

Analysis and Observations of Telehealth in Primary Care Follow Up Appointments for Vulnerable Populations

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ABSTRACT

Background: The Milwaukee Health Care Partnership's Emergency Department Care Coordination (EDCC) initiative allows vulnerable patients in 8 local emergency departments to schedule a follow-up primary care appointment upon discharge at primary care safety net clinics. In March 2020, EDCC receiving clinics transitioned all appointments to telehealth due to the COVID-19 pandemic. The objectives of this study were to examine the effect of telehealth on the show rate at EDCC initial follow-up appointments and obtain perspectives on the strengths and weaknesses of primary care via telehealth through statistical analysis of appointments and patient and provider feedback.

Methods: EDCC data were analyzed for appointments scheduled from 2018 through 2021. Using univariate logistic regression, the show rate was examined before and after the adoption of telehealth. In addition, surveys of EDCC patients were conducted after telehealth visits, and feedback was solicited from receiving clinic providers.

Results: Nearly 3900 (n=3897) primary care visits were scheduled through EDCC within the date range; 284 were conducted via telehealth. After controlling for age, sex, insurance, clinic location, and lead time, telehealth appointments were associated with a lower no-show rate than in-person appointments (P=0.002). Qualitative studies revealed that telehealth can help patients overcome barriers, specifically transportation and childcare concerns, but is difficult for older and non-English speaking patients.

Conclusions: Patients were significantly more likely to attend follow-up visits conducted via telehealth. Patients and clinicians identified telehealth as a means of overcoming socioeconomic barriers but also cited drawbacks to its use. Further research is needed to identify the ongoing role of telehealth and specific populations that would benefit most from its potential.

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INTRODUCTION

Patients in medically underserved areas often experience socioeconomic barriers to care, such as transportation or childcare concerns.^{1,2} Telehealth has long been promoted as a means of overcoming these barriers, but growth of the modality was previously hampered by logistical challenges, including restrictive reimbursement patterns.^{3,4} However, as the COVID-19 pandemic shuttered brick-and-mortar clinics across the nation and emergency legislation markedly expanded access and coverage, telehealth use soared.^{5,6} Nationwide, telehealth claims increased 78-fold from February through April 2020, and roughly 1 in 3 visits in April was conducted virtually. Even with widespread vaccination and relaxation of restrictions, claim volume remained 38 times higher in July 2021 compared to prepandemic levels, with approximately 1 in 7 medical visits still occurring via telehealth.⁷ Wisconsin's patterns were consistent with national trends; over 160,000 virtual visits were conducted in 2020, compared to less than 3000 the year prior.⁸

Federally Qualified Health Centers (FQHC) demonstrated similar patterns to private and non-profit health care networks in regard to treatment modality, with 30.2% of visits conducted via telehealth between July and November 2020.⁹ The massive expansion of telehealth among FQHCs – clinics that primarily provide primary care to un- and underinsured patients under a sliding-scale fee system based on

ability to pay – creates a unique opportunity to assess the role of telehealth in providing primary care to vulnerable patients. One 2021 cross-sectional study noted a reduction in no-shows when comparing nonprocedural telehealth to in-person visits at a large urban medical center.¹⁰ However, little research exists regarding telehealth as a means of increasing show rate for primary care visits among socially vulnerable patients, particularly those with Medicaid and the uninsured.

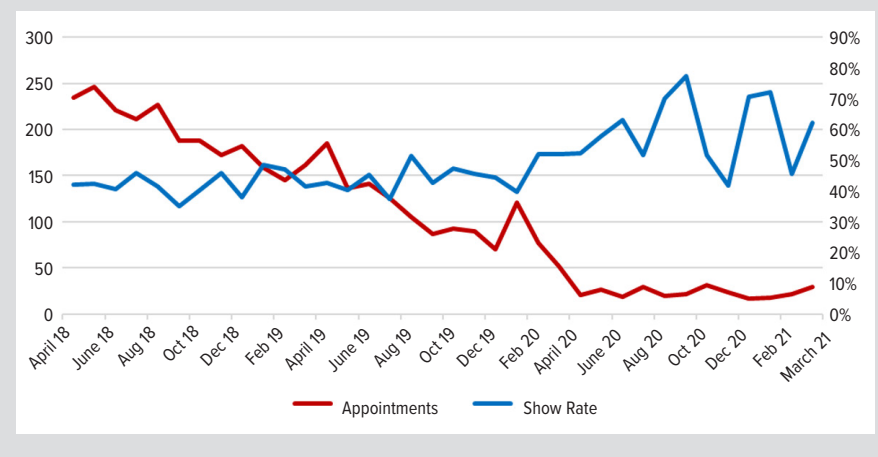
Prior to the pandemic, patient and clinician satisfaction with telehealth was generally mixed, despite evidence of improved outcomes.¹¹ However, since March 2020, patient satisfaction with telehealth has generally improved.^{12,13} Clinician satisfaction has followed similar trends, with multiple studies finding greater than 80% satisfaction.^{14,15} Nonetheless, qualitative research regarding patient and clinician perceptions of telehealth remain lacking, especially in low-income clinical settings such as FQHCs.

The Emergency Department Care Coordination (EDCC) initiative, a program facilitated by the Milwaukee Healthcare Partnership, has worked since 2007 to connect uninsured and underinsured patients without an established primary care provider to primary care at local FQHCs and safety net clinics. The program targets patients with complex or chronic medical needs, including frequent emergency department (ED) users, and leverages ED social workers, nurses, and other staff to schedule a primary care appointment before the patient discharges. The program does not target patients who are otherwise eligible for internal primary care follow-ups within the health care system. Though the EDCC, thousands of appointments are scheduled every year; however, prior to the pandemic, show rates had consistently hovered around 45%. As receiving clinics transitioned to telehealth at the beginning of the pandemic, the EDCC served as a direct window into the quantitative and qualitative impacts of care modality on providing accessible and quality care for vulnerable patients.

METHODS

A cross-sectional study was conducted of ambulatory appointments following EDCC referrals at 5 FQHC receiving clinics in Milwaukee, Wisconsin, between April 5, 2018, and March 31, 2021. Patient visits prior to March 23, 2020, took place in person; visits after this date were conducted via telehealth, either by video or telephone. Deidentified patient data were obtained from EDCC's cloud-based intersystem technology software, MyHealthDirect, which sources data directly from the referring EDs and the receiving FQHCs. This study was deemed a

Figure. Emergency Department Care Coordination Appointment Volume and Show Rate, April 2018 – March 2021



Box. Standardized Survey for Patients

General Perceptions: “How did the visit go? Did you feel prepared for the visit?”

Accessibility: “Was it easier to attend the visit via telehealth?”

Desirability: “Which type of visit did you prefer, or were they about the same?”

Sustainability: “Would you consider making another telehealth visit?”

quality improvement initiative and therefore IRB-exempt by the institutional review board of the University of Wisconsin.

EDCC referrals were included regardless of the referring ED, but only adult medicine referrals to FQHCs were included; pediatric, OB/GYN, and dental appointments were excluded. The EDCC data set included limited patient information, including age, sex, patient insurance status, and appointment lead time. Binary logistical regression was conducted using the Statistical Program for Social Sciences SPSS 27.0 software (SPSS Inc, Chicago, Illinois). While many factors were considered in the logistic regression model, the main outcome of interest was differences in show rate for telehealth primary care appointments compared to traditional appointments, and these additional factors were considered to control for confounding factors that were available in the data set.

In parallel, we conducted standardized, qualitative, opt-in interviews of patients referred through EDCC who attended their virtual visit. Interviews were designed to elicit perspectives on telehealth on 4 axes, as illustrated in the Box. These interviews were facilitated by clinic staff at the 2 FQHCs performing the most telehealth appointments and were incorporated as part of the standard visit follow-up procedure. We additionally performed qualitative interviews with physicians and advanced practice providers at EDCC receiving clinics through existing communication channels, such as the EDCC work group's monthly Zoom meeting. We conducted these unstructured interviews ourselves; the questions were not standardized, but conversation focused on the advantages

and disadvantages of telehealth, with a special focus on barriers overcome or created by distanced visits. All interviews took place between September 1, 2020, and July 31, 2021.

RESULTS

Effect of Telehealth on Show Rates

Via the EDCC, 3613 in-person visits were scheduled between April 5, 2018, and March 23, 2020; 284 telehealth visits were scheduled between March 24, 2020, and March 31, 2021. As seen in the Figure, alongside the change in modality and decrease in referral volume, overall show rate increased, totaling 43% for in-person visits and 59% for telehealth visits.

As this shift in modality occurred, the patient panel demographics shifted slightly alongside it, as demonstrated in Table 1. Two of the larger FQHCs handled 90% of telehealth visits, with a third handling the rest. The EDCC referral pool during COVID was slightly older and more male, with uninsured patients eclipsing Medicaid as the most common insurance status. On univariate analysis, the decrease in no-show rate retained statistical significance when controlling for concurrent changes in patient demographics, insurance status, clinic location, and appointment lead time as shown in Table 2.

When looking at show rates comparing telehealth to in-person visits, there was a significant difference, with telehealth visits having an increased likelihood of attendance ($P=0.002$). There was also a significant difference in show rates when examining other factors, including across the different FQHCs ($P\leq 0.0001$). When examining show rates based on the number of days from ED visits to appointment, there was a significant difference, with patients seen within 5 days of their ED visit having an increased likelihood of attending ($P\leq 0.0001$). Insurance type also was examined, and uninsured patients were seen as more likely to attend than other insurance types ($P=0.012$). Patient age also showed a significant difference, with older and middle-aged patients being more likely to attend than younger patients ($P\leq 0.0001$). However, there was not a significant difference when comparing show rates by sex ($P=0.96$).

Patient/Provider Interviews

Surveys were posed to 50 patients following a telehealth visit at 2 FQHCs; 28% (14 patients) opted in. Sixty-four percent ($n=9$) reported feeling prepared for their visit, with the remaining 5 patients remarking that instructions were not available in Spanish or that the distinction between phone versus video visits was not made clear by EDCC staff in the ED. Though 86% of patients surveyed felt that telehealth appointments were more accessible, citing barriers in transportation and childcare as the main factors, just 36% stated that they preferred a virtual visit to an in-person visit. However, of those who preferred an in-person visit, 78% said that they would consider making another telehealth appointment.

Table 1. Demographic Data

	In Person	% Total	Telehealth	% Total
Attendance				
Attended	1547	43	169	59
Did not attend	2065	57	116	41
Federally Qualified Health Center				
Clinic A	835	23	130	46
Clinic B	942	26	125	44
Clinic C	788	22	0	0
Clinic D	853	24	30	11
Clinic E	194	5	0	0
Lead Time (days)				
0–5	1497	41	195	68
6–9	1238	34	71	25
10–14	446	12	10	4
15+	431	12	9	3
Insurance status				
Commercial	170	5	8	3
Medicaid	1813	50	119	42
Medicare	119	3	11	4
Uninsured	1510	42	147	52
Age				
16–39	2214	61	156	55
40–64	1317	36	119	42
65+	81	2	10	4
Sex				
Female	1595	44	117	41
Male	2017	56	168	59

Twenty-one FQHC and free clinic providers also were interviewed via an unstructured format through existing communication channels. All clinicians we approached participated in the interview. Many reported that a higher-than-expected share of their patient panel was able to access video or telephonic technology, which improved clinic workflow. By screening patients for COVID symptoms and exposure before in-person visits, physicians at high personal risk could continue to safely resume their practice, even without a full vaccination course. Physicians who had previously incorporated telehealth into their practice said that higher Medicaid/Medicare reimbursement (due to emergency legislation) was a key piece in allowing clinics to expand virtual visits to the degree necessary over the early months of the pandemic.

DISCUSSION

Prior to March 2020, the EDCC program had never recorded a show rate greater than 47%. This was attributed to numerous factors, some of which were procedural. For example, longer lead times before appointments previously had been associated with lower show rates. However, other proposed factors included social determinants of health that prevent patients from reaching the receiving clinic, such as childcare responsibilities or lack of transportation. Telehealth has demonstrated promise as a solution for patients affected by barriers like these, and the significant increase in show rate to nearly 60% as the EDCC transitioned to virtual

appointments supports the notion that telehealth may be more accessible for some segments of these vulnerable patients.

One factor playing a role in the increased show rate is the notably decreased lead time before appointments. The EDCC previously determined that scheduling an appointment within 5 days is a best practice, and the flexibility of telehealth allows for this practice to be implemented more smoothly. Another potential explanation lies with the FQHC distribution – two of the larger FQHCs took the majority of telehealth patients, and it is possible that the community connections formed before the pandemic helped these clinics function more efficiently during the pandemic. However, the regression suggests that neither lead time nor receiving clinic identity accounted for the full magnitude of change seen during the study period.

Additionally, patients cited neither of these criteria when asked about the increase in show rate, instead discussing almost exclusively the overall convenience of telehealth. The majority of patients—even those who later stated they preferred in-person visits—identified telehealth as more accessible. When asked why, most identified the ability to stay home with children during the appointment and/or not having to make use of public transit and associated affordability issues. In Milwaukee’s low-income communities, these barriers often go hand-in-hand;

Medicaid’s nonemergency medical transport facilitates transport to appointments, but it cannot accommodate children—even if the patient is the sole caretaker. Telehealth visits allowed patients with young dependents to sidestep both hurdles at once.

Providers largely identified pandemic-specific factors, such as clinic flow improvement and staff safety, as benefits of telehealth. For elderly or immunosuppressed clinic providers, telehealth represented the sole mechanism of providing care without undertaking prohibitive personal risk; this benefit was a particular lifeline for free clinics, many of which rely on retired volunteer physicians. Even outside of free clinics, telehealth visits served as an effective triage mechanism, allowing receiving clinics to manage patient load efficiently. However, as the threat of dangerous infectious disease wanes, the benefit of both of these factors will likely decline alongside it.

Both patients and clinicians also identified drawbacks to the

widespread use of telehealth. While simplifying clinic flow on the provider end, patients with somatic complaints often ended up scheduling an additional in-person visit afterwards, erasing any convenience benefit gained from the initial virtual visit. While the majority of patients were able to successfully adjust to video technology, some older patients found the software too difficult to use – although telephonic visits were generally accessible for all age groups. Additionally, information for logging into many of these platforms was only available in English, and the incorporation of interpreters during virtual visits remained a challenge, both of which limited telehealth efficacy for Milwaukee’s substantial non-English-speaking population. Clinicians also reported that some patients rejected an EDCC referral after learning that it would take place via telehealth because they only wanted to be seen in person. Overall, the majority of patients surveyed stated that they preferred an in-person visit if given a choice.

Table 2. Show Rates Categorized by Individual Factors

	Attended	Did Not Attend	Grand Total	Show Rate %	Odds Ratio (95% CI)	P value
Telehealth visit						
Overall telehealth comparison						0.002
No	1547	2065	3612	43		
Yes vs No	169	116	285	59	(0.515 – 0.857)	0.002
Total	1716	2181	3897	44		
Federally Qualified Health Centers (FQHC)						
Overall FQHC comparison						0.0001
Clinic A	490	475	965	51		
Clinic B vs A	537	530	1067	50	(0.352 – 0.686)	0.311
Clinic C vs A	301	487	788	38	(0.332 – 0.645)	0.435
Clinic D vs A	327	556	883	37	(0.383 – 0.780)	0.0001
Clinic E vs A	61	133	194	31	(0.471 – 0.983)	0.0001
Total	1716	2181	3897	44		
Lead Time (Days)						
Overall Lead Time Comparison						0.0001
0 – 5 vs 0 – 5	855	837	1692	51		
6 – 10 vs 0 – 5	560	749	1309	43	(1.121 – 1.521)	0.001
11 – 15 vs 0 – 5	167	289	456	37	(1.256 – 2.009)	0.0001
16+ vs 0 – 5	134	306	440	30	(1.540 – 2.369)	0.0001
Total	1716	2181	3897	44		
Insurance						
Overall insurance comparison						0.012
Uninsured	789	1143	1932	41		
Commercial vs uninsured	80	98	178	45	(0.361 – 0.829)	0.004
Medicaid vs uninsured	793	864	1657	48	(0.333 – 0.913)	0.021
Medicare vs uninsured	54	76	130	42	(0.420 – 0.961)	0.032
Total	1716	2181	3897	44		
Age						
Overall age comparison						0.0001
16 – 39	925	1445	2370	39		
40 – 64 vs 16 – 39	738	698	1436	51	(1.733 – 4.563)	0.0001
65+ vs 16 – 39	53	38	91	58	(1.054 – 2.772)	0.03
Total	1716	2181	3897	44		
Sex						
Overall sex comparison						0.960
Female	732	980	1712	43		
Male vs female	984	1201	2185	45	(0.873 – 1.138)	0.960
Total	1716	2181	3897	44		

It must be noted that the onset of telehealth adoption in this study coincided with COVID-19, which itself produced far-reaching effects in the public's relationship to health care and may serve as a confounder. It is possible that with public consciousness focused on health, show rate at in-person visits may have increased at a proportional rate if offered. Additionally, the precipitous decline in EDCC referrals after telehealth adoption, in addition to the uneven distribution of referrals to FQHCs during the pandemic, may have directly affected the show rate. Though partly due to lower ED volumes and fewer available ED staff that made these referrals, it also may represent patients self-selecting for those willing and able to attend a virtual visit. The combination of these circumstances, in addition to the limited number of patient and provider interviews, limit the generalizability of these findings, and further research is needed to determine the sustained impact of telehealth as the pandemic wanes.

CONCLUSION

Show rate at primary care follow-up appointments after ED discharge increased upon adoption of telehealth. Patients and clinicians generally had positive perception of telehealth appointments and identified specific barriers to care overcome by telehealth appointments; however, challenges remain in developing efficient and equitable practice guidelines. Further research is needed to understand which populations benefit most from telehealth use, whether these benefits will persist after the pandemic, and what additional strategies might help patients attend their telehealth appointments.

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