

## CASE STUDY

# CareConnect: Adapting a Virtual Urgent Care Model to Provide Buprenorphine Transitional Care

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Medications for opioid use disorder (OUD) such as buprenorphine are the gold standard for treatment of OUD, but patients face many barriers accessing these medications. To address this gap, a team at Penn Medicine leveraged new regulatory flexibilities during the Covid-19 pandemic that allow for virtual prescribing of buprenorphine. Their goal in establishing the model, called CareConnect, was to provide same-day, high-quality, short-term buprenorphine treatment as well as linkage to longitudinal care. CareConnect includes trained clinicians who provide OUD care integrated into a broader virtual urgent care practice. The program is enhanced by a substance use navigator team that assesses patients, supports patients and clinicians throughout a patient's care journey, and links patients to longitudinal OUD care programs based in primary care or specialty behavioral health. In this article, the authors describe the development and implementation of this novel program to treat OUD embedded within an existing telehealth urgent care program. Penn Medicine's work shows that buprenorphine telehealth prescribing can be adopted by generalist clinicians. The substance use navigator support is a critical element to fill gaps and overcome barriers to care in the community and health system.

## KEY TAKEAWAYS

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- » Medication-first approach. Same-day access to lifesaving medications for opioid use disorder is limited, but this is critical to start treatment for patients during a reachable moment or to bridge gaps for patients who lose access to buprenorphine due to barriers in care.
- » Telehealth provides an opportunity to fill this gap. Virtual models are a patient-centered, flexible method of providing buprenorphine care without long wait times or costly ED visits.
- » Leveraging generalist clinicians. We found that training generalist clinicians within an existing virtual urgent care model was feasible and rapidly scalable for short-term buprenorphine prescribing followed by linkage to longitudinal care.
- » The importance of a compassionate, knowledgeable advocate. The substance use navigator team provides this support to patients and helps clinicians gain confidence by ensuring appropriate follow-up.
- » Audio-only access is critical. Not all patients have access to the Internet or a smartphone, and thus models serving marginalized populations must accommodate both audio-only and audiovisual visits.
- » Reimbursement obstacles. Reimbursement for navigation and support services remains a hurdle.

## The Challenge

The United States is facing an unprecedented crisis of opioid use disorder (OUD) and overdose, with record numbers of individuals experiencing overdose and other complications since onset of the Covid-19 pandemic.<sup>1</sup> One of our most potent tools for addressing this crisis is medications for OUD (MOUDs) such as methadone and buprenorphine, which reduce mortality by more than 50% and improve a host of other outcomes.<sup>2</sup> Despite effectiveness, treatment is the exception, not the rule, with less than 20% of patients with OUD receiving any treatment and even fewer receiving MOUDs.<sup>3</sup> For individuals seeking treatment, there are innumerable hurdles, including wait times, variable care quality, high costs, regulatory requirements, and burdensome rules at the program level.<sup>4-6</sup>

OUD treatment retention is also challenged by these barriers. Patients may lose access to insurance or prescribers, or they may be discharged due to rigid program policies or requirements. For example, many programs impose mandated counseling or discharge patients if there is ongoing substance use, even though this is not recommended best practice.<sup>5,7</sup> Without treatment continuity, patients are at high risk of returning to substance use, and rapid access to MOUDs is critical.

Patients who receive same-day treatment are more likely to continue life-saving medication.<sup>8</sup> However, traditional outpatient and rehabilitation programs rarely offer same-day access to care, and many involve days or weeks of “intake” before prescribing MOUDs, if they are

provided at all.<sup>9</sup> Same-day treatment is now offered in some EDs,<sup>10</sup> but this is variable, costly, and still requires care linkages to longitudinal OUD treatment programs.<sup>11</sup>

Although the pandemic exacerbated many drivers of overdose, it also created opportunities for innovation.<sup>12</sup> Before the pandemic, initiation of controlled substances, including buprenorphine, was not permitted without an in-person evaluation under the Ryan Haight Online Pharmacy Consumer Protection Act.<sup>13</sup> During the public health emergency, federal regulations changed to allow for telehealth buprenorphine initiation, creating an opportunity to scale virtual models for buprenorphine initiation and continuity (Figure 1).





## The Goal

Our goal in establishing CareConnect was to provide same-day, high-quality buprenorphine treatment for patients with OUD. Some models of transitional care clinics, or bridge clinics, have been described that provide same-day buprenorphine treatment and care navigation. Although bridge clinics fill a similar gap as CareConnect, these models have not been widely adopted. Most bridge clinics rely on dedicated specialty staff, space, and other resources that limit scalability, especially in smaller health systems or more rural areas.<sup>11</sup>

FIGURE 1

### Gaps in Care Addressed by CareConnect

Existing substance use treatment models often fail to provide timely treatment, and adoption of evidence-based treatment with buprenorphine and other medications for opioid use disorder (OUD) is variable in these settings. Costs of inpatient or ED-based care are also high. Telehealth models such as CareConnect can help bridge these gaps by providing same-day access to evidence-based treatment at low cost, followed by linkage to longitudinal outpatient buprenorphine prescribing.

		Timely Access	Evidence-Based Care	Cost
	Inpatient OUD Treatment	⊗	⊖	⊗
	Outpatient OUD Treatment	⊗	⊖	✓
	ED-Initiated Treatment	✓	✓	⊗
	CareConnect Telehealth	✓	✓	✓

Source: The authors.

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CareConnect’s innovation lies in leveraging new regulatory flexibilities to operate as a virtual bridge clinic model, expanding the potential reach of the program. Telehealth also offers many advantages to patients, maximizing convenience and privacy and overcoming logistical barriers such as transportation, work, or child care.<sup>14</sup> In addition, rather than requiring a dedicated team of specialist clinicians, CareConnect is embedded within an existing virtual urgent care model staffed by generalist clinicians. Patients and clinicians are supported through peer-led substance use navigation services to facilitate rapid assessment, buprenorphine prescribing, and linkages to follow-up care.

## The Execution

Before CareConnect, our team used ad hoc virtual visits to fill occasional gaps in OUD care, but we had no processes for documenting, billing, or scaling these efforts for patients not already established with a clinic or program. Clinician time was highly structured and could not easily pivot to accommodate unpredictable after-hours care or uninsured patients. In fall 2021, we partnered with Penn Medicine’s existing virtual urgent care model, [Penn Medicine OnDemand](#) (PMOD). PMOD started as homegrown virtual urgent care for Penn faculty and staff and grew to a public facing model by January 2020, staffed by clinicians 24/7. PMOD clinicians provide virtual care for a variety of conditions, such as minor infections, back pain, headaches, allergies, and other mild symptoms that do not require an ED or in-person assessment. Along with a fully staffed team, PMOD had an existing infrastructure for scheduling, completing, and billing for virtual visits — including low-cost options for uninsured patients — and a flexible model for same-day appointments, providing the infrastructure for CareConnect growth.

For marginalized individuals seeking treatment, because stigma is a significant barrier, it is important to greet them with a compassionate, knowledgeable person who will help them navigate the treatment system.<sup>15</sup> To meet this need, we implemented a team of substance use navigators (SUNs), who are individuals with lived and/or professional experience with substance use care and additional training in care navigation, case management, recovery support, and harm reduction. The program began with one experienced SUN from our health system who serves as the program manager; two additional SUNs were hired to provide extended coverage. Our SUNs include one certified recovery specialist, which is the Pennsylvania state certification for peer recovery support professionals, and two individuals with bachelor’s degrees and prior case management experience with individuals with substance use disorders. SUNs conduct an initial assessment, connect patients to PMOD, and provide short-term case management and linkage to longitudinal treatment, as well as supporting patients and clinicians. SUNs engage patients from the time of a call until they complete an appointment with a longitudinal

buprenorphine prescriber, usually within 1 to 2 weeks. Although they do not formally follow up patients after that time period, patients may continue to reach out if additional needs arise. SUNs typically follow a caseload of 10–15 patients who are being actively navigated.

After initial conversations with PMOD leadership, we formalized a partnership that became CareConnect. PMOD clinicians are family and internal medicine physicians and nurse practitioners (NPs) who focus on urgent care issues. None had specific experience with buprenorphine prescribing or addiction treatment, but the team has a culture of spearheading new projects to meet needs in the health system, and team members were excited about taking the necessary steps to implement this pilot program.<sup>16,17</sup> To start, PMOD leadership asked all 14 PMOD clinician team members to apply for their [DATA 2000 waiver](#) to prescribe buprenorphine, often called the X waiver. Because a recent policy change allows practitioners to obtain an X waiver and prescribe to up to 30 patients at a time without completing a specific waiver training (8 hours for physicians and 24 hours for advanced practice providers), all of the practitioners applied for this credential at the outset.<sup>18</sup> Now that the program is established, new providers register for their X waiver as part of the onboarding process.

Although the full X waiver training was unnecessary, CareConnect leadership developed two focused training sessions for PMOD clinicians on buprenorphine prescribing: a 1-hour overview of OUD epidemiology, diagnosis, treatment, and management with buprenorphine, and a second 1-hour session on applying these principles to assessment and treatment in the PMOD context. Trainings were led by two experienced addiction medicine clinicians (M.L., J.K.P.) and the program manager (N.O.), herself a person in recovery, certified peer recovery specialist, and experienced SUN.

At the same time, we sought funding to support the new care model. Clinician visits were billable telehealth encounters; however, we needed funds to cover SUN salaries, which are not currently billable. Other costs include payment for uninsured patients to cover the PMOD appointment cost (\$49 per visit), transportation costs for one-time rideshare or public transportation to access medications and appointments, and medication or copay costs. To cover these costs, we partnered with the Philadelphia Department of Public Health to fund these services.

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We piloted our model with one or two patients per week in November 2021, and the service grew over the first 10 months. CareConnect now operates 9:00 AM to 9:00 PM, 7 days per week. When a patient calls CareConnect, they are greeted by a SUN who conducts an intake. SUNs perform an initial assessment, including substance(s) used, interest in treatment, and other active needs. Patients deemed to be high risk due to active medical issues such as infections or alcohol withdrawal are directed to an ED. SUNs also provide resources to patients who are not seeking a buprenorphine prescription. To receive buprenorphine, patients must be aged 16 years or older, meet criteria for

OUD based on reported history during the intake assessment, and not have an active buprenorphine prescription from another program or provider.

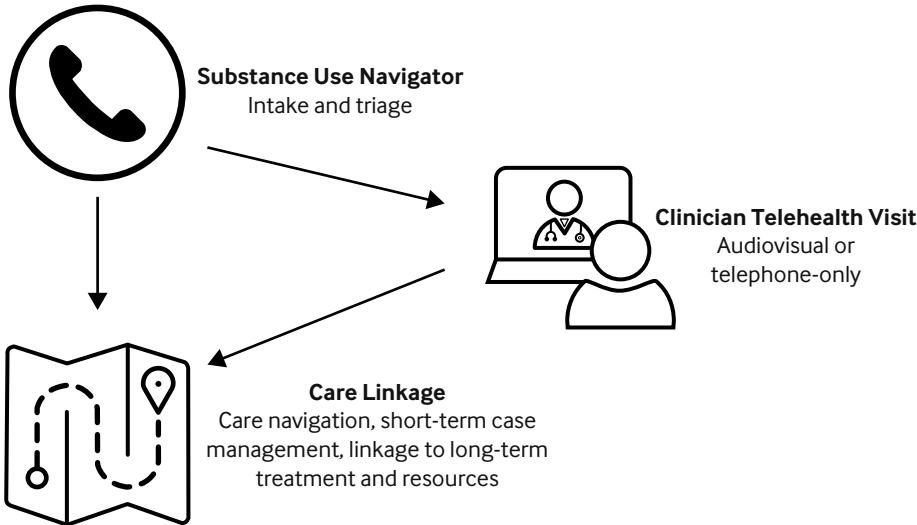
Patients seeking buprenorphine are scheduled on the same day for a virtual visit with a PMOD clinician, typically within about 2 hours, who collaborates with the SUNs to develop a treatment plan. PMOD has clinicians on duty 24 hours a day, with the number varying by time of day and current demand, and clinicians conduct the virtual buprenorphine appointments interspersed with their other routine urgent care visits. After the clinician encounter, the SUNs follow up with patients with telephone calls or text messages to ensure that their prescription is picked up and follow-up is secured. Visits with SUNs and clinicians are typically conducted by telephone, allowing for greater flexibility for patients without reliable access to the Internet or audiovisual platforms, a common barrier for marginalized patients<sup>14</sup> (Figure 2).

Another element of CareConnect involves providing support to clinicians, social service providers, patients, families, or others seeking information, care access, and navigation. SUNs provide education, resources, and support for a variety of questions. Although not explicitly a clinical consultation line, SUNs have access to addiction medicine physician backup if a call involves clinical management questions. Finally, SUNs are well versed in harm reduction and provide education for patients on safer use strategies and tools such as naloxone and fentanyl test strips.

FIGURE 2

### CareConnect Workflow

Individuals calling CareConnect complete an intake call with a substance use navigator. The substance use navigator conducts an initial assessment, and patients needing a buprenorphine prescription are scheduled for a clinician visit. All callers receive resources and care navigation as appropriate.



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To disseminate and grow our model, we first conducted outreach within Penn Medicine at our EDs as well as with health system primary care clinics. We have since socialized the program with other health systems, behavioral health providers, psychiatric crisis centers, local jails, and harm reduction organizations. These dissemination efforts included outreach through formal meetings and presentations and provision of flyers and CareConnect business cards to partner organizations to give to providers and patients. Most patients report hearing about CareConnect from a health care provider (63%), followed by word of mouth (28%).

## Hurdles

Even with our streamlined model, we uncovered numerous challenges that patients face in obtaining medications and follow-up care. Many pharmacies did not stock buprenorphine, refused to fill it, or would not accept payment from our program. To address these issues, we created workarounds such as developing a list of partner pharmacies and assisting patients with transportation to pharmacies where buprenorphine is available. Follow-up visits also present challenges, with many programs having long wait times, being unwilling to provide medication at the intake visit, or imposing other requirements to receive buprenorphine. Matching patients to programs that meet their needs is an ongoing project that requires a dynamic understanding of the local treatment system, and some patients need additional follow-up through CareConnect while awaiting care linkage.

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Because of these hurdles, SUN services are integral to the program’s success and critical in supporting both patients and clinicians. However, SUN visits are not reimbursed in traditional fee-for-service models, and funding remains an ongoing challenge. Thus far, SUNs are paid via grants; however, we are seeking to partner with local payers to provide additional financial support or routine reimbursements for sustainability.

In addition, in a transitional program for OUD patients such as CareConnect, loss to follow-up is a challenge. We also do not always know what happens to patients. Some may engage in a higher level of care, such as inpatient treatment, or another form of OUD treatment not captured in our data, such as methadone maintenance, but some do not connect with ongoing treatment. We continue to seek to improve our retention rate and conduct routine outreach for those patients who are lost to follow-up.

Finally, CareConnect and other telehealth-based programs for OUD treatment continue to face questions about the sustainability of pandemic-era regulatory flexibilities. Although the Biden administration has signaled support for continuing virtual buprenorphine treatment,<sup>19</sup> this would



entail codifying regulatory changes at the federal level to allow for buprenorphine initiation without an in-person assessment.<sup>13</sup> With growing evidence about the safety and effectiveness of telehealth-based OUD care<sup>20</sup> and advocacy on the part of leaders in the field,<sup>21</sup> we hope this continues to be part of our toolkit of treatment strategies.

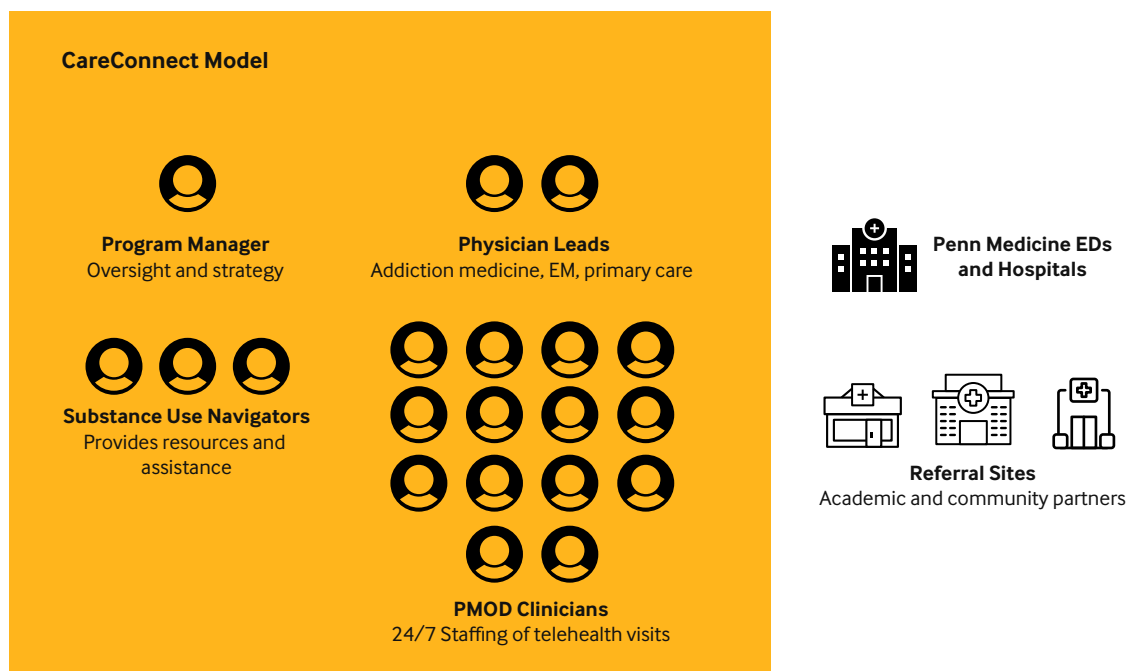
## The Team

- CareConnect Leadership: one program manager, one addiction/emergency medicine physician, and one addiction medicine/primary care physician
- SUNs: three total
- PMOD clinician team: 14 total; seven full-time NPs, four per-diem NPs, and three medical doctors, including the medical director

FIGURE 3

### CareConnect Staffing Model

CareConnect is led by one program manager (who also serves as a substance use navigator) and two specialist physician leads. There are two additional substance use navigators and 14 clinicians who provide care through Penn Medicine OnDemand (PMOD) and see CareConnect patients for buprenorphine prescriptions. Referrals are directed within the local health system and to external partners.



ED = emergency department.

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- Research evaluation team: three substance use researchers with expertise in health services and implementation research
- Community referral sites: more than 25 clinics as of September 2022, including primary care-based treatment and specialty substance use treatment (Figure 3)

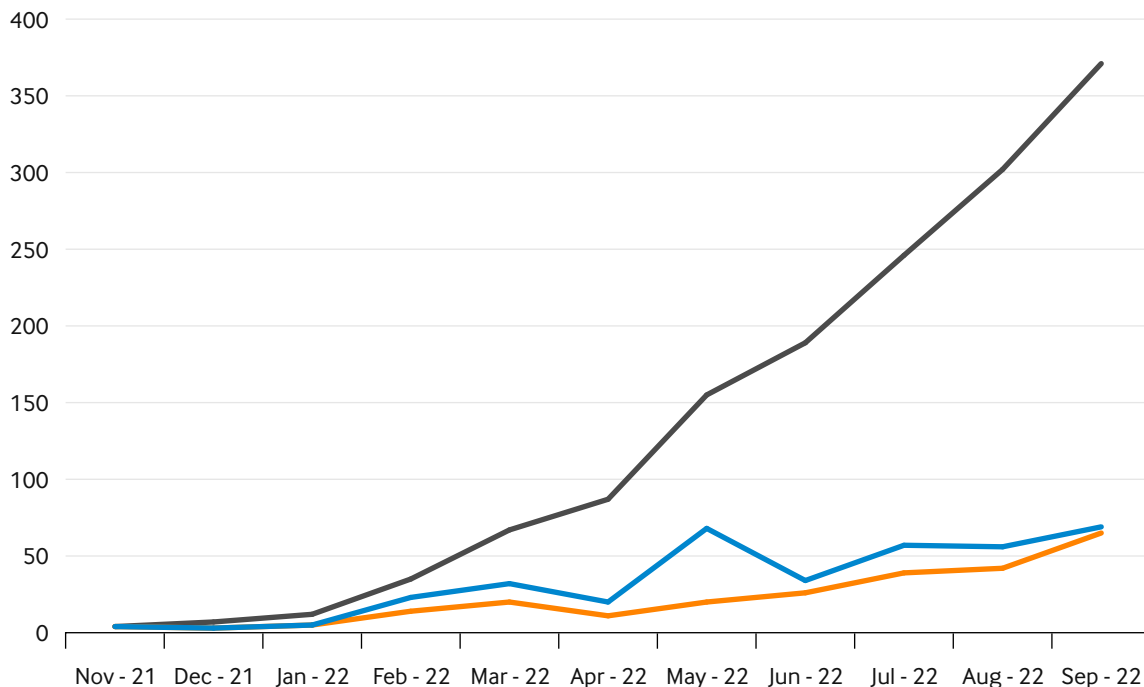
## Metrics

Since launching in November 2021, CareConnect has connected with more than 350 patients as of August 2022. We continue to assess capacity as the service grows and plan to hire additional SUNs as volume increases. Visits have increased for both total calls (n = 371) and buprenorphine prescription encounters (n = 249) during the first 11 months of the program from November 2021 through September 2022. Of the nonprescription encounters, 47% were providers seeking information, and 53% were patients or family members (Figure 4).

FIGURE 4

### CareConnect Call Volume

This graphic shows the volume of CareConnect calls by month, including cumulative calls, total monthly calls, and number of calls for buprenorphine prescriptions. Although there is some variation, month by month, the trend over time shows continued growth in utilization.



Note: the black line represents total cumulative calls, the blue line represents total monthly calls, and the orange line represents monthly prescription encounters.

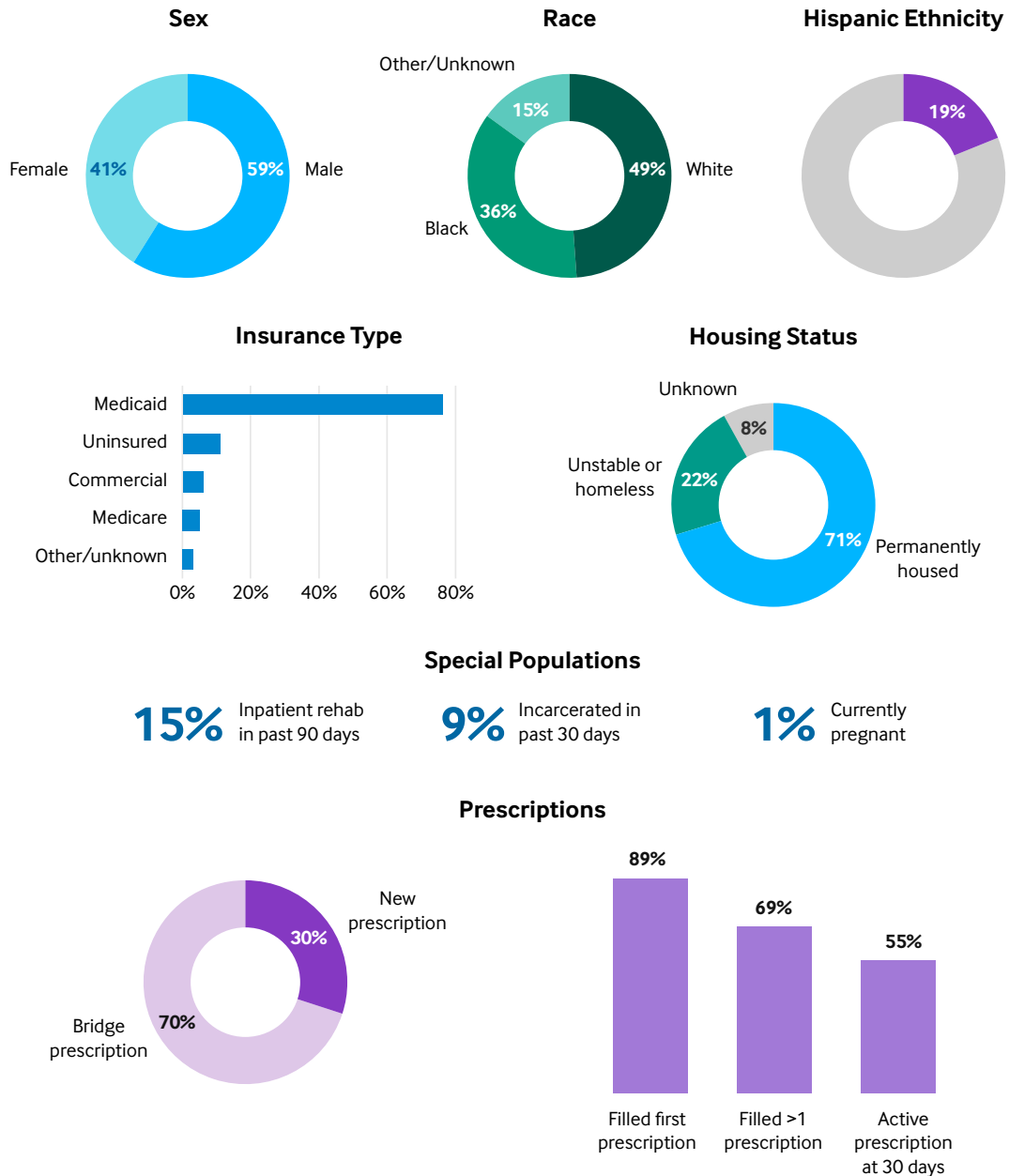
Source: The authors.

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FIGURE 5

## CareConnect Patient Characteristics and Outcomes

This graphic presents a variety of key characteristics and follow-up outcomes for patients who received a buprenorphine prescription from CareConnect from November 2021 through September 2022.



rehab = rehabilitation.

Source: The authors.

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We collect detailed information from patients receiving prescriptions (Figure 5). Our patients come from diverse racial and ethnic backgrounds, are largely insured through Medicaid or are uninsured, and represent all regions of Philadelphia and surrounding counties. The majority received bridge prescriptions, meaning a prescription for continuity of care rather than new buprenorphine initiation. Most (89%) picked up their initial prescription, 69% filled at least one additional prescription, and 55% had an active buprenorphine prescription at 30 days, according to a review of the state prescription monitoring program data. Because these numbers do not capture patients who were admitted for inpatient treatment or transitioned to methadone, they may be an underestimate of those engaged in treatment.

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Care transitions in this patient population are tenuous, as evidenced by similar linkage and retention rates in other low-threshold, transitional models of care.<sup>22-24</sup> Although CareConnect outcomes are comparable to those of other models, future work for our program will include more systematic follow-up and outreach to patients after their initial engagement.

## Where to Start

Covid-19 accelerated a shift toward telehealth buprenorphine models, which have been shown to be feasible and associated with positive outcomes.<sup>25</sup> Although others have implemented virtual buprenorphine bridge programs,<sup>26,27</sup> our program is among the first to leverage generalist clinicians in an existing urgent care infrastructure. This required modest start-up costs to hire the SUNs and brief, focused training of existing staff as opposed to models relying on specialist addiction treatment providers, who are few and far between, and often lack the infrastructure for scale. Next steps include evaluating patient outcomes on a larger scale and conducting formal interviews with clinicians and staff to provide an in-depth assessment of implementation.

Our work shows that buprenorphine telehealth prescribing can be adopted by generalist clinicians within an existing virtual urgent care. We recommend partnering with a team with the infrastructure to support documentation, billing, and prescribing medications and a willingness to learn to serve patients with OUD. Providers benefited from tailored training and support early on to build confidence. A key learning was the critical role SUNs play in supporting patients and practitioners, filling gaps, and problem solving to overcome system challenges.

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**References**

1. U.S. Centers for Disease Control and Prevention. Provisional Drug Overdose Death Counts. 2021. Updated February 9, 2022. Accessed January 2022. <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>.

2. National Academies of Sciences Engineering, and Medicine. Medications for Opioid Use Disorder Save Lives. Washington, DC: The National Academies Press, 2019. <https://doi.org/10.17226/25310>.
3. Krawczyk N, Rivera BD, Jent V, Keyes KM, Jones CM, Cerdá M. Has the treatment gap for opioid use disorder narrowed in the U.S.?: a yearly assessment from 2010 to 2019. *Int J Drug Policy*. July 19, 2022 [Online ahead of print]. <https://www.sciencedirect.com/science/article/pii/S0955395922002031> <https://doi.org/10.1016/j.drugpo.2022.103786>.
4. Mackey K, Veazie S, Anderson J, Bourne D, Peterson K. Barriers and facilitators to the use of medications for opioid use disorder: a rapid review. *J Gen Intern Med* 2020;35(Suppl 3):954-63 <https://doi.org/10.1007/s11606-020-06257-4>.
5. Jakubowski A, Fox A. Defining low-threshold buprenorphine treatment. *J Addict Med* 2020;14:95-8 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7075734> <https://doi.org/10.1097/ADM.0000000000000555>.
6. Kazerouni NJ, Irwin AN, Levander XA, et al. Pharmacy-related buprenorphine access barriers: an audit of pharmacies in counties with a high opioid overdose burden. *Drug Alcohol Depend* 2021;224:108729 <https://doi.org/10.1016/j.drugalcdep.2021.108729>.
7. Martin SA, Chiodo LM, Bosse JD, Wilson A. The next stage of buprenorphine care for opioid use disorder. *Ann Intern Med* 2018;169:628-35 <https://doi.org/10.7326/M18-1652>.
8. Roy PJ, Price R, Choi S, et al. Shorter outpatient wait-times for buprenorphine are associated with linkage to care post-hospital discharge. *Drug Alcohol Depend* 2021;224:108703 <https://doi.org/10.1016/j.drugalcdep.2021.108703>.
9. Mojtabai R, Mauro C, Wall MM, Barry CL, Olfson M. Medication treatment for opioid use disorders in substance use treatment facilities. *Health Aff (Millwood)* 2019;38:14-23 <https://doi.org/10.1377/hlthaff.2018.05162>.
10. Hawk K, Hoppe J, Ketcham E, et al. Consensus recommendations on the treatment of opioid use disorder in the emergency department. *Ann Emerg Med* 2021;78:434-42 <https://doi.org/10.1016/j.annemergmed.2021.04.023>.
11. Martin A, Butler K, Chavez T, et al. Beyond buprenorphine: models of follow-up care for opioid use disorder in the emergency department. *West J Emerg Med* 2020;21:257-63 <https://doi.org/10.5811/westjem.2020.7.46079>.
12. Krawczyk N, Fawole A, Yang J, Tofighi B. Early innovations in opioid use disorder treatment and harm reduction during the COVID-19 pandemic: a scoping review. *Addict Sci Clin Pract* 2021;16:68 <https://doi.org/10.1186/s13722-021-00275-1>.
13. Davis CS, Samuels EA. Continuing increased access to buprenorphine in the United States via telemedicine after COVID-19. *Int J Drug Policy* 2021;93:102905 <https://doi.org/10.1016/j.drugpo.2020.102905>.

14. Aronowitz SV, Engel-Rebitzer E, Dolan A, et al. Telehealth for opioid use disorder treatment in low-barrier clinic settings: an exploration of clinician and staff perspectives. *Harm Reduct J* 2021;18:119 <https://doi.org/10.1186/s12954-021-00572-7>.
15. Lowenstein M, Perrone J, Xiong RA, et al. Sustained implementation of a multicomponent strategy to increase emergency department-initiated interventions for opioid use disorder. *Ann Emerg Med* 2022;79:237-48 <https://doi.org/10.1016/j.annemergmed.2021.10.012>.
16. Mahraj K, Chaiyachati KH, Asch DA, et al. Developing a large-scale Covid-19 surveillance system to reopen campuses. *NEJM Catal Innov Care Deliv* 2021;2(6) <https://catalyst.nejm.org/doi/10.1056/CAT.21.0049>.
17. Morgan AU, Balachandran M, Do D, et al. Remote monitoring of patients with Covid-19: design, implementation, and outcomes of the first 3,000 patients in COVID Watch. *NEJM Catalyst*. July 21, 2020. Accessed October 10, 2022. <https://catalyst.nejm.org/doi/full/10.1056/CAT.20.0342>.
18. Office of the Secretary, Department of Health and Human Services. Practice Guidelines for the Administration of Buprenorphine for Treating Opioid Use Disorder. April 28, 2021. Accessed October 10, 2022. <https://www.federalregister.gov/documents/2021/04/28/2021-08961/practice-guidelines-for-the-administration-of-buprenorphine-for-treating-opioid-use-disorder>.
19. Gupta R, Levine RL, Cepeda JA, Holtgrave DR. Transforming management of opioid use disorder with universal treatment. *N Engl J Med* 2022;387:1341-4 <https://www.nejm.org/doi/full/10.1056/NEJMp2210121> <https://doi.org/10.1056/NEJMp2210121>.
20. Jones CM, Shoff C, Hodges K, et al. Receipt of telehealth services, receipt and retention of medications for opioid use disorder, and medically treated overdose among Medicare beneficiaries before and during the COVID-19 pandemic. *JAMA Psychiatry* 2022;79:981-92 <https://doi.org/10.1001/jamapsychiatry.2022.2284>.
21. Czeisler MÉ. A case for permanent adoption of expanded telehealth services and prescribing flexibilities for opioid use disorder: insights from pandemic-prompted emergency authorities. *JAMA Psychiatry* 2022;79:950-2 <https://doi.org/10.1001/jamapsychiatry.2022.2032>.
22. Carter J, Zevin B, Lum PJ. Low barrier buprenorphine treatment for persons experiencing homelessness and injecting heroin in San Francisco. *Addict Sci Clin Pract* 2019;14:20 <https://doi.org/10.1186/s13722-019-0149-1>.
23. Krawczyk N, Buresh M, Gordon MS, Blue TR, Fingerhood MI, Agus D. Expanding low-threshold buprenorphine to justice-involved individuals through mobile treatment: addressing a critical care gap. *J Subst Abuse Treat* 2019;103:1-8 <https://doi.org/10.1016/j.jsat.2019.05.002>.
24. Daniels AM, Salisbury-Afshar E, Hoffberg A, Agus D, Fingerhood MI. A novel community-based buprenorphine program: client description and initial outcomes. *J Addict Med* 2014;8:40-6 <https://doi.org/10.1097/ADM.000000000000004>.



25. Mahmoud H, Naal H, Whaibeh E, Smith A. Telehealth-based delivery of medication-assisted treatment for opioid use disorder: a critical review of recent developments. *Curr Psychiatry Rep* 2022;24:375-86 <https://doi.org/10.1007/s11920-022-01346-z>.
26. Lynch MJ, Houck P, Meyers J, Schuster J, Yealy DM. Use of a telemedicine bridge clinic to engage patients in opioid use disorder treatment. *J Addict Med* 2022;16:584-7 <https://doi.org/10.1097/ADM.0000000000000967>.
27. Clark SA, Davis C, Wightman RS, et al. Using telehealth to improve buprenorphine access during and after COVID-19: a rapid response initiative in Rhode Island. *J Subst Abuse Treat* 2021;124:108283 <https://doi.org/10.1016/j.jsat.2021.108283>.