



Original Investigation | Psychiatry

Medicaid Costs and Outcomes for Patients Treated in an Outpatient Telepsychiatry Clinic

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Abstract

IMPORTANCE Evidence of cost savings attributable to indicated and timely care remain rare in psychiatry. Interventions to provide evidence-based psychiatric care to Medicaid patients that lower total costs of care are particularly challenging.

OBJECTIVE To investigate Medicaid costs and care outcomes associated with use of an outpatient telepsychiatry clinic.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study analyzed Medicaid patients using and not using the services of an outpatient telepsychiatry clinic (Frontier Psychiatry, Billings, Montana) in 2022. Data analysis was performed from June to September 2024.

EXPOSURE Receipt of care through an outpatient telepsychiatry clinic.

MAIN OUTCOMES AND MEASURES Differences in Medicaid costs and cost subtypes between telepsychiatry patients and controls were assessed. Quality metrics, including inpatient hospitalizations, hospital readmissions, and admissions from the emergency department, were also compared.

RESULTS In total, there were 2686 patients using the outpatient telepsychiatry clinic's services (1665 female [62.0%]; mean [SD] age, 30.55 [14.67] years) and 2686 propensity-matched controls (1665 female [62.0%]; mean [SD] age, 31.37 [15.92] years). Across categories examined, the telepsychiatry patients had care costs per member per month (PMPM) similar to those for propensity-matched control patients (\$685.5 [95% CI, \$632.9-\$738.2] vs \$734.0 [95% CI, \$645.7-\$822.3]; $P = .10$) over the study period. PMPM costs to Medicaid from the telepsychiatry clinic's patients were higher for professional services vs control patients (\$464.0 [95% CI, \$443.4-\$484.5] vs \$388.4 [95% CI, \$368.1-\$408.7]; $P < .001$) but were lower for inpatient hospitalization fees (\$201.6 [95% CI, \$146.2-\$228.7] vs \$260.6 [95% CI, \$220.2-\$341.5]; $P = .04$). Telepsychiatry clinic patients had a 38.0% lower mean annualized hospitalization rate per 1000 patients than controls (274.3 [95% CI, 237.1-311.6] hospitalizations per 1000 patients vs 442.6 [95% CI, 396.5-488.7] hospitalizations per 1000 patients; $P < .001$) and a 17.9% lower rate of admissions from the emergency department (patients vs controls, 299.7 admissions [47.7%] vs 519.0 admissions [58.1%]).

CONCLUSIONS AND RELEVANCE In this cross-sectional study of 5372 patients, use of an outpatient telepsychiatry clinic's services was associated with decreases in inpatient hospitalization rates and lower rates of admissions from the emergency department, with similar costs to Medicaid.

(continued)

Key Points

Question Is participation in an outpatient telepsychiatry clinic associated with costs to Medicaid and aggregate patient health outcomes?

Findings This cross-sectional study of 5372 patients found that patients participating in an outpatient telepsychiatry clinic had similar Medicaid costs across cost categories analyzed compared with propensity score-matched controls. Telepsychiatry patients had a 38.0% lower rate of annualized inpatient hospitalizations and a 17.9% lower rate of admissions from the emergency department compared with the controls.

Meaning These findings suggest that outpatient telepsychiatry care could play an important role in reducing hospital admissions.

+ Supplemental content

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Abstract (continued)

These findings suggest that outpatient telepsychiatry care could play an important role in reducing hospital admissions among patients enrolled in Medicaid.

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Introduction

Much health care spending is wasted on consequences of forgoing upstream treatment, by either choice or lack of access to treatment.^{1,2} This is particularly true in psychiatry, where access to timely psychiatric care remains limited,^{3,4} many patients with mental illness are impoverished because of the nature of their diseases,⁵ and the majority of psychiatrists do not accept Medicaid.⁶ With the societal and economic costs of not treating mental illness plainly exceeding the costs of treatment,⁷ it is crucial to adopt a more timely model of care, particularly for those enrolled in Medicaid, which reimburses at the lowest rates of any major insurer.

Evidence of cost-effectiveness of interventions in psychiatry has focused on emergency or inpatient care, for instance, with evidence that telepsychiatry consultation services in emergency departments can decrease unnecessary psychiatric hospitalizations and save money, or on especially high-intensity users of psychiatric services.^{8,9} Such analyses often report systems-level outcomes of interest, including hospital readmissions, long hospital stays, and admissions from the emergency department (a proxy for unplanned admissions).¹⁰⁻¹² An example of successful evidence-based, timely, and upstream psychiatric care in Medicaid patients, with primary end points of (1) cost savings and (2) improved patient outcomes, could encourage adoption of this care model by payers and to encourage a shift to value-based contracting more broadly.

In this cross-sectional analysis of patient and actuarial outcomes, we use 2022 Medicaid data to investigate costs to Medicaid and care outcomes associated with timely outpatient telepsychiatry care in Medicaid patients from one of the largest psychiatric care organizations in the Intermountain West, Frontier Psychiatry (Billings, Montana), which provides evidence-based outpatient telepsychiatry care to thousands of Montana Medicaid patients each year, filling a longstanding statewide gap in upstream care access for these patients in a state with comparatively poor mental health care outcomes.¹³ We hypothesized that use of these outpatient telepsychiatry services may be associated with differences in inpatient and overall care costs to Medicaid, as well as differences in inpatient hospitalizations and hospital readmissions.

Methods

Institutional Approval and Participant Consent

This study was based on fully deidentified patient information and, thus, did not require institutional review board approval. Informed consent was not required as patient-level cost and admission data were collected by the Centers for Medicare & Medicaid Services and were deidentified according to federal guidelines, in accordance with 45 CFR §46. This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines for cross-sectional studies.

Data Sources and Study Population

To examine care costs and hospital admissions in our cohort, we cross-referenced the Centers for Medicare & Medicaid Services Transformed Medicaid Statistical Information System Analytic Files, Demographic & Eligibility, and Claims databases with the clinic's data.¹⁴ With these databases, we created 2 groups: a group of all Montana Medicaid patients using any of the outpatient clinic's services for mental illness in 2022 (telepsychiatry clinic patient group), who were propensity

score-matched to Medicaid patients not using the services in 2022 to form a control group. Notably, we did not control for care access to other psychiatric care practitioners or institutions in our analysis. Details on cost segmentation, propensity score matching, and analytical techniques can be viewed in the eAppendix in [Supplement 1](#).

Our primary outcome for this study was mean per member per month (PMPM) costs to Medicaid, with differences assessed via *t* testing. Our secondary outcomes were 5 inpatient care quality outcomes: (1) annualized hospitalization rate, with differences assessed via *t* testing; the proportions of those hospitalized patients experiencing (2) 30-day and (3) 90-day readmissions; (4) the proportion of admissions from the emergency department; and (5) short hospital stays (<3 days), with all differences assessed via χ^2 testing. To mitigate risk of bias given our multiple comparisons, all outcomes of interest were determined a priori of analysis.

Statistical Analysis

Data analysis was performed from June to September 2024. First, we determined any significant differences in sociodemographic and relevant comorbid factors between our 2 propensity score-matched groups using χ^2 testing for categorical variables and *t* testing for continuous variables. Next, to assess overall costs of care, we assessed the per-patient costs billed to Medicaid in each of our groups, both in aggregate and stratified by cost type. We again used *t* testing to determine differences in PMPM Medicaid payment amount in aggregate and for each payment type, as well as differences in the annualized hospitalization rate per 1000 Medicaid enrollees. As a measure of effect size, we calculated Cohen *d* values for all outcomes of interest.¹⁵ We mitigated our false discovery rate for this analysis using the Benjamini-Hochberg correction for multiple comparisons in our *P* values for all primary and secondary outcomes of interest.¹⁶ SAS Enterprise Guide statistical software version 7.1 (SAS Institute) and Python statistical software version 3.1 (Python Software Foundation) were used for all analyses. All tests were 2 tailed. Corrected significance was set at *P* < .05.

Results

Study Population

Our final study population (5372 patients; 49 590 member months; 3330 female [62.0%]) consisted of a 1:1 match between all Montana Medicaid patients using the outpatient telepsychiatry clinic's services in 2022 (2686 patients; 22 748 member months; 1665 female [62.0%]; mean [SD] age, 30.55 [14.67] years) and control patients (2686 patients; 26 842 member months; 1665 female [62.0%]; mean [SD] age, 31.37 [15.92] years) (**Table 1**). Despite propensity score matching, telepsychiatry clinic patients differed from controls in terms of age group stratification and county of residence; telepsychiatry clinic patients had a higher prevalence of schizophrenia (260 patients [9.7%] vs 170 controls [6.3%]) and lower prevalence of depressive disorders (1796 patients [66.9%] vs 1900 controls [70.7%]).

Care Costs and Utilization

Over the study period, patients using the outpatient telepsychiatry clinic's services did not significantly differ from propensity-matched control patients in terms of overall PMPM care costs across categories examined (patients vs controls, \$685.5 [95% CI, \$632.9-\$738.2] vs \$734.0 [95% CI, \$645.7-\$822.3]; *P* = .10) (**Table 2**). PMPM costs to Medicaid were higher for professional services for telepsychiatry clinic patients (patients vs controls, \$464.0 [95% CI, \$443.4-\$484.5] vs \$388.4 [95% CI, \$368.1-\$408.7]; *P* < .001) but were lower for inpatient hospitalizations (patients vs controls, \$201.6 [95% CI, \$146.2-\$228.7] vs \$260.6 [95% CI, \$220.2-\$341.5]; *P* = .04). PMPM costs owing to capitation payments were also lower for telepsychiatry patients (patients vs controls, \$8.15 [95% CI, \$7.45-\$8.86] vs \$10.41 [95% CI, \$9.45-\$11.38]; *P* = .001) (**Figure**).

Care and Quality Outcomes

Telepsychiatry clinic patients and controls differed substantially on several care outcomes examined. Telepsychiatry clinic patients had a 38.0% lower mean annualized hospitalization rate (274.3 hospitalizations per 1000 patients; 95% CI, 237.1-311.6 hospitalizations per 1000 patients) vs control patients (442.6 hospitalizations per 1000 patients; 95% CI, 396.5-488.7 hospitalizations per 1000 patients) ($P < .001$) (Table 2). Of these hospitalizations, telepsychiatry clinic patients had a significantly lower rate of admissions from the emergency department than controls (patients vs controls, 299.7 admissions [47.7%] vs 519.0 admissions [58.1%], a 17.9% decrease). Rates of 30-day readmissions (patients vs controls, 57.8 readmissions [9.8%] vs 103.0 readmissions [11.7%]), 90-day readmissions (patients vs controls, 87.3 readmissions [19.2%] vs 143.0 readmissions [21.1%]), and inpatient short (<3 days) stays (patients vs controls, 105.0 stays [16.7%] vs 136.0 stays [15.2%]), from these hospitalizations did not differ significantly between telepsychiatry clinic patients and control.

Discussion

To our knowledge, this cross-sectional analysis is the first to show Medicaid costs and quality outcomes associated with use of an outpatient telepsychiatry clinic's service. We did not find significant differences in overall costs to Medicaid between patients using the outpatient telepsychiatry clinic's services and propensity score-matched control patients across cost categories

Table 1. Characteristics of Outpatient Telepsychiatry Clinic and Control Patients

Characteristic	Participants, No. (%)		Cohen <i>d</i>	<i>P</i> value
	Telepsychiatry	Control		
Sex				
Female	1665 (62.0)	1665 (62.0)	<0.0001	>.99
Male	1021 (38.0)	1021 (38.0)		
Age group, y				
0-3	≤10	≤10	0.0244 ^{a,b}	.001 ^a
4-11	176 (6.6)	207 (7.7)		
12-17	480 (17.9)	450 (16.8)		
18-29	699 (26.0)	672 (25.0)		
30-39	637 (23.7)	554 (20.6)		
40-49	383 (14.3)	400 (14.9)		
50-64	260 (9.7)	328 (12.2)		
65-74	46 (1.7)	61 (2.3)		
75-100	≤10	≤10		
Dual enrollment	221 (8.2)	245 (9.1)	-0.0636	.24
County	NL ^c	NL ^c	0.0451 ^{a,b}	<.001 ^a
Attention-deficit/hyperactivity disorder	875 (32.6)	834 (31.1)	0.0656	.23
Anxiety disorder	1894 (70.5)	1932 (72.8)	-0.0626	.25
Bipolar disorder	489 (18.2)	437 (16.3)	0.1027	.06
Neurocognitive disorder	167 (6.2)	157 (5.9)	0.0312	.57
Personality disorder	196 (7.3)	184 (6.9)	0.0348	.52
Schizophrenia	260 (9.7)	170 (6.3)	0.1236 ^a	<.001 ^a
History of suicide attempt	461 (17.2)	418 (15.6)	0.0867	.11
History of trauma	1301 (48.4)	1256 (46.8)	0.0672	.22
Depression	1796 (66.9)	1900 (70.7)	-0.1678 ^a	.002 ^a
Any substance use disorder	924 (34.4)	914 (34.0)	0.0156	.77
All other mental health disorders	467 (17.4)	427 (15.9)	0.0801	.14
Chronic illness and disability payment system plus Medicaid prescription risk score, mean (95% CI)	0.53 (0.51-0.54)	0.53 (0.51-0.54)	-0.0010	.97
Emergency department utilization/1000/mo, mean (95% CI)	122.4 (106.3-125.1)	115.7 (112.8-132.0)	0.0266	.33

Abbreviation: NL, not listed.

^a Denotes a significant difference between populations on χ^2 testing for categorical variables, on *t* testing for continuous variables ($P < .05$).

^b Denotes a Cramér V value.

^c Data are not shown owing to potentially identifying information.

analyzed. However, we found differences in the composition of these costs between outpatient telepsychiatry patients and control patients. Costs to Medicaid for telepsychiatry patients appear to be greater for professional services, but appear to be lower for inpatient hospitalizations. Our work also found a significant difference in inpatient hospitalization rates and admissions from the emergency department between patients using the telepsychiatry clinic's services and patients not using telepsychiatry services, although the effect sizes of these differences were modest. Our study design was observational in nature, and our results cannot be used to causally link use of telepsychiatry services and patient-level cost or quality outcomes. It is our hope that further research can better elucidate the association between receipt of outpatient telepsychiatry care and cost and quality outcomes.

The outpatient telepsychiatry clinic analyzed in this study provides 100% telepsychiatry-based care through clinically indicated and evidence-based psychotherapeutic and pharmacologic

Table 2. Per-Member Per-Month Costs of Health Care to Medicaid and Quality Outcomes by Category, Outpatient Telepsychiatry Clinic vs Control Patients

Category	Telepsychiatry	Control	Cohen d	P value
Per-member per-month costs to Medicaid, mean (95% CI), \$				
Cost type				
Durable medical equipment	16.62 (12.66-20.58)	16.17 (11.26-21.08)	0.0037	.89
ED	3.35 (1.37-5.33)	3.94 (1.39-6.49)	-0.0097	.77
Home health or community-based services	0.06 (0.00-0.11)	2.11 (0.00-5.74)	-0.0291	.42
Hospice	0.99 (0.00-2.48)	0.10 (0.00-0.29)	0.03288	.42
Inpatient hospital	187.5 (146.2-228.7)	280.9 (220.2-341.5)	-0.0671 ^a	.04 ^a
Capitation payments	8.15 (7.45-8.86)	10.41 (9.45-11.38)	-0.0997 ^a	<.001 ^a
Outpatient hospital	4.93 (0.54-9.33)	32.02 (0.00-86.30)	-0.0256	.46
Professional costs	464.0 (443.4-484.5)	388.4 (368.1-408.7)	0.1402 ^a	<.001 ^a
Combined costs	685.5 (632.9-738.2)	734.0 (645.7-822.3)	-0.0248	.10
Quality metrics ^b				
Total hospitalizations	628.9	893	NA	NA
Annualized hospitalization rate/1000 (95% CI)	274.3 (237.1-311.6)	442.6 (396.5-488.7)	-0.1507 ^a	<.001 ^a
30-d Readmissions from hospitalization (% of total) ^c	57.8 (9.8)	103 (11.7)	-0.0674	.42
90-d Readmissions from hospitalization (% of total) ^d	87.3 (19.2)	143 (21.1)	-0.0466	.54
Admissions from ED (% of total)	299.7 (47.7)	519 (58.1)	-0.2043 ^a	<.001 ^a

Abbreviations: ED, emergency department; NA, not applicable.

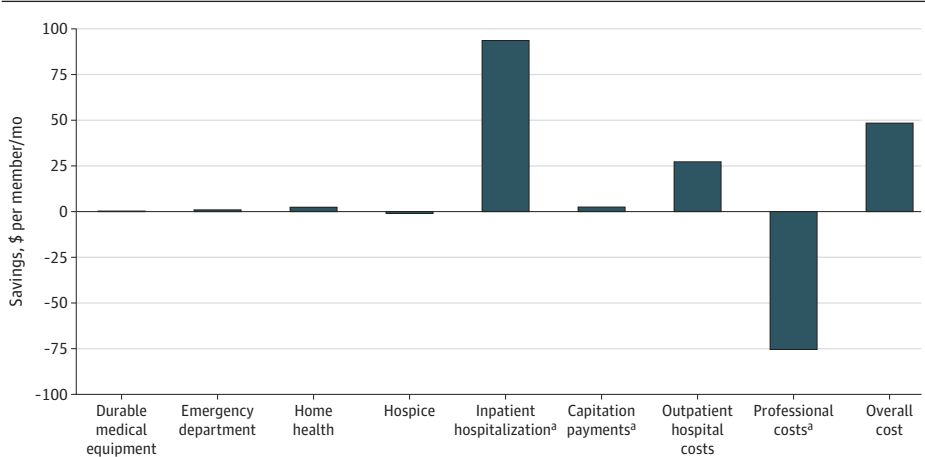
^a Denotes statistical significance (Benjamini-Hochberg corrected $P < .05$).

^b Outpatient telepsychiatry clinic data were adjusted for smaller number of patient member-months in sample by a factor of approximately 1.18 (ie, 26 842 member-months in the control group divided by 22 748 member-months in the outpatient telepsychiatry group).

^c Refers to initial hospitalizations prior to last 30 days of 2022.

^d Refers to initial hospitalizations prior to last 90 days of 2022.

Figure. Medicaid Cost Differences, Telepsychiatry Clinic Patients vs Control



^a Denotes statistically significant difference via t test between mean per-member per-month costs to Medicaid from outpatient telepsychiatry clinic patients and mean per-member per-month costs to Medicaid from control patients (Benjamini-Hochberg corrected $P < .05$).

treatment techniques, much like peer organizations. However, the clinic also demonstrates a willingness to serve those traditionally underserved in psychiatry, such as patients enrolled in Medicaid and those with other insurance who may not be able to afford the cash pay model common in private practice psychiatry today, which creates an artificial "paucity in the land of plenty."¹⁷ The outpatient telepsychiatry clinic takes nearly all referrals spanning behavioral health concerns, from schizophrenia to substance use disorders, and does not screen patients for acuity prior to acceptance. The clinic cares for these patients using telepsychiatry and cares for patients at a scale that can, in many cases, get patients seen within 72 hours of initial request.

Limitations

This study's findings should be interpreted within the scope of several important limitations. Our analysis was conducted on only 1 year of data, and the relationship of longitudinal costs of care between the outpatient telepsychiatry clinic's patients and control patients could differ substantially from the data presented here. It also focuses on Medicaid patients in a state with relatively high Medicaid reimbursement rates compared with other states, and does not control for differences in time spent insured by Medicaid. The nature of the data does not allow for us to generalize differences in costs between outpatient telepsychiatry patients and controls to those with different types of insurance, those with multiple insurance coverages, or those who may not have insurance. Although we propensity score matched, we were not able to control for important aspects of mental illness, such as disease course and symptom severity, that may have differed between the outpatient telepsychiatry clinic's patients and control patients. In addition, our outcomes data are limited; we do not quantify important efficacy metrics such as sustained mental illness remission rates or improvement in symptoms.

Conclusions

In this cross-sectional study of 5372 Montana Medicaid patients, those using an outpatient psychiatry clinic's services had a 38.0% lower rate of hospitalizations than those not using such services, with similar costs to Medicaid between groups across categories analyzed. Costs to Medicaid for those using the telepsychiatry clinic's services were higher for professional fees and lower for inpatient hospitalization costs. Further government and private investment is needed to reduce downstream sequelae of delayed psychiatric care. It is our hope that the findings we report here spur increased investment in, and access to, pragmatic and timely outpatient psychiatric treatment for some of our nation's most vulnerable patients.

ARTICLE INFORMATION

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Author Contributions: Drs An and Budhiraja had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Havlik, Ghomi, An.

Acquisition, analysis, or interpretation of data: All authors.

Drafting of the manuscript: Havlik.

Critical review of the manuscript for important intellectual content: Ghomi, An, Budhiraja, Arzubi.

Statistical analysis: Havlik, Ghomi, An, Budhiraja.

Obtained funding: Ghomi, Arzubi.

Administrative, technical, or material support: Havlik, Ghomi, Arzubi.

Supervision: Ghomi.

Conflict of Interest Disclosures: Dr Havlik reported receiving personal fees from Frontier Psychiatry for preparation of the submitted work and receiving personal fees from Ieso Digital Health for consulting outside the submitted work. Dr Ghomi reported being an employee of Frontier Psychiatry, which receives payments from insurance companies including Medicare and Medicaid. Dr Arzubi reported being part owner of Frontier Psychiatry. No other disclosures were reported.

Data Sharing Statement: See [Supplement 2](#).

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SUPPLEMENT 1.

eAppendix. Supplemental Methods
eReferences

SUPPLEMENT 2.

Data Sharing Statement