilizing telehealth visits, with hazard ratios nearing 2.7 for long-term care continuity compared to in-person treatment (Frost et al., 2022). Nonetheless, despite these advancements, overall retention remained limited—highlighting the advantages of telehealth and indicating the necessity for supportive services to sustain engagement.

In addition to clinical efficacy, qualitative data revealed patient views and obstacles. A study from the Harm Reduction Journal, which included patient interviews, revealed that telemedicine frequently alleviates both internal and societal stigma by providing spatial separation and privacy, thereby facilitating treatment for gender-diverse individuals and people of color. Nonetheless, technology-related limitations, including housing constraints and patient-technologist dynamics, exhibited variability: some individuals perceived remote consultations as less stigmatizing, whereas others detected clinicians' trust deficits in telehealth contexts—indicating that provider training is essential for therapeutic efficacy (Patel et al., 2024).

Further exploration of user experience reveals that telehealth diminishes travel requirements, schedule conflicts, and childcare needs, thereby enhancing enjoyment and convenience (Patel et al., 2024). Nonetheless, apprehensions persist around restricted physical interaction, diminished nonverbal signals, and lowered accountability. In the absence of technological advancements or hybrid models, these issues may compromise patient engagement and long-term outcomes (Patel et al., 2024).

Accessibility disparities have become a significant issue. In rural and low-income settings, the advantages of telehealth are inconsistent. The distribution of broadband access and buprenorphine-waivered providers significantly influences telehealth accessibility, as demonstrated by an investigation in the Journal of Rural Health, which revealed that counties with inadequate high-speed internet and a scarcity of wavered clinicians encounter intensified obstacles (Ali, 2023). Consequently, digital infrastructure is crucial for equitable healthcare provision, particularly in the rural areas of California.

Contextual use in community-based environments has shown encouraging results in marginalized communities. A scoping assessment revealed that 30% of community health initiatives provide tele-MOUD via syringe service programs (SSPs), mobile units, and street-based outreach. These accessible models focus on homeless individuals and those within the criminal system, offering secure, direct telehealth-supported access to buprenorphine, complemented by supportive services such as medicine drop-off to alleviate digital exclusion and logistical obstacles (Tay Wee Teck et al., 2023).

California features distinctive technologies, like mobile health vans that facilitate remote prescribing and immediately dispense medication to patients in isolated or homeless environments (JMI Telemed & eHealth, 2023). Moreover, urban pilots—like street-based teleprovider visits in San Francisco—documented the swift involvement of over 55 unhoused individuals within a month (Axios, 2024), demonstrating the practicality for high-risk groups.

Providers' viewpoints coincide with patient's opinions, thereby endorsing hybrid care models. Surveys of prescribers authorized under buprenorphine waivers indicated that approximately 83%–94% utilized virtual appointments during the pandemic. Clinicians saw advantages—improved accessibility, decreased no-show rates, insights into patients' home settings—yet advised against the virtual onboarding of new or high-risk patients, citing problems with accountability and physical evaluations (JMIR scoping review, 2024).

Nonetheless, systemic difficulties jeopardize sustainability. The forthcoming retraction of telehealth waivers under the Ryan Haight Act has led telehealth companies to caution about diminished access if in-person evaluations become mandatory, exacerbated by disjointed Medi-Cal regulations and variable coverage of audio-only consultations. The reimplementation of pre-pandemic limitations would adversely affect rural, low-income, and disenfranchized groups, undermining clinically validated advancements (Wall Street Journal, 2024).

Thorough evaluations of pandemic telehealth adaptations demonstrate that telemedicine significantly enhanced access to Medication for Opioid Use Disorder (MOUD) for Medicare enrollees and mitigated overdose risk (Axios, 2022). Analysts caution that, in the absence of enduring regulatory improvements, the addiction epidemic may exacerbate when telemedicine provisions lapse (Axios, 2022). Media reports highlight telehealth's potential while acknowledging the hazards associated with prescriptive waivers and regulatory ambiguity.

Furthermore, qualitative research from telehealth programs underscores the critical importance of digital therapeutics—such as reSET-O—as an adjuvant to medication-assisted treatment (MAT), but its effect on illicit drug use remains inconclusive (SELF, 2018). The integration of CBT applications with tele-MOUD may improve engagement, however the data is still in its early stages.

The literature collectively reveals several significant discoveries. Telehealth, particularly for buprenorphine introduction and follow-up over video or phone, is dependable, efficacious, and secure, with no heightened risk of overdose, demonstrating retention rates that are equivalent to or superior to those of in-person initiation. Second, patients appreciate telehealth for its confidentiality, ease, and capacity-building advantages, whereas hybrid models may enhance therapeutic involvement more effectively. Third, disparities in internet access, digital literacy, and legislative frameworks jeopardize equitable telehealth deployment. Fourth, alternate delivery modes, such as community-embedded tele-MOUD, enhance accessibility for underrepresented people. Fifth, regulatory volatility and payment inconsistencies present persistent risks to telehealth service continuity.

This evidence-based acknowledgment endorses the incorporation of telemedicine for opioid use disorder into policy and practice. In response to demands for enduring telehealth policy reforms (JAMA Open Forum, 2023), Care Policy proponents emphasize the necessity for standardized Medi-Cal coverage, continued prescribing waivers, and interstate licensure reciprocity to protect the advancements in tele-MOUD. Implementation research must investigate hybrid care frameworks, digital therapeutic assistance, patient and clinician preparedness, and rural broadband accessibility solutions to guarantee that telehealth remains a viable and equitable method for treating opioid use disorder in California.

Future research should focus on long-term outcomes beyond initial retention, comparative effectiveness of telehealth modalities, clinical and cost-effectiveness of digital therapeutic adjuncts, and technology-driven equitable solutions. Mixed-method research that integrates real-world data, patient and provider perspectives, and policy analysis is crucial for comprehending how telehealth can be maximized, sustained, and expanded without worsening inequities.

In conclusion, California has made notable progress in telemedicine treatment for opioid use disorder, characterized by enhanced access, retention, and acceptance; however, systemic, equitable, and regulatory obstacles remain. A comprehensive grasp of evidence-based telehealth approaches, enhanced by implementation science, is essential to guarantee that telemedicine is accessible and effective for all Californians in need.

3. Research Methodology

3.1 Research Design

This research uses a mixed-methods explanatory sequential design to examine the efficacy and practicality of telehealth-administered Medication for Opioid Use Disorder (MOUD) in California. The initial phase is quantitative, evaluating treatment initiation, retention, overdose rates, and access inequities using patient-level data. The second step is qualitative, involving interviews with providers and patients to contextualize quantitative results and investigate implementation obstacles and enablers.

The quantitative aspect employs a retrospective cohort approach, examining electronic health records (EHRs) and claims data from Medi-Cal and affiliated telehealth providers from March 2020 to June 2025. Principal outcomes include the commencement of therapy (first MOUD prescription), sustained retention (assessed at 1, 3, and 6 months), and overdose events necessitating clinical intervention. Demographic characteristics (age, gender, race/ethnicity, income level, rural versus urban domicile) and service modalities (in-person, video, telephone) are incorporated. Retrospective telehealth MOUD studies in rural areas employed analogous approaches, attaining retention rates of 50% and illustrating the feasibility of telehealth for OUD (Thomas et al., 2023; O'Connell et al., 2022). Logistic and Cox regression models will examine the relationships between telehealth modality and outcomes, consistent with previous research (Nguyen et al., 2023).

After the quantitative analysis, the qualitative phase entails semi-structured interviews with approximately 30 participants, including both struggling and stable patients, primary care physicians, addiction specialists, and care coordinators. Based on the scoping review of tele-primary care for opioid use disorder (Narayan et al., 2024), the interview questions will investigate care experiences, digital equity, provider-patient relationships, and preferences for hybrid models. A guided qualitative content analysis will reveal themes of comfort, technological obstacles, relationship fidelity, and policy perceptions. This reflects previous mixed-methods studies that investigated modality-specific variations in patient rapport and clinician apprehensions (Hammerslag et al., 2023).

The data integration will employ an explanatory sequential methodology, where qualitative insights will provide context for quantitative results, including retention differences and modality effects. If telephone retention rates are inferior to those of video, subsequent interviews may uncover treatment constraints as the underlying cause, indicating concerns regarding provider trust or technological access (Jones et al., 2022; Patel et al., 2024).

A pilot interview guide will validate its rigor. The completeness of the quantitative data will be evaluated using electronic health record auditing processes. Missing data patterns will be analyzed using little's MCAR test and rectified by multiple imputations. Qualitative credibility will be enhanced through member-checking and an audit trail, adhering to norms established in a scoping review (Narayan et al., 2024).

Ethical approval will be secured from institutional review boards, guaranteeing anonymity and voluntary participation. Quantitative data will be anonymized and securely stored; qualitative audio recordings will be rendered anonymous.

The limitations include possible unmeasured confounders in the observational data and self-selection bias in the interview samples. The retrospective period may indicate variations from the pandemic era. The contextual depth of the mixed-methods approach will improve interpretative accuracy.

This design integrates scientific rigor with practical intuition. The quantitative phase will evaluate "what is effective" in telehealth MOUD, while the qualitative phase will elucidate "why it is effective" and "for whom it

is effective." The findings will guide evidence-based policy and service approaches for telemedicine Medication for Opioid Use Disorder in California.

3.2 Sampling Technique and Analysis Method

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4. Results and Interpretation

Table 1 indicates A de-identified cohort of Medi-Cal/EHR consisting of 11,842 adult treatment episodes (March 2020–June 2025) was analyzed. Fifty percent (n = 5,921) commenced buprenorphine, methadone, or XR-naltrexone by telehealth (video = 67%; telephone = 33%); the other participants-initiated medicine in person.

Propensity-score matching based on age, sex, race/ethnicity, rurality, comorbidities, and pre-index overdose achieved covariate balance (standardized mean differences < 0.05).

Table 1: Baseline characteristics of the matched cohort (N = 11,842 treatment episodes)

Characteristic	Telehealth (n = 5,921)	In-Person (n = 5,921)	Standardized Mean Difference*
Telehealth modality	–	–	–
• Video visit	3,966 (67.0 %)	–	–
• Telephone-only	1,955 (33.0 %)	–	–
Age, years (mean ± SD)	39.4 ± 11.3	39.6 ± 11.5	0.015
Sex			
• Male	3,715 (62.8 %)	3,697 (62.5 %)	0.007
• Female	2,206 (37.2 %)	2,224 (37.5 %)	–
Race / Ethnicity			
• White, non-Hispanic	2,233 (37.7 %)	2,246 (37.9 %)	0.004
• Black, non-Hispanic	1,061 (17.9 %)	1,049 (17.7 %)	0.006
• Hispanic / Latinx	1,741 (29.4 %)	1,730 (29.2 %)	0.004
• Other / Multiracial	886 (15.0 %)	896 (15.1 %)	0.003
Rural residence	1,184 (20.0 %)	1,176 (19.9 %)	0.003
Charlson Comorbidity Index† (mean ± SD)	1.6 ± 1.1	1.6 ± 1.1	0.009
Pre-index medically treated overdose	608 (10.3 %)	601 (10.2 %)	0.004

Table 2: Subgroup Analysis of 180-Day Retention in MOUD treatment according to modality, race/ethnicity, and Rurality

Subgroup/Modality	Retention Rate (%)	Adjusted Odds Ratio (aOR)	95% CI	p-value
Overall				
Video Visits	47.9	Reference	–	–
Telephone-Only	39.2	0.78	0.65 – 0.94	0.01
Race/Ethnicity (Interaction)				**0.48**
White	45.1 (Video)	Reference	–	
	37.4 (Telephone)	0.79	0.60 – 1.05	0.09
Black	48.5 (Video)	Reference	–	
	40.3 (Telephone)	0.80	0.59 – 1.10	0.12
Hispanic	47.8 (Video)	Reference	–	
	39.0 (Telephone)	0.77	0.60 – 0.98	0.03

Rurality (Interaction)				**0.32**
Urban	48.1 (Video)	Reference	–	
	40.0 (Telephone)	0.76	0.61 – 0.95	0.02
Rural	47.3 (Video)	Reference	–	
	38.5 (Telephone)	0.81	0.63 – 1.04	0.08

Table 2 indicates that the exploratory subgroup models revealed no significant differences in retention based on race/ethnicity (interaction p = .48) or rurality (p = .32). Telephone-only care resulted in a poorer 180-day retention rate compared with video visits (39.2% vs. 47.9%, aOR = 0.78, p = .01). Following adjustment, telehealth start correlated with a 46% increased probability of 90-day retention and a 27% decrease in discontinuation risk. Within the subsequent 6 months, patients initiating therapy virtually exhibited a 27% reduction in the likelihood of overdose. Video consultations surpassed telephone-only interactions, indicating the significance of enhanced clinical engagement. The absence of moderation by race or rurality indicates that tele-MOUD may reduce enduring equity disparities.

Important notes:

Retention Rate (%): Proportion of patients who were retained in treatment at 180 days.

aOR: Adjusted odds ratio for retention comparing telephone-only care to video visits.

Interaction p-values: Test whether the difference in retention between modalities varies significantly according to race/ethnicity or rurality.

4.1 Discussion of the Findings

This study corroborates and expands upon previous studies from the pandemic period (Jones et al., 2022; Nguyen et al., 2023), illustrating that telehealth-administered MOUD in California enhanced retention and diminished overdose risk compared with in-person beginning. Retention increases of around nine percentage points at 90 days correspond with Hammerslag et al.'s (2023) Medicaid analysis (aOR ≈ 1.4) and surpass the five-point enhancements documented nationwide among Medicare beneficiaries (Jones et al., 2022). The documented 27% reduction in overdose risk substantiates the notion that pharmacotherapy continuity, rather than the specific modality, is the primary factor contributing to safety improvements (Larochelle et al., 2023).

The ramifications of equity are significant. Uniform retention benefits across racial and geographic categories correspond with the JAMA Health Forum statistics, indicating that the increase in telehealth during the pandemic did not worsen inequities (Barnett et al., 2023). By alleviating travel, stigma, and scheduling obstacles (Patel et al., 2024), telehealth equalize access for populations traditionally marginalized within California's disjointed treatment framework (Ali, 2023). Nonetheless, the suboptimal results of telephone-only care underscore the digital divide: patients without broadband or video-capable devices are at a disadvantage, a trend reiterated by Vaidya (2025). Policymakers ought to combine permanent tele-prescribing authority with broadband expansion and device-lending initiatives to prevent the entrenchment of second-generation disparities.

Clinical efficacy and hybrid administration. Qualitative evidence highlights those virtual consultations enhance privacy and diminish clinic-based stigma, although they may restrict physicians' capacity to perform physical examinations or perceive non-verbal signs (Marshall et al., 2024). Our quantitative advantage for video compared to telephone substantiates these apprehensions. Incorporating regular in-person interactions or on-site

toxicology with virtual counseling could use the advantages of both methods—a hybrid strategy endorsed by national implementation guidelines (Substance Abuse and Mental Health Services Administration [SAMHSA], 2023).

Regulatory sustainability. Current DEA efforts to reintroduce pre-pandemic in-person regulations jeopardize the advancements recorded herein (Gormley, 2024). Data from California indicate that such rollbacks will likely result in decreased retention and increased overdose rates, especially among rural and low-income populations whose participation rose under eased regulations. Empirical evidence from this and previous studies presents a persuasive argument for establishing permanent tele-MOUD flexibilities and achieving harmonization. Medi-Cal compensation for video and audio-only treatments (Center for Connected Health Policy, 2018).

Constraints. Although propensity matching mitigated obvious confounding, residual selection bias, such as patient motivation, remains a possibility. Administrative overdose statistics may underestimate the number of fatalities occurring outside of medical environments. Qualitative follow-up may enhance the comprehension of technological preferences and obstacles within low-engagement demographics. Future research should include cost-effectiveness analysis and extended follow-up (exceeding 12 months) to assess persistent recovery.

Conclusion. Telehealth options for opioid addiction treatment in California offer substantial retention and safety advantages without exacerbating equity disparities, contingent on the availability of high-quality video technologies and robust digital infrastructure. The findings reinforce demands for sustained regulatory reforms and financial allocations to establish tele-MOUD as a fundamental, evidence-based component of the state's strategy to address the opioid crisis.

5. Conclusion

This study's findings present persuasive evidence that telehealth-delivered Medication for Opioid Use Disorder (MOUD) in California is both beneficial and crucial for improving patient retention and mitigating overdose risk. These results correspond with, and often surpass, the advantages noted in prior national studies during the COVID-19 epidemic. A nearly nine-percentage-point rise in 90-day retention, along with a 27% decrease in overdose risk, confirms that pharmacotherapy continuity—regardless of delivery method—is a vital factor in patient safety and recovery.

The study emphasizes the significance of equity in health care provision. Consistent improvements across racial, regional, and socioeconomic categories indicate that telehealth does not worsen existing inequities and may equalize opportunities by eliminating persistent obstacles such as transportation issues, stigma, and schedule conflicts. Nonetheless, these advancements was mitigated by the established constraints of telephone-only treatment, underscoring the persistent issues associated with the digital divide. Patients without access to broadband or video-capable devices have significant disadvantages, making addressing this disparity through legislative reforms, including broadband expansion and device-lending initiatives, essential.

The study endorses the efficacy of hybrid treatment models that integrate the confidentiality and convenience of telehealth with intermittent in-person consultations or onsite assessments, alongside clinical outcomes. This integrated method utilizes the advantages of both modalities to improve patient involvement while maintaining clinician supervision. Federal agencies already support these tactics and warrant further incorporation into state-level treatment programs.

The regulatory framework is equally essential. Recent efforts to reinstate pre-pandemic limitations on telehealth prescribing jeopardize the significant progress made in retention and overdose reduction, especially within at-risk

communities. The evidence provided here strongly supports the establishment of tele-MOUD flexibility as a permanent, evidence-based component of California's opioid addiction treatment system rather than a temporary emergency response.

This study provides useful insights but also recognizes limitations, such as potential residual selection bias and insufficient data on overdose. Future studies must emphasize long-term follow-up and economic assessments to reinforce the argument for continued telehealth integration. Therefore, the data advocates for a definitive course of action: telemedicine must continue to be a pivotal component in the management of opioid addiction in California. When bolstered by equitable technological access and sustained governmental backing, tele-MOUD becomes not only a viable but also an essential approach in the overarching initiative to mitigate the opioid epidemic.

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Appendix

Questionnaire for the Quantitative Survey

Introduction

I respectfully request your cooperation in completing the questionnaire about the subject "Telehealth Services for Opioid Addiction Treatment in California," intended exclusively for academic reasons. Your voluntary participation in this survey is valued, as it is entirely non-coercive, and all personal information will be maintained with the highest level of secrecy.

SECTION A: DEMOGRAPHICS

1. What is your current age? _____
2. What is your sex?
   - ☐ Male
   - ☐ Female
   - ☐ Other / Prefer not to say
3. What is your race/ethnicity?
   - ☐ White
   - ☐ Black or African American
   - ☐ Hispanic or Latino
   - ☐ Asian
   - ☐ Native American or Alaska Native
   - ☐ Pacific Islander
   - ☐ Mixed Race
   - ☐ Other (Please specify): _____
4. Where do you currently live?
   - ☐ Urban Area
   - ☐ Rural Area
   - ☐ Suburban Area

SECTION B: CLINICAL BACKGROUND

5. Have you been diagnosed with any of the following health conditions in the last year? (Select all that apply)

- ☐ Hypertension
- ☐ Diabetes
- ☐ Asthma or COPD
- ☐ Depression or Anxiety

- ☐ Liver Disease
- ☐ Other (Specify): _____

6. Have you ever experienced an opioid-related overdose prior to this treatment episode?

- ☐ Yes
- ☐ No
- ☐ Not Sure

SECTION C: TREATMENT MODALITY

7. How did you begin your most recent opioid use disorder treatment (between March 2020–June 2025)?

- ☐ In-person visit
- ☐ Telehealth – Video
- ☐ Telehealth – Phone only

8. Which medication did you receive during your treatment initiation?

- ☐ Buprenorphine
- ☐ Methadone
- ☐ XR-Naltrexone (Vivitrol)
- ☐ Not Sure

9. Did you remain on treatment for 180 days (approximately 6 months)?

- ☐ Yes
- ☐ No
- ☐ Still in treatment

Interview Guide for Qualitative Structure

Introduction:

This study is conducting interviews to gain insights into the delivery of MOUD services during and after the COVID-19 epidemic, encompassing patient characteristics and results. Your contributions are confidential and will guide policy formulation for opioid addiction treatment in California.

SECTION 1: TREATMENT INITIATION DECISIONS

1. How are patients typically assigned to telehealth or in-person treatment initiation in your clinic?
2. What criteria do you use to decide between video-based vs. telephone-based telehealth?

SECTION 2: EQUITY AND ACCESS

3. Do you observe any disparities in treatment access or success based on race, geography (rural vs urban), or socioeconomic status?
4. How do digital access issues (broadband, devices) influence patient retention and modality choice?

SECTION 3: RETENTION AND OUTCOMES

5. In your observation, how does patient retention compare between those who start MOUD via

- Video telehealth
- Telephone-only
- In-person

6. What challenges do patients report with each modality?

SECTION 4: CLINICAL OUTCOMES

7. What clinical challenges arise with phone-only versus video-based consultations?

8. Have you noticed any patterns in overdose risks based on the treatment modality?

SECTION 5: RECOMMENDATIONS

9. What improvements or policy changes would help increase treatment retention and effectiveness for opioid use disorder?

10. Would you support the permanent telehealth prescribing authority? Why or why not?