BRIEF REPORT

Care Redesign to Support Telemedicine Implementation During the COVID-19 Pandemic: Federally Qualified Health Center Personnel Experiences

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Background: **Federally qualified health centers (FQHCs) rapidly adopted and implemented telemedicine during the COVID-19 pandemic. This study analyzes FQHC personnel accounts of care redesign strategies to support telemedicine implementation in 2020 and 2021, and identifies improvement opportunities.**

Methods: **We conducted semistructured, in-depth interviews with clinic personnel (n = 15) at 2 FQHCs in Northern California (December 2020-April 2021) to examine telemedicine adoption and use of audio-video and audio-only/phone telemedicine encounters.**

Results: **FQHC clinicians and staff reported that telemedicine implementation increased access to care and reduced appointment no-show rates. However, a reported reduced ability to develop and foster interpersonal connections negatively impacted clinician-patient relationships. Care redesign strategies included systems to triage appointment types (in-person versus virtual), work-arounds to screen for and address social and nonmedical needs, and new protocols to navigate privacy needs for first time telemedicine users. In addition, increasing remote monitoring capabilities was deemed an important priority for improving telemedicine use for marginalized populations.**

Conclusions: **Telemedicine implementation in FQHCs involved care redesign to optimize virtual interactions and care processes. Guidelines and evidence-based practices are needed to improve telemedicine use in FQHCs, including strategies to support interpersonal connections; approaches to virtually screen for and address social needs; and protocols to further mitigate privacy issues. Future research is needed to identify when telemedicine can optimally supplement in-person care to improve patient outcomes and clinic efficiency, particularly in safety net settings. (J Am Board Fam Med 2023;36:712–722.)**

Keywords: **Community Health Centers, COVID-19, Health Services Accessibility, Implementation Science, Pandemics, Primary Health Care, Qualitative Research, Quality Improvement, Safety-Net Clinics, Telehealth**

Introduction

Before the COVID-19 pandemic, telemedicine adoption was limited in federally qualified health centers (FQHCs),[1] which serve socioeconomically vulnerable populations. In 2019, only 43% of FQHCs reported providing telemedicine visits compared with 99% in 2020.[2,3] For FQHCs that used telemedicine prepandemic, 75% offered telemental health services whereas only 28% used telemedicine for primary care.[2] The pandemic accelerated telemedicine implementation.[4,5] By 2020, 97% of FQHCs reported using telemedicine to deliver primary care.[3]

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Telehealth studies conducted during the pandemic document benefits, including increases in access to care, and challenges, such as clinician difficulty establishing interpersonal connections and conducting physical exams virtually.[6–9] Most pandemic-era telemedicine research has focused on implementation in outpatient or primary care settings broadly,[6–10] or for specific populations (e.g., the elderly, adolescents).[11–13] Few have examined telemedicine implementation experiences in FQHCs.[14,15]

The aim of this study is to characterize the care redesign undertaken by 2 FQHCs as they implemented telemedicine during the pandemic. We examine benefits and challenges experienced, as well as work-arounds deployed to overcome hurdles.

Methods

We conducted semistructured interviews with FQHC personnel to collect information about changes to care provision during the COVID-19 pandemic. The study involved 2 California FQHCs that predominantly serve immigrant communities (Chinese, Latino). By April 2020, both offered telemedicine visits for the first time. Eligible clinic personnel were involved in telemedicine adoption decisions or had direct implementation experience, and were recommended by a clinic liaison for participation.

The interview guide included questions about COVID-19 video and audio-only telemedicine experiences, impacts to clinic operations, perceived sustainability, and recommendations. The questions and qualitative codebook were developed based on telemedicine research,[12,16–23] and the Technology Acceptance Model,[24] which highlights perceived ease of use and perceived usefulness of technologies as key determinants. The instruments were also developed based on organizational capacity frameworks[25,26] and theories of implementation climate,[27] which highlight that innovations need to align with users' values and organizational capabilities.

Eligible and interested respondents provided verbal consent before participating in a remote interview (December 2020–April 2021), which was audio-recorded with permission. Participants received a $25 gift card. Recruitment ceased when data saturation was attained for key themes. Additional details are described elsewhere.[28] The Institutional Review Board of the University of California, Merced, approved study protocols and materials (UCM2020-85).

Eight themes (implementation facilitators; challenges; modality-specific experiences; perceived benefits; patient-physician relationship changes; changes affecting workflow, care processes, and quality; patient misconceptions; and social and nonmedical needs) and 33 related codes (of 107 total codes) were analyzed. A coauthor independently coded transcripts to streamline data analysis,[29] with guidance from the lead author. The team held weekly meetings to discuss discrepancies and obtain consensus.

Results

Fifteen clinic personnel from 2 FQHCs completed interviews (duration: 48 to 85 minutes), including clinic leadership, physicians, community health workers (CHWs), and operations/support staff. See personnel characteristics in Appendix Table 1. Illustrative quotes for findings are in Tables 1 and 3.

Telemedicine Benefits, Challenges

Physicians indicated improved quality of discussion about medications in virtual appointments, particularly for chronically ill and elderly patients. Medications were generally accessible at home and patients could easily verify information or show their medication on screen. Physicians also noted seeing patients at home provided a "fuller picture of health and wellness environments."

Interpersonal connections were noted to be harder to establish via telemedicine. Respondents said the amount of information patients shared via telemedicine was less than inperson. Some patients were described as feeling rushed or less likely to share sensitive experiences (e.g., intimate partner violence, elderly abuse). Respondents said some patients appeared less confident or comfortable in virtual visits, which could impact their engagement. However, clinicians noted video visits at least afforded them the ability to see patients

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Table 1. Telemedicine Implementation: Perceived Benefits and Challenges During the COVID-19 Pandemic, Personnel (n = 15) from Two Federally Qualified Health Centers in Northern California, 2020–2021

Theme	Key Finding	Illustrative Quotes
Patient, provider, and organization benefits	Improved access to care and convenience	"Most of the time my diabetes patients will have every three month visits, but telehealth is really good for those patients who actually need more frequent visits as we are adjusting their medication and changing their insulin . . . and making sure the problems of med adherence are addressed before we get to that three-month mark so that we can actually see improvement sooner rather than waiting until the next in person visits." *(Physician, Clinic A)*
	Increased opportunity for social support	"When we do the coaching, some of the children are at home and they hear [recommendations about] controlling your portion, cut down the high carbohydrate food like yams. . . . So, they help, once we're done with our appointment they started to notice that you have to stop eating this because the health coach said cut this down. . . . Having telemedicine really helps in that way." *(CHW, Clinic A)*
	Insights from home environment	"It's hard to measure this, but there's just something really pleasing about seeing someone in their own environment. So often patients come to our clinic and, you know, they're on our turf, and it's a weird place. You know, you get poked, there's medicines . . . It's just, it's a clinic. . . . when we call and talk to them on the phone in their home, you're seeing their kitchen, their living room, the dining room, you see their kids at school or playing in the background. They, you know, they're more comfortable where they're at." *(Leader, Clinic A)*
		"The virtual ones with video I've gotten the chance to have some insight into the family of my patients and their living situation, which can really give you a much fuller picture of their health and wellness environments." *(Physician, Clinic A)*
	Increased understanding of medication use	"I think improved medication understanding, understanding of medication. So being able to say, this, the medication bottle you are holding up right now, is for this condition, and then they can tell you how many times a day they use it. Because sometimes even in person, they might not bring in their medication and they might just refer to them as the little white pill versus like when they're at home their medications are there, and they can actually show you what they have." *(Physician, Clinic A)*
	Reduced no-show rates	"Our clinic no-show rate kind of varies between like 12 and 16% of the time, some days it's much higher, some days it's lower, but they started calling patients when they aren't there on time and asked them if they would like to do a video visit instead. And quite often they'll say, yes, they didn't have a ride, or their car broke down or their husband didn't get off work in time. And so, they still wanted to receive care they just couldn't get here. And so, that's been a huge benefit." *(Leader, Clinic A)*
Challenges of virtual care	Reduced information exchange	"In person they tend to tell me the story of their life and on the video visit or telephone, yeah, they go right to the point." *(CHW, Clinic A)*
		"If there is an issue with intimate partner violence or even adult elderly abuse, any of those issues you don't know who the patient is around. And so, when you're asking these questions you don't know if the patient is actually giving you the right answer, is there anything else that's circumstantial that they're not able to reveal all the information, and so I think there is less understanding of the patient's circumstances and the environment on the phone." *(Leader, Clinic B)*
	Differing comfort levels	"At the very beginning some people were having fun. . . . But some other people, they were so shy. They were looking somewhere else except the camera." *(CHW, Clinic A)*
		"I think older people a lot of the times what I've seen is they want to talk to the provider [in person], see the provider, they seem more connected. Some of them know the staff also well and they kind of connect with the staff as well because they've been with the clinic for many years and that makes them less anxious. And they have other issues that they can discuss with the provider, personal issues sometimes that we cannot discuss easily over telehealth or Zoom video visits." *(Physician, Clinic B)*

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Table 1. Continued

Theme	Key Finding	Illustrative Quotes
	Reduced ability to foster interpersonal connection	"I know a lot of [patients] express the impersonal experience [with telehealth], so they like to be in-clinic to have someone there that they can talk to and kind of have more of a personal experience." *(Care Coordinator, Clinic B)*
		"I think, you know, there's always the concern about missing out on your, the interpersonal connection. So, there may be a bit of a difference between patients who are already established and knew their providers and their health coach well versus ones who are maybe newer patients that didn't have as strong of a connection, but my feeling is that they're still very much, you know, willing to engage with their care through telehealth." *(Leader, Clinic A)*

Abbreviation: CHW, Community health worker.

"face-to-face," which facilitated patient-physician relationships.

Despite limitations, personnel reported telemedicine improved access to care. Telemedicine decreased appointment wait times and increased touch points with clinic personnel. Virtual appointments and health education classes were also viewed as more accessible to patients' family members/caregivers, who could provide social support to facilitate care and/or health management, including dietary and lifestyle changes. Other benefits included reduced no-show rates, which may have led to efficiency gains by decreasing service delivery disturbances. Personnel attributed no-show reductions to the relative convenience of telemedicine, as patients could attend appointments from work/home. This was especially important for their patient population, for whom missing work or finding transportation and/or childcare could be difficult.

Changes in Workflow and Care Processes

Respondents shared changes in workflow and care processes resulting from telemedicine use [Table 2].

Part of the operational impact of telemedicine adoption was navigating triaging patients to in-person or virtual appointments, including whether a virtual appointment required video, or whether phone (audio only) was sufficient. Even with training and protocols in place, triaging was an ongoing challenge with a steep learning curve to determine the appropriate visit type.

Table 2. Changes Affecting Care Provision and Clinic Operations at Multiple Workflow Time Points in Two Federally Qualified Health Centers During the COVID-19 Pandemic, 2020–2021

Pre-Visit	Patient Visit	Post-Visit
Triage	***Privacy***	***Billing***
Determining how to optimally triage appointments to be either virtual or in person was an ongoing challenge.	The clinics deployed several strategies to increase privacy, which was a key need during virtual appointments.	Some patients did not understand that virtual appointments were formal medical appointments that required copays. As such, clinic personnel spent time educating the patients that telemedicine appointments were still subject to billing and copay processes.
Intake	***Virtual Exam Guidance***	
Intake for virtual appointments was conducted by phone instead of in person.	Clinicians received trainings and best practice guidance for how to conduct medical examinations using only the information available virtually.	
Remote Monitoring	***Distractions***	
Clinics encountered hurdles in obtaining information such as weight, blood pressure, and vitals remotely. They employed several tactics to address these challenges but reported that strengthening remote monitoring capacity was an ongoing priority.	Respondents reported navigating distractions during virtual appointments, including from background noise or patient multitasking.	

Table 3. Telemedicine Implementation: Changes to Care Provision and Processes During the COVID-19 Pandemic, Described by Personnel (n = 15) in Two Federally Qualified Health Centers in Northern California, 2020–2021

Theme	Key Finding	Illustrative Quotes
Changes in workflow and care processes: Pre-visit	Navigating challenges in triaging between in-person versus virtual appointments	"I think one of the other challenges has been training with the call center and – we still do not have this done well or done right – but [developing] a matrix or some training for a call center agent to understand when is appropriate for a telehealth visit versus an in-person visit. And that's been a big challenge for us because there are some services that can be done virtually and others that just absolutely cannot. . . . Oftentimes there will be issues with a patient on a provider's schedule with the incorrect visit type. So, it requires everybody to review their schedule well in advance and really monitor, which is not something that used to be a concern." *(Operations Staff, Clinic A)*
	Addressing remote monitoring hurdles	"What I do still see as something that is majorly lacking is being able to provide a full set of vital signs. I think for both diabetes as well as for cardiovascular disorders, a proper charting of weights and seeing how that may fluctuate can give some early warning signs of something happening, as well as being able to have accurate monitoring of fasting blood sugar levels. . . . Remote monitoring would be very helpful." *(Leader, Clinic B)*
		"We do the teaching to make sure that they understand how to use [the devices], but then sometimes when they go home, I will call them back to see how they're doing . . . they say, oh, I forgot how to use it. So, having someone else to explain it to another member of the family, so that they know how to use it as well, that has been one of the challenges with some patients." *(CHW, Clinic A)*
		[Regarding blood pressure or glucose monitors] "They're expensive, so not everybody has them or can afford them, specifically when insurance doesn't cover it. And they don't know how to use it sometimes." *(Physician, Clinic B)*
Changes in workflow and care processes: During a visit	Encountering privacy challenges	"I've had some cases where patients they may agree at the beginning to do a video visit and then when they realize that we are starting to talk about really private issues they tell me that it's not a good time to talk about it. . . . So, often times I have patients that step out of the house, go into the backyard so they can talk more freely, but then at the same time that's also usually when the internet might get worse, so there are some issues that we just can't address if it's a concern about privacy." *(Physician, Clinic A)*
		"I've had a couple of patients that were clearly dealing with psychiatry issues that wanted to put off on their therapist's referral just because they had a smaller home with multiple people living in it and they felt uncomfortable talking about their mental health issues with kids around." *(Leader, Clinic B)*
	Obtaining training and best practices for clinicians conducting virtual exams	"The more difficult resource investment was trying to get useful best practices and knowledge, sort of have a core group of individuals gathering that information . . . then sharing it with clinicians. So, this included things like best practices for how to engage patients through the web interaction through telehealth, best practices for

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Table 3. Continued

Theme	Key Finding	Illustrative Quotes
		what kind of clinical conditions are appropriate versus not appropriate, how to conduct physical exams over camera. And then also kind of learning how to put that information, translate that into electronic health records and also team care when your team was no longer sitting around each other." *(Leader, Clinic A)*
		[Regarding audio-only visits] "Obviously there's very limited physical evaluation you can do. You know, especially with COVID, . . . COVID patients aren't coming in, so we're starting to be trained and systematic in listening for 'are they speaking in full sentences, are they coughing, do they sound short of breath, do they sound ill,' but that's sort of the extent of what you can tell from audio." *(Physician, Clinic A)*
	Navigating virtual distractions	"[Some patients are] doing laundry, cooking dinner, cleaning the house, while they're sort of having a visit with you. I'd say there's definitely a distracted group of individuals [on virtual appointments]." *(Leader, Clinic A)*
		"We asked them to be in a quiet place when we connect with them. And sometimes that works, [and] sometimes it's not possible because there are children in the house, but we try to make it as accommodating to whatever they can accommodate in their home." *(CHW, Clinic A)*
		"We don't go forward with video visits if someone's in a vehicle. On the phone, someone could very much be in a car driving during the visit, we discourage that, but we can't hundred percent prevented it. Usually if you're on video and we see you're driving, we . . . tell them we'll reschedule." *(Leader, Clinic A)*
Changes in workflow and care processes: Post-visit	Educating patients regarding virtual billing protocols	"Some, not all of them, but some of them, they thought that when we do the visit by video they thought it's free, [that] they don't have to renew their insurance. But then lately we have to educate them to understand that it's still the same. They still have to renew their insurance." *(CHW, Clinic A)*
Changes in identifying and addressing social and non-medical needs	Changes to screening processes	"For adult patients, we're not doing the same level of social needs assessment. It's more just people are aware and asking, and I'm asking you know, are you doing okay on rent are you doing okay on food, we have a list of resources." *(Physician, Clinic A)*
		"One of the issues is telemedicine limits the amount you can judge and see. You cannot see the person, or you might be able to but it's hard to address all issues. It's different when it's done in steps when they come to the clinic. They check in, and then they talk to the MA, they talk to the physician, they talk to the person doing checkout. That's when they used to get the tokens for their ride, so I feel like [with telehealth] the number of people contacting the patient is very limited, and I think the amount the patient can share is also very limited, and so, you're not seeing their body language if it's a phone visit, or even if it's on Zoom I feel like all of that restricts the amount of questions you ask about the social determinants." *(Leader, Clinic B)*
	Lack of a warm handoff/delayed follow up	"Before it would be in person, and the doctor would say follow up with this patient navigator, they'll be able to assist you. After their appointment they'll come find the patient navigator and it was easier for us to come

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Table 3. Continued

Theme	Key Finding	Illustrative Quotes
		out and assist them. Versus now, it's call this patient, we call them, but they don't pick up the phone." *(Care Coordinator, Clinic B)*
		"In the office we can direct [patients] to the front desk staff or personnel versus with televisit we have to send a task to that person and then that person has to contact the patient so it has added steps, it may not happen in timely matter because of that." *(Physician, Clinic B)*
	Changes in how community resource information and referrals are shared	"I have no paper list that I can hand them and circle. . . . A very small fraction of our patients are signed up for the MyChart portal where I can send them information or links, so it's harder. . . . I can tell them a phone number, and they can write it down or I can say I'll leave it for you at the front desk you can come by or we'll mail you some stuff but that's less satisfactory." *(Physician, Clinic A)*
		"Normally we would either hand them a resource, so direct them to like a website or give them the phone number or etc., or a brochure or a pamphlet. Initially it was a little challenging because you had to figure out a way to send them that information digitally or drop it in the mail to them, but we kind of did all of the above." *(Leader, Clinic A)*

Abbreviations: CHW, Community health worker; MA, Medical assistant.

Virtual appointment intake was conducted by phone. Medical assistants said gathering weight and blood pressure information was contingent on the availability of remote monitoring resources. Because patients were often not able to afford blood pressure monitors, clinics distributed a limited number of the devices, funded by grants or donations. Additional challenges remained, including patient knowledge gaps in operating devices, physical limitations using devices, and inconsistencies of readings. Clinics responded by training patients, asking patients to bring devices in to assess accuracy, or relying on in-person vitals. Even with these strategies, weight and blood pressure measures were commonly not available or recorded. Improving remote monitoring was considered a high priority for telemedicine sustainability.

Physicians received training for how to conduct exams virtually, including maximizing available contextual cues, such as listening for shortness of breath.

As the clinics serve a safety-net population, many of their patients live in crowded home environments, which personnel were concerned negatively impacted privacy and caused patients to delay behavioral health care. To address privacy needs, clinic personnel routinely asked patients if they were in a private space, created passcodes on virtual applications, switched to phone visits when necessary, and had interpreters join by phone.

Distractions were said to increase for some patients while using telemedicine (e.g., from background noise and multitasking, including household chores), which could reduce patients' attention and engagement. To decrease distractions, patients were asked to join from a quiet location. If patients were driving, clinics rescheduled appointments.

Patient misconceptions/confusion about telemedicine billing was common. As a result, clinic staff spent time educating patients that virtual sessions were formal medical appointments with copays/fees.

Changes in Addressing Social Needs

Although clinics integrated social needs screening questions into telemedicine visits, the assessments were said to be generally less in-depth compared to in person assessments. When social needs were identified, physicians were not able to provide a warm handoff to patient navigators. To address this, 1 clinic added a protocol to assign tasks to navigators

to follow up with patients afterward. This, however, could take several attempts, resulting in delays.

Clinics also developed work-arounds to provide social needs referrals and community resource information, using e-mail, text, mail, phone, and/or patient portals; posting information to web sites/social media; and leaving printed materials for pick-up at the clinic. Several of these were considered suboptimal compared with distribution during in-person appointments.

Discussion

We investigate care redesign that transpired in 2 FQHCs as they adopted and implemented telemedicine during the COVID-19 pandemic to meet the needs of a marginalized patient population, who have historically faced barriers in accessing virtual care.[30–32]

Our study found several benefits, including telemedicine's potential to improve the quality of medication discussions. To optimize this benefit, patients should be advised to have medications readily accessible during telemedicine visits. Another recommendation based on our findings is increasing family engagement – a noted benefit in adult and pediatric care settings,[6,33–35] as they can help gather vitals[35] or manage care.[33] Our findings reveal there are also benefits to including family members in virtual health education sessions, as they can support lifestyle changes. Future research should explore best practices for this inclusion.

Continuing and strengthening remote monitoring capabilities was seen as necessary to sustain high quality telemedicine for FQHC patients, who often are not able to afford devices on their own. Because lack of reimbursement is a noted issue,[36] expanding device reimbursement and increasing staff time to monitor/educate patients could support improved remote monitoring integration.

We also found that FQHCs retooled workflows and care processes for telemedicine use. A key challenge was determining appropriate appointment triage paths, noted in related studies.[8,11] Although our FQHCs and others[37,38] have developed their own triage protocols, creating standard guidance for clinics to make efficient and clinically appropriate triage decisions would be beneficial.

Guidelines are also needed to improve virtual privacy standards for FQHC patients. Existing recommendations include modifying clinic environments and employing strategies to increase patients' ability to manage information shared.[12,35,39–44] Clinics' strategy of using phone visits to increase privacy underscores the need to continue offering audio-only visits in FQHCs, whose patients often have few alternative privacy-enhancing options.

Telemedicine implementation led to modifications to screening for and addressing social needs. Evidence-based virtual screening protocols are needed, including determining optimal modes for specific populations (e.g., synchronous virtual screening versus online tools).[45] Investment is also needed to integrate "warm handoffs" to patient navigators into telemedicine platforms and improve virtual distribution of social need referrals/resources.

Limitations include a modest sample size and long fielding period, which reflect pandemic-related recruitment challenges. Despite this, perspectives from clinicians and staff offer a nuanced understanding of care redesign early in the pandemic in FQHCs. As the interviews took place at only 2 FQHCs, generalizability is limited. However, given the consistency of experiences reported across clinics with distinct immigrant populations, the findings are likely relevant to FQHCs that serve similar marginalized or immigrant populations.

Conclusions

Our qualitative study of FQHC telemedicine implementation highlights workflow modifications and work-arounds for multiple care processes during the pandemic. To improve telemedicine implementation in FQHCs, resources and evidence-based practices are needed to support interpersonal connections, guide triage decisions, mitigate privacy issues, increase remote monitoring capacity, and improve ways to identify/address social needs virtually.

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References

1. Kim JH, Desai E, Cole MB. How The Rapid Shift To Telehealth Leaves Many Community Health

Centers Behind During The COVID-19 Pandemic. Health Affairs Forefront. Published June 2, 2020. Accessed April 24, 2023. Available at: https://www.healthaffairs.org/do/10.1377/forefront.20200529.449762/full/.

2. Health Center Program Data. Health Resources & Services Administration. Published 2019. Accessed April 4, 2023. Available at: https://data.hrsa.gov/tools/data-reporting/program-data/national/table?tableName=ODE&year=2019.
3. Health Center Program Data. Health Resources & Services Administration. Published 2020. Accessed April 4, 2023. Available at: https://data.hrsa.gov/tools/data-reporting/program-data/national/table?tableName=ODE&year=2020.
4. Gelburd R. Examining the state of telehealth during the COVID-19 pandemic. United Hospital Fund; 2020. Accessed April 4, 2023. Available at: https://uhfnyc.org/publications/publication/telehealth-during-covid-19/.
5. Verma S. Early impact of CMS expansion of Medicare telehealth during COVID-19. Health Affairs Blog. Published July 15, 2020. Accessed April 4, 2023. Available at: https://www.healthaffairs.org/do/10.1377/forefront.20200715.454789/full/.
6. Gomez T, Anaya YB, Shih KJ, Tarn DM. A qualitative study of primary care physicians' experiences with telemedicine during COVID-19. J Am Board Fam Med 2021;34:S61–S70.
7. Tewksbury C, Deleener ME, Dumon KR, Williams NN. Practical considerations of developing and conducting a successful telehealth practice in response to COVID-19. Nutr Clin Pract 2021;36:769–74.
8. Breton M, Sullivan EE, Deville-Stoetzel N, et al. Telehealth challenges during COVID-19 as reported by primary healthcare physicians in Quebec and Massachusetts. BMC Fam Pract 2021;22:192.
9. Knierim K, Palmer C, Kramer ES, et al. Lessons learned during COVID-19 that can move telehealth in primary care forward. J Am Board Fam Med 2021;34:S196–S202.
10. Hall TL, Connelly L, Staton EW, et al. Points of concordance, points of discordance: a qualitative examination of telemedicine implementation. J Am Board Fam Med 2022;35:517–26.
11. Callisaya ML, Lee AHC, Khushu A. Rapid implementation of telehealth in geriatric outpatient clinics due to COVID-19. Intern Med J 2021;51:1151–5.
12. Barney A, Buckelew S, Mesheriakova V, Raymond-Flesch M. The COVID-19 pandemic and rapid implementation of adolescent and young adult telemedicine: challenges and opportunities for innovation. J Adolesc Health 2020;67:164–71.
13. Aziz A, Zork N, Aubey JJ, et al. Telehealth for high-risk pregnancies in the setting of the COVID-19 pandemic. Am J Perinatol 2020;37:800–8.
14. Uscher-Pines L, Arora N, Jones M, et al. Experiences of health centers in implementing telehealth visits for underserved patients during the COVID-19 pandemic: results from the Connected Care Accelerator Initiative. Published online March 14, 2022. Accessed April 4, 2023. Available at: https://www.rand.org/pubs/research_reports/RRA1840-1.html.
15. McCarthy C, Bateman MT, Jr, Henderson T, Jean R, Evans R. Adoption of telepharmacy within a community health center: a focus on clinical pharmacy services. J Am Coll Clin Pharm 2021;4:924–33.
16. Lyles CR, Allen JY, Poole D, Tieu L, Kanter MH, Garrido T. "I want to keep the personal relationship with my doctor": understanding barriers to portal use among African Americans and Latinos. J Med Internet Res 2016;18:e5910.
17. Lyles CR, Handley MA, Ackerman SL, et al. Innovative implementation studies conducted in US safety net health care settings: a systematic review. Am J Med Qual 2019;34:293–306.
18. Portz JD, Fruhauf C, Bull S, et al. "Call a teenager … that's what i do!"—grandchildren help older adults use new technologies: qualitative study. JMIR Aging 2019;2:e13713.
19. Scott Kruse C, Karem P, Shifflett K, Vegi L, Ravi K, Brooks M. Evaluating barriers to adopting telemedicine worldwide: a systematic review. J Telemed Telecare 2018;24:4–12.
20. Anderson K, Francis T, Ibanez-Carrasco F, Globerman J. Physician's perceptions of telemedicine in HIV care provision: a cross-sectional web-based survey. JMIR Public Health Surveill 2017;3:e31.
21. Chwistek M. "Are you wearing your white coat?": telemedicine in the time of pandemic. JAMA 2020;324:149–50.
22. Gordon HS, Solanki P, Bokhour BG, Gopal RK. "I'm not feeling like I'm part of the conversation": patients' perspectives on communicating in clinical video telehealth visits. J Gen Intern Med 2020;35:1751–8.
23. Lau J, Knudsen J, Jackson H, et al. Staying connected in the COVID-19 pandemic: telehealth at the largest safety-net system in the United States. Health Aff (Millwood) 2020;39:1437–42.
24. Venkatesh V, Davis FD. A theoretical extension of the technology acceptance model: four longitudinal field studies. Management Science 2000;46:186–204.
25. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implement Sci 2009;4:50.
26. Payán DD, Sloane DC, Illum J, et al. Catalyzing implementation of evidence-based interventions in safety net settings: a clinical–community partnership in South Los Angeles. Health Promot Pract 2017;18:586–97.

27. Klein KJ, Sorra JS. The challenge of innovation implementation. The Academy of Management Review 1996;21:1055–80.
28. Payán DD, Frehn JL, Garcia L, Tierney AA, Rodriguez HP. Telemedicine implementation and use in community health centers during COVID-19: Clinic personnel and patient perspectives. SSM Qual Res Health 2022;2:100054. Published online February 10, 2022.
29. Nevedal AL, Reardon CM, Opra Widerquist MA, et al. Rapid versus traditional qualitative analysis using the Consolidated Framework for Implementation Research (CFIR). Implement Sci 2021;16:67.
30. Rodriguez JA, Saadi A, Schwamm LH, Bates DW, Samal L. Disparities in telehealth use among California patients with limited English proficiency. Health Aff (Millwood) 2021;40:487–95.
31. Khoong EC, Butler BA, Mesina O, et al. Patient interest in and barriers to telemedicine video visits in a multilingual urban safety-net system. J Am Med Inform Assoc 2021;28:349–53. Published online November.
32. Park J, Erikson C, Han X, Iyer P. Are State telehealth policies associated with the use of telehealth services among underserved populations? Health Aff (Millwood) 2018;37:2060–8.
33. Hogue A, Becker SJ, Fishman M, Henderson CE, Levy S. Youth OUD treatment during and after COVID: Increasing family involvement across the services continuum. J Subst Abuse Treat 2021;120:108159.
34. Cole B, Pickard K, Stredler-Brown A. Report on the use of telehealth in early intervention in Colorado: strengths and challenges with telehealth as a service delivery method. Int J Telerehabil 2019;11:33–40.
35. Goddard A, Sullivan E, Fields P, Mackey S. The future of telehealth in school-based health centers: lessons from COVID-19. J Pediatr Health Care 2021;35:304–9.
36. Talana AL, Finn J, Sentell T. Landscape analysis of current self-measured blood pressure activities at selected federally qualified health centers in Hawai'i. Published online October 2021. Accessed April 4, 2023. Available at: https://manoa.hawaii.edu/publichealth/sites/manoa.hawaii.edu.publichealth/files/downloads/2021_project_12_.pdf.
37. Loeb AE, Rao SS, Ficke JR, Morris CD, Riley LH, Levin AS. Departmental experience and lessons learned with accelerated introduction of telemedicine during the COVID-19 crisis. J Am Acad Orthop Surg 2020;28:e469–e476.
38. Croymans D, Hurst I, Han M. Telehealth: the right care, at the right time, via the right medium. N Engl J Med Catalyst. Published online2020;12.
39. Ott KK, Schein RM, Straatmann J, Schmeler MR, Dicianno BE. Development of a Home-based telerehabilitation service delivery protocol for wheelchair seating and mobility within the Veterans Health Administration. Mil Med 2022;187:e718–e725.
40. Henry BW, Block DE, Ciesla JR, McGowan BA, Vozenilek JA. Clinician behaviors in telehealth care delivery: a systematic review. Adv Health Sci Educ Theory Pract 2017;22:869–88.
41. Powell RE, Henstenburg JM, Cooper G, Hollander JE, Rising KL. Patient perceptions of telehealth primary care video visits. Ann Fam Med 2017;15:225–9.
42. Sequeira GM, Kidd KM, Rankine J, et al. Gender-diverse youth's experiences and satisfaction with telemedicine for gender-affirming care during the COVID-19 pandemic. Transgend Health 2022;7:127–34.
43. Allison BA, Rea S, Mikesell L, Perry MF. Adolescent and parent perceptions of telehealth visits: a mixed-methods study. J Adolesc Health 2022;70:403–13.
44. McSwain SD, Bernard J, Burke BL, et al. American Telemedicine Association operating procedures for pediatric telehealth. Telemed J E Health 2017;23:699–706.
45. Bernhardt C, King C. Telehealth and food insecurity screenings: challenges and lessons learned. Mhealth 2022;8:10.

Appendix.

Appendix Table 1. Characteristics of Clinic Personnel Respondents (n = 15) at Two Federally Qualified Health Centers in Northern California

Participant Characteristics	N (% or SD)
Age in years, mean (SD)	39 (9.4)
Percent female	80%
Clinic personnel role, N (%)	
Leader or manager	4 (26%)
Primary care physicians	3 (20%)
Care coordinator or community health worker	2 (13%)
Operations/support staff	6 (40%)
Organizational tenure in years, mean (SD)	5.3 (5.1)
Responsibilities include patient interaction, N (%)	12 (80%)
Race[a]	
American Indian	1 (8%)
Asian or Pacific Islander	4 (33%)
White	3 (25%)
Other race[b]	1 (8%)
Ethnicity[a]	
Hispanic/Latino	5 (42%)
Non-Hispanic/Latino	7 (58%)
Fluent in Spanish[a]	8 (67%)

Abbreviation: SD, Standard deviation.
Note: Rows may not add up to 100% for certain characteristics if respondent(s) did not answer a question. Clinic personnel respondents completed interviews between 2020-2021. Eight respondents participated from Clinic A, and seven from Clinic B.
[a]Race, ethnicity and Spanish fluency were collected only for those whose organizational responsibilities included patient interaction (n = 12).
[b]Other does not include the response options Alaska Native and Black/African American, which were not selected by respondents.