Title

An observational study of the extent of naloxone furnishing in California Central Valley community pharmacies

Journal

Journal of the American Pharmacists Association, 63(2)

ISSN

1544-3191

Authors

Banawis, Micah
Mah, Gordon
Mohsin, Rania
et al.

Publication Date

2023-03-01

DOI

10.1016/j.japh.2022.10.028

Journal of the American Pharmacists Association xxx (2022)

Contents lists available at ScienceDirect

Journal of the American Pharmacists Association

journal homepage: www.japha.org

RESEARCH

An observational study of the extent of naloxone furnishing in California Central Valley community pharmacies

Micah Banawis, Gordon Mah, Rania Mohsin, Jethro Pobre, Darrin Tracy, Anna V. Song, Dorie E. Apollonio*

ARTICLE INFO

Article history:
Received 25 August 2022
Accepted 30 October 2022

ABSTRACT

Background: California has sought to expand medication access and improve public health by authorizing pharmacists in California to prescribe certain medications since 2014. Medications with pharmacist-initiated prescribing, or furnishing, include naloxone, hormonal contraception, postexposure prophylaxis/preexposure prophylaxis, and nicotine replacement therapy. In light of the United States' opioid epidemic, naloxone, an opioid antagonist, this study considered furnishing rates in urban areas of California. Research from 2020 found 42.5% of pharmacies furnished naloxone. However, there has been limited study of furnishing outside of urban areas.

Objective: This study assessed pharmacist furnishing rates of naloxone in California's Central Valley and identified barriers and facilitators to implementation.

Methods: From April to May 2022, the researchers first conducted a cross-sectional, observational study of community and mail-order pharmacies in California's largely rural Central Valley, then collected interview data from a subset of pharmacists in stores that indicated they furnished naloxone.

Results: Forty-three percent of Central Valley pharmacies reported that they furnished naloxone. Interview respondents reported that barriers to furnishing included time restrictions, cost to patients, stigma, and language barriers.

Conclusions: Furnishing rates in the Central Valley were slightly higher (43.4%) than those reported in previous research focusing on urban areas of California (42.5%). Identified barriers to furnishing were consistent with those identified in previous research. These findings suggest that further policy interventions may be needed to reduce out-of-pocket costs, establish stronger pharmacist-provider relationships, and provide education combatting stigma against opioid users to increase naloxone furnishing.

Health professional shortage areas (HPSAs) are communities identified by the U.S. Human Resources and Services Administration in which there is a shortage of primary care health professionals.[1] These shortages are accompanied by an absence of a consistent source of care, difficulty accessing care when needed, and a lack of outpatient preventative care, leading to increased hospitalizations.[1-4] Multiple interventions have been attempted to increase access to care in HPSAs, including increased use of nonphysician providers. During the opioid epidemic, increasing access to naloxone furnishing has been viewed as critical in rural areas where opioid misuse is disproportionately high, including California's Central Valley.[5-7]

In the United States, pharmacists at community pharmacies are one of the most accessible points of care, with 90% of Americans living within 5 miles of a pharmacy.[8] People seeking care have expressed interest in services at pharmacies not only because of ease of accessibility but also the availability of multilingual staff and extended hours that make it possible to access care on evenings and weekends.[9] Previous studies have also shown that pharmacy-based care can extend

Disclosure: The author/The authors declares/declare no relevant conflicts of interest or financial relationships.

Funding: California Tobacco-Related Disease Research Program #28PC-0044 (Song)

Previous presentations of the work: There are no previous presentations to report.

Twitter handle for promotional purposes: @CalNcpc.

* **Correspondence:** Dorie E. Apollonio, PhD, MPP, Department of Clinical Pharmacy, University of California San Francisco, 530 Parnassus Avenue, Suite 366, San Francisco, CA 94143.

E-mail address: dorie.apollonio@ucsf.edu (D.E. Apollonio).

https://doi.org/10.1016/j.japh.2022.10.028

Key Points

Background:

- California instituted pharmacist prescribing of certain medications, including naloxone, a process known as furnishing, to increase access.
- In urban areas of California, naloxone furnishing rates have increased over time to over 42% of pharmacies.
- Rural areas of California have high rates of opioid overdoses that make increasing access to naloxone critical to improving public health.

Findings:

- Despite concerns about potentially low rates of medication access in rural areas such as California's Central Valley, over 43% of pharmacies in this region furnished naloxone.
- Barriers to furnishing identified in past research, including cost to purchasers, limited time available to pharmacists, and perceived stigma, were also identified as barriers to furnishing in this research.
- Further policy interventions may be needed to increase naloxone access in high-need rural areas such as California's Central Valley.

services for patients in medically underserved rural areas to reduce inappropriate prescribing, improve disease management, and enhance medication adherence and knowledge.[10] In 2013, the California legislature passed SB 493, known as the Pharmacy Practice Bill, which expanded the role of pharmacists by giving them authority to furnish naloxone, hormonal contraception, nicotine replacement therapy, and travel medications, specifically prescription drugs and immunizations that are recommended by the Centers for Disease Control and Prevention to prevent or treat disease when travelling outside of the United States.[11] California uses the term "furnish" to describe pharmacist-initiated prescription of medications.[12] Expansion of pharmacist furnishing capabilities provides access to those in need, including people who use opioids.[13-18]

Past studies have sought to determine rates of pharmacist furnishing given its potential impact on access to care. However, these studies have focused on urban areas; 2 previous studies of pharmacist furnishing of naloxone in California sampled primarily urban pharmacies (98% and 99%, respectively); 3 previous studies on naloxone, hormonal contraception, and postexposure prophylaxis/preexposure prophylaxis furnishing were conducted in the San Francisco Bay Area only.[5,19-22] As of the date of this study, there has been no prior research assessing furnishing rates in California's Central Valley, a largely rural area, with a shortage of primary care physicians.[23] However, understanding furnishing in these communities and those like it, particularly for naloxone, is critical given the disproportionate impact of the opioid epidemic in rural communities. For example, the age-adjusted rate of opioid-related overdose deaths in Fresno, one of the Central Valley's largest counties, increased by 46%, from 48.6 per 100,000 residents in 2019 to 71 per 100,000 residents in 2020.[24,25]

This study sought to address this existing gap in research by assessing the extent of pharmacist furnishing, with a focus on naloxone, in the Central Valley. Research focused on the Central Valley due to the high potential impact of furnishing to increase access to care. It first assessed the extent of naloxone furnishing through a phone survey, then identified barriers and facilitators to implementation through interviews with a subset of furnishing pharmacists identified in the phone survey. We expected that rates of naloxone furnishing would be lower in disproportionately rural Central Valley pharmacies than in urban pharmacies evaluated in previous research, given the effects of high out-of-pocket costs in an area where people have lower incomes and social stigma surrounding opioid use disorders in more politically conservative communities.[22,25,26]

Methods

This study proceeded in 2 steps. The first step was an observational, cross-sectional telephone survey of community and mail-order pharmacies in California's 11-county Central Valley that identified which pharmacies in the region furnished naloxone. The second step involved case study interviews with a subset of furnishing pharmacists in the region, identified from the telephone survey, to identify barriers and facilitators to furnishing. Data collection was completed in April—May 2022. The study was approved by the Institutional Review Board (#21-35317) of the University of California, San Francisco, in February 2022.

Setting and sample

Pharmacies were identified in the Central Valley using the California Department of Consumer Affairs Board of Pharmacy database of active licenses for the 11 counties included in the Central Valley region: Calaveras, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tulare, and Tuolumne.[27] Pharmacies that would be unable to order or furnish naloxone because they did not interact with human patients or did not serve a population that would use naloxone were excluded (e.g., veterinary pharmacies, pediatric pharmacies, nuclear pharmacies, compounding-only pharmacies).

Data collection

The first step of data collection was a telephone survey of all pharmacies with the potential to furnish naloxone in the Central Valley, to identify overall furnishing rates. Four authors who were PharmD students, in collaboration with undergraduate researchers at the University of California Merced Nicotine & Cannabis Policy Center (UC Merced NCPC), first contacted all pharmacies that met inclusion criteria (independent and retail pharmacies that could potentially furnish naloxone) using the telephone number listed in the Board of Pharmacy license database. Using an existing screening question from previously published research on naloxone furnishing, upon initial contact an interviewer posed the question, "I heard that you can get naloxone from a pharmacy without a prescription from your

doctor. Can I do that at your pharmacy?"[19,20] Contact with each pharmacy was attempted up to 3 times.

To identify potential interview contacts in the second step of data collection, interviews of furnishing pharmacists, each person at a pharmacy who that indicated it furnished naloxone was asked whether a furnishing pharmacist at the store would be interested in being interviewed for the study. If a pharmacist expressed interest, they received a cover letter, consent forms to sign by email or fax, and a list of interview questions. Researchers scheduled a time to interview after receiving this written consent. Pharmacies that did not furnish naloxone were not asked for interviews on the grounds that they would be unable to identify facilitators to furnishing naloxone at their store.

Measures

Participants were interviewed in a semistructured manner using an interview instrument used in previously published research to study furnishing of other medications and modified to address naloxone (see Supplement for the instrument).[5,21,22] This instrument included a list of questions, however each interview was conducted in a semi-structured format that allowed for a natural flow of discussion and gave participants opportunities provide additional information that may not have been specifically addressed in the prepared questions.[21]

Topics included the following: (1) characteristics of the pharmacy and staff (e.g., number of years since degree, postgraduate training, years of practice, and gender of participants; the number of pharmacists and technicians for the pharmacy); (2) description of the furnishing process; (3) perceptions regarding the effectiveness, advantages, disadvantages, facilitators, and barriers to furnishing; (4) whether respondents also furnished other medications; and (5) recommendations for reproducibility or improvement. Participants were interviewed via video (Zoom) or audio call except in one case, where responses were collected by e-mail. With permission, calls were recorded and transcribed. The interviewers took additional notes during and after the interview.

Analysis

The analysis began with calculation of descriptive statistics, including the percentage of pharmacies that furnished naloxone identified in the telephone survey. For interviews with the subset of naloxone furnishing pharmacists, descriptive analysis summarized the extent of furnishing for medications other than naloxone. Transcripts of each interview conducted, as well e-mail responses, were uploaded to Atlas.ti software for qualitative data analysis and deidentified by numbering each interview. Beginning with codes developed from past research on furnishing practices as a preliminary guide, as well as inductive methods to identify potential novel concepts, the investigators developed a codebook classifying statements as referring to barriers or facilitators, then further subdivided them by type in Atlas.ti. Complete sentences were the minimum unit of analysis coded in the transcripts to identify common themes.[5,19-22,28] To ensure validity and consistency across interviews and coding, each interview was conducted by a minimum of 2 researchers, and coding was completed simultaneously by all of the researchers who had conducted interviews. Disagreements were resolved by discussion until the group reached consensus. Transcripts, findings, and key quotations used to illustrate them were summarized in drafts circulated to the entire research team. Findings were triangulated based on reviews of previous studies of furnishing. Only findings identified as relevant by the group were included in the final analysis.

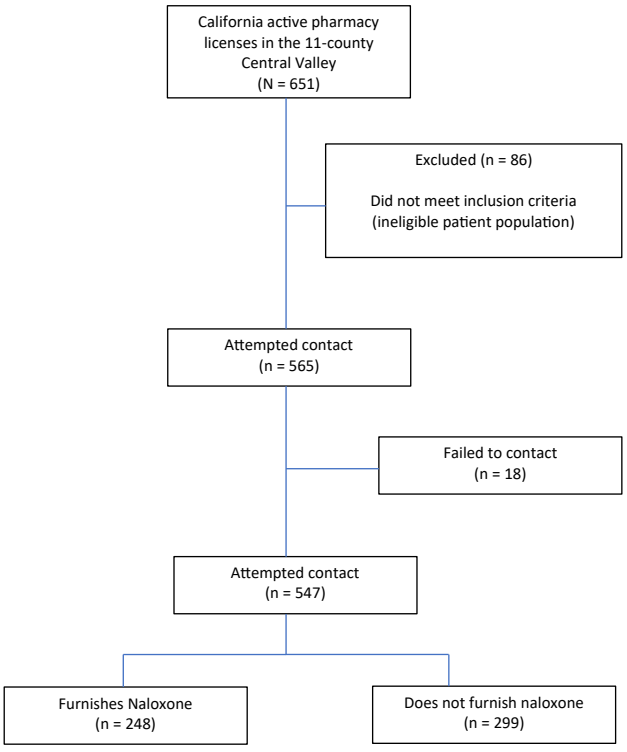

Figure 1. Flow diagram of data collection. Source: Data collected by the authors.

Results

Furnishing rates in the Central Valley (telephone survey)

The initial data collection step involved a telephone survey from the 651 total pharmacies identified in the Central Valley. Of these, 86 were excluded prior to data collection because they did not serve a population that would be prescribed naloxone (e.g., veterinary pharmacies). Of the 565 pharmacies that could potentially furnish naloxone in the region, we successfully contacted 547 after 3 call attempts. Of the 547 pharmacies contacted, 248 (43.4%) reported that they furnished naloxone, while 299 (56.6%) reported that they did not. A flow diagram of these results is provided in Figure 1.

The 11 Central Valley counties varied by population and location; the 8 counties of the San Joaquin Valley (Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare) had populations ranging from 153,000 to over a million, while the eastern counties of the Sierras (Calaveras, Mariposa, Tuolumne) had populations ranging from 17,000 to 56,000, as shown in Table 1. Counties with smaller populations supported fewer pharmacies and fewer furnishing pharmacies. Only 1

Table 1
Population, number of pharmacies, and naloxone furnishing rates by county

County	Populatio n (% of total Central Valley population)	Number of pharmacies (% of total number of pharmacies)	Number of furnishing pharmacies (% of 547 successfully contacted pharmacies)	% Of furnishing pharmacies in the county	Average number of county residents served by furnishing pharmacy
Calaveras	46,221 (1)	6 (1)	3 (1)	50	15,407
Fresno	1,013,581 (23)	141 (25)	52 (9)	37	19,491
Kern	917,673 (21)	129 (23)	61 (11)	47	15,043
Kings	153,443 (3)	17 (3)	9 (2)	53	17,049
Madera	159,410 (4)	19 (3)	6 (1)	32	26,568
Mariposa	17,147 (0.4)	2 (0.4)	0 (0)	0	-
Merced	286,461 (6)	36 (6)	15 (3)	42	19,097
San Joaquin	789,410 (18)	79 (14)	37 (7)	47	21,335
Stanislaus	552,999 (12)	70 (12)	28 (5)	40	19,750
Tulare	477,054 (11)	62 (11)	34 (6)	55	14,031
Tuolumne	55,810 (1)	10 (2)	3 (1)	30	18,603
Total	4,469,209	571	248	43.4	18,021

Sources: American Community Survey, California Board of Pharmacy, and data collected by the authors.

county, Mariposa (which encompasses a large portion of Yosemite National Park), had no pharmacies that furnished naloxone; in the remaining 10 counties, the share of pharmacies that furnished naloxone ranged between 30% and 54.8%. The overall share of furnishing pharmacies throughout the Central Valley was 43.4%. As a measure of potential access, we also calculated the number of county residents per furnishing pharmacy (excluding Mariposa, where no pharmacies furnished naloxone), determining that each furnishing pharmacy served between 14,000 and 21,300 residents.

Barriers and facilitators to furnishing in the Central Valley (interviews)

The second step of data collection was interviewing furnishing pharmacists in the region for interviews about barriers and facilitators to furnishing. Among the contacted pharmacies that furnished naloxone, 8 furnishing pharmacists agreed to be interviewed. The stores where these pharmacists worked represented 5 of the 11 counties in the Central Valley (Calaveras, Fresno, Kern [3], Merced, and San Joaquin [2]). Of these, 5 were associated with a chain pharmacy, while the remaining 3 were independent. Although previous research on furnishing rates is limited, it suggests that naloxone furnishing is more common than furnishing of other medications.[5,19-22] Interview participants were asked whether they also furnished other medications; as some of the factors that discourage or encourage furnishing may be consistent across medications. Six respondents indicated that the stores where they worked also furnished hormonal contraception, 3 respondents that their stores also furnished nicotine replacement therapy , and 1 that their store also furnished preexposure prophylaxis/postexposure prophylaxis. Respondents indicated that the pharmacies where they worked filled between 250 and 1000 prescriptions per day, averaging approximately 500. The time that respondents had held their positions ranged from 5 months to 20 years, and none had completed a residency. Results are provided in Table 2.

With respect to barriers to furnishing, all interview participants listed cost to patients as the primary barrier. They noted that insurance did not necessarily cover naloxone, and when it did not, patients would not purchase it. As one stated, “The biggest barrier to this is first of all money. If it’s zero copay, they probably will take it. If there’s any copay, they’re just normally not going to pay for it.” (Respondent 1).

Other barriers to furnishing included time, cost, stigma, and lack of a shared language. Reported heavy workloads and a lack of dedicated time to integrate naloxone screening into the pharmacy workflow was cited by 6 of 8 respondents as making it difficult to prioritize furnishing naloxone. One respondent noted, “It's really time. We don't really have time here to initiate for those implementing naloxone […] unless patients request it.” (Respondent 4). With respect to stigma, 5 respondents stated that it was difficult to suggest supplying naloxone to patients due to its association with drug abuse. They indicated that patients perceived offers of naloxone as accusations of opioid abuse. One stated, “[T]here's always like that lash back from a patient, like oh, I don't need it because I'm not abusing it. That's the common phrase.” (Respondent 5). Lastly, one respondent reported that the absence of a shared language was a barrier due to lack of understanding and miscommunication, noting that, “[W]e have to get a translator to […] communicate with the patients. Maybe the patient's not understanding correctly even [as] it’s being translated.” (Respondent 1). Examples of responses regarding barriers to furnishing are shown in Table 3.

Although California Assembly Bill No. 2760, which passed in 2018, required medical prescribers to offer a naloxone or equivalent prescription to populations at higher risk of opioid overdose, out-of-pocket costs to the uninsured in the United rose 500 percent from 2014 to 2018 for certain brands of naloxone.[29,30] Generic naloxone has an average wholesale price of $64.80-$75.00.[31] Participants believed that reducing out-of-pocket costs could increase naloxone purchase and use. A chain community pharmacist stated that they went “out of their way to try to find GoodRx discount cards to help bring down the price for patients.” (Respondent 5) and that doing so reduced patient reluctance to purchase naloxone. Similarly, an independent community pharmacist suggested that “lower [ing] restrictions and mak[ing] it OTC [over the counter]” (Respondent 7) would increase the likelihood of visitors purchasing naloxone.

Participants were also asked to identify facilitators to furnishing. Responses included collaborating with other health professionals, closer proximity to pain clinics, expanded scope of pharmacy practice in California, supportive corporate

Table 2
Characteristics of pharmacy and pharmacy staff

Respondents	County	Independent or chain pharmacy	No. of years in current position at pharmacy	Job title	Residency completed (Y or N)	Store size (per shift)	No. of prescriptions per day	Furnishes NRT (Y or N)	Furnishes HC (Y or N)	Furnishes PEP/PrEP (Y or N)
Respondent 1	Kern	Independent	2 y	PIC	N	3P, 5T	700	N	Y	N
Respondent 2	Calaveras	Chain	7 y	Pharmacy Manager	N	2P, 4T	300-400	N	Y	N
Respondent 3	Merced	Chain	3 y	Staff pharmacist	N	3P, 5T	700-800	Y	Y	N
Respondent 4	Kern	Chain	3 y	Pharmacy Manager	N	3P, 8T	1000	Y	Y	N
Respondent 5	San Joaquin	Chain	5 mo	Pharmacy Manager	N	1P, 2T, 1C	250-300	N	N	N
Respondent 6	Fresno	Independent	7 y	Pharmacist and Co-Owner of pharmacy	N	3P, 5T	120	N	Y	N
Respondent 7	San Joaquin	Independent	20 y	PIC	N	2P, 3T	400-600	Y	Y	Y
Respondent 8	Kern	Chain	3 y	Staff pharmacist	N	2P, 3T	250	N	N	N

Abbreviations used: HC, hormonal contraception; NRT, nicotine replacement therapy; P, pharmacists; PEP, postexposure prophylaxis; PIC, pharmacist-in-charge; PrEP, pre-exposure prophylaxis; T, technicians; Y or N, yes or no.

policies, education and training on naloxone furnishing, and higher demand for naloxone. With respect to collaboration, 2 respondents stated that closer proximity to pain clinics increased the likelihood of pharmacies furnishing naloxone. One pharmacist stated that, "some pharmacies are located in regions [with] higher potential [of] abuse …that can also drive up having … more Naloxone in that location." (Respondent 5). One pharmacist indicated that demand was higher in their region, stating that, "people started asking for it. We dispensed it" (Respondent 7). Additional examples of responses regarding facilitators to furnishing are provided in Table 4.

Discussion

Since 2013, California has sought to expand access to care by authorizing pharmacists to furnish medications. Implementing naloxone furnishing by pharmacists in particular provides a potential opportunity to reduce opioid overdoses. These services are especially critical in rural areas like California's Central Valley that have been disproportionately impacted by the opioid epidemic.[25,26] We were unable to identify any prior studies that assessed the extent of pharmacist furnishing in rural, HPSAs such as the Central Valley, and our findings suggest that contrary to initial expectations, almost half (43.4%) of contacted pharmacies, including some mail-order pharmacies, furnished naloxone in the Central Valley. In contrast, a study of primarily urban pharmacies in California conducted in 2020 found that 42.4% furnished naloxone.[20]

Interviews with pharmacists who furnished naloxone suggested that pharmacies continued to face barriers to successful implementation, many of which have been identified in previous research. These included time restrictions, high out-of-pocket costs for purchasers, stigma associated with opioid use, and in 1 case, language barriers. All respondents indicated that out-of-pocket costs were the most critical barrier and that prices varied depending on insurance coverage; this finding is consistent with prior research.[32]

The findings regarding stigma as a barrier to offering and accepting naloxone are also consistent with previous research. This includes a study involving pharmacy students in Tennessee and their perceptions of naloxone use and opioid use disorder patients, which found that although pharmacy students are capable of and predisposed to furnish naloxone, successful furnishing is complicated by limited patient awareness and stigma, specifically the perception that naloxone is for "addicts" only.[7,33] Another study examining undergraduates' reactions to fictional vignettes about people with opioid use disorder found addiction was attributed to the opioid user's character and varied by an user's socioeconomic status.[34] Studies examining perceptions of take-home naloxone conducted with both healthcare providers and opioid users have found that stigma influences both parties when providing education and seeking out information about naloxone and overdose prevention, respectively.[35,36] These studies suggest that further interventions in pharmacy education to combat stigma against naloxone use and opioid use disorder might help facilitate increasing naloxone furnishing rates.

Strengths and limitations

Limitations to this study include generalizability, variable effects of coronavirus disease 2019, and self-reporting bias. The analysis only considered the 11 counties in the Central Valley, which may limit extrapolation outside of this region. The sample also did not include interview data from pharmacies that furnished but chose not to participate, which may have resulted in a biased sample. Another limitation is that this study was conducted 2 years after the most recent comparison study of naloxone furnishing in California. As a result, the higher furnishing rates observed in this study may have reflected a time trend or effect of the coronavirus disease 2019 pandemic, such as difficulty securing appointments with physicians encouraging use of pharmacy services, rather than a difference in prevalence.[19,37] Interview data were self-

Table 3
Factors identified as barriers to furnishing naloxone

Key elements	Example quotes
Cost to patient (8 of 8 respondents)	- "A lot of times they don't want to pay the cost of the medication […] if I remember correctly, it's about $90 or so, roughly for the Narcan. So, a lot of times they don't want to pay for it, if the insurance doesn't cover it and if it's expensive" (respondent 2)
	- "The patient's co-pay, it just depends on their insurance. Like I said, most insurance covers it. But some patients will have a high co-pay for their Medicare. I've seen it over $40." (respondent 4)
	- "A lot of patients don't tend to pick it up, they don't take the medication because it is a high co-payment, and they just feel like, oh, this a just in case kind of a drug. It's an emergency drug. I don't necessarily need it, like I would be like the blood pressure medication or diabetic's medication, you know? […] so, a lot of patients are like kind of encouraged, but at the same time, they just feel like, oh, well, I've been on this drug for like almost a year and nothing has happened. Why am I going to pay $56 or something like that, you know, for this medication which I may never use?" (respondent 5)
Time Restrictions (6 of 8 respondents)	- "A lot of pharmacists feel like having that extra work […] there's not enough incentives for the pharmacists to go through the training and to be certified because they feel like it's additional time away from other jobs they already have to do, and they […] feel overburdened, that there's not enough help, there's not enough hours, and then there's not enough pay for pharmacists to be doing this as well now." (respondent 5)
	- "We had multiple different systems to go through, which were a little complicated to be able to process, because it is a time-consuming process to be able to do in the pharmacy, while being able to take care of the patients." (respondent 2)
	- "Labor really, the time it takes to explain how to use and when to use. All insurance companies reimburse really the ingredient cost, not the time it takes to explain how to use and when to use. However, we eat the labor cost so the patients can benefit from having this." (respondent 7)
Stigma (5 of 8 respondents)	- "A lot of patients, in their minds, they feel like having a Narcan […] is like a pharmacist or a prescriber is accusing me of abusing a drug, which they may not be. But that is a hard point to get through to a patient until you have a deeper discussion of why this is important" (respondent 5)
	- "That's a barrier in itself because they feel they don't need it, so we do see people that don't want to take it. Yeah, always like the topic of addiction and, opioid overdoses are pretty like difficult topic to kind of communicate to patients." (respondent 1)
Language (1 of 8 respondents)	- "Whether or not the patient can understand you well […] I have to step back a minute our pharmacy is an area of California that has a lot of migrants, Hispanic workers, and it's a barrier itself" (respondent 1)

Table 4
Factors identified as facilitators to furnishing naloxone

Key elements	Example quotes
Collaboration with healthcare providers	"The local doctors have been pretty happy with us looking after their pain management patients. Doctors like it, they feel like we're watching out for our patients." (respondent 7)
Proximity to pain clinics	"We have pain clinics in the area, so we decided to pursue the naloxone program at our store, so we got that set up here. Recently, this year, most of the doctors in the area have started sending out prescriptions for Narcan for new patients. So, a lot of the doctors are on the same page as pharmacist making sure a patient has something as a resource […] for accidental overdoses, whether it's just overdose on medication or from interaction with other medications" (respondent 2)
California state law	"California is very strict about a lot of things and they're very good with their policy and regulations […] that did kind of help CVS shape this [naloxone furnishing] program… California law has helped kind of give direction to a lot of retail pharmacies in what they can do to kind of protect patients." (respondent 5)
Corporate policy	"[Having] systemized…. Paperwork to keep track of it… when we type the prescriptions… like our brith controls process" (respondent 2)
Education/Training	"Encourage… all pharmacist to get [naloxone furnishing] training done" (respondent 6)
Demand/need for opioid antagonist	"Family member was concerned about their mother being on… opioids, and …'wanted to have it for [themselves]' just in case" (respondent 5)

reported and may have reflected social desirability bias or human error. One interview was done through e-mail, rather than a phone call, which limited the ability to probe for clarification and additional detail. Pharmacies that did not furnish naloxone were not included in interviews on the grounds that they would be unable to provide information on facilitators to naloxone furnishing; future studies could investigate if these pharmacies furnish other medications. Additional research could also address potential differences in furnishing practices between independent and chain pharmacies, as well as furnishing rates for other medications in this region. Irrespective of these limitations, the findings provide new information regarding pharmacist furnishing in HPSAs, barriers that prevent the widespread provision of naloxone, and potential strategies that may help overcome those barriers.

Conclusions

In 2013, California authorized pharmacists to furnish naloxone with the goal of increasing access and reducing opioid overdose deaths. Although furnishing rates appear to have been increasing over time, access to naloxone through successful implementation of furnishing in community pharmacies has been inconsistent. Findings from this research suggest that access could be improved by adequately staffing for workload to allow for furnishing, requiring standardized reimbursement rates by insurance companies, and lowering out-of-pocket costs for people purchasing naloxone without insurance. On a societal scale, additional education in pharmacy school curricula focused on destigmatizing opioid use disorder might also facilitate successful furnishing. Overall, pharmacist

furnishing in California appears to have improved access to naloxone for populations at risk of opioid overdose and death, including in high-need areas such as the Central Valley; however, further interventions are likely needed to address the remaining barriers faced by community pharmacists.

Acknowledgments

The authors acknowledge the pharmacists who volunteered to interview for our study. We also acknowledge the research team at UC Merced Nicotine and Cannabis Policy Center including Josefina Ortiz, Tania Marquez, Jimena Angel, Rosemelly Medal, Jaquelin Marquez, Itzel Perez, and Stephanie Lopez for their assistance in initial pharmacy contact.

Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.japh.2022.10.028.

References

1. Liu JJ. Health professional shortage and health status and health care access. *J Health Care Poor Underserved*. 2007;18:590–598.
2. Dashputre AA, Surbhi S, Podila Pradeep SB, Shuvo SA, Bailey JE. Can primary care access reduce health care utilization for patients with obesity-associated chronic conditions in medically underserved areas? *J Eval Clin Prac*. 2020;26(6):1689–1698.
3. Parchman ML, Culler SD. preventable hospitalizations in primary care shortage areas: an analysis of vulnerable medicare beneficiaries. *Arch Fam Med*. 1999;8(6):487–491.
4. Allen NB, Diez-Roux A, Liu K, Bertoni AG, Szklo M, Daviglus M. Association of health professional shortage areas and cardiovascular risk factor prevalence, awareness, and control in the multi-ethnic study of atherosclerosis (MESA). *Circ Cardiovasc Qual Outcomes*. 2011;4(5):565–572.
5. Nguyen AM, Kearney TE, Apollonio DE. Evaluation of naloxone furnishing community pharmacies in San Francisco. *J Am Pharm Assoc (2003)*. 2020;60(6):1050–1057.
6. Flaherty MT, Stuby P, Kose W. Addressing the opioid epidemic in rural America. *Psychiatr Serv*. 2018;69:1114.
7. Cernasev A, Veve MP, Talbott T, Hall EA, Hohmeier KC. Pharmacy students' perceptions and stigma surrounding naloxone use in patients with opioid use disorder: a mixed methods evaluation. *Pharmacy*. 2020;8:205.
8. Heaton PC, Altstadter B, Hogea C, Poston S, Ghaswalla P. The impact of community pharmacy utilization of immunization information systems on vaccination rates: results of a clustered randomized controlled trial. *J Am Pharm Assoc (2003)*. 2022;62(1):95–103.e2.
9. Barber JS, Ela E, Gatny H, et al. Contraceptive desert? Black-White differences in characteristics of nearby pharmacies. *J Racial Ethnic Health Disparities*. 2019;6(4):719–732.
10. Taylor CT, Byrd DC, Krueger K. Improving primary care in rural alabama with a pharmacy initiative. *Am J Health Pharm*. 2003;60(11):1123–1129.
11. Senate Bill 493 (SB 493): California's pharmacist provider status bill (SB 493) passed the state assembly in a unanimous vote on September 11, 2013. The state Senate gave its final approval on September 12, 2013. Gov. Jerry Brown of California signed the bill into law on October 1, 2013. See California Legislative Information on act to amend California business and professions code and full text for SB 493. Available at: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB493. Accessed November 30, 2021.
12. 2009 California business and professions code—section 4015–4045: article 2. Available at: https://law.justia.com/codes/california/2009/bpc/4015-4045.html. Accessed December 5, 2021.
13. CCR § 1746.3. Protocol for pharmacists furnishing naloxone Hydrochloride. See (Effective January 27, 2016); Cal. Bus. & Prof. Code § 4052.01. Available at: http://www.pharmacy.ca.gov/laws_regs/1746_3_ooa.pdf. Accessed December 5, 2021.
14. 2022 Lawbook for Pharmacy § 1746.5. Protocol for pharmacists furnishing naloxone Hydrochloride. Cal. Bus. & Prof. Code § 4052.01. Available at: https://www.pharmacy.ca.gov/laws_regs/pharmacy_lawbook.shtml. Accessed December 1, 2022.
15. 2022 Lawbook for Pharmacy § 4052.8. Cal. Bus & Prof Code § 4052.8. Initiation and Administration of Vaccines. Available at: https://www.pharmacy.ca.gov/laws_regs/pharmacy_lawbook.shtml. Accessed December 1, 2022.
16. 2022 Lawbook for Pharmacy § 4052.3 *Emergency Contraception Drug Therapy*. Available at: https://www.pharmacy.ca.gov/laws_regs/pharmacy_lawbook.shtml. Accessed December 1, 2022.
17. CCR §1746.2 protocol for pharmacists furnishing nicotine replacement products; (effective December 5, 2021), for protocol. Available at: http://www.pharmacy.ca.gov/publications/nicotine_protocol.pdf. Accessed May 21, 2017.
18. Senate Bill 159 (SB-159): HIV: preexposure and postexposure prophylaxis. Available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB159. Accessed December 5, 2021.
19. Puzantian T, Gasper JJ, Ramirez CM. Pharmacist furnishing of naloxone in California: a follow-up analysis. *J Am Pharm Assoc (2003)*. 2021;61(5):e108–e112.
20. Puzantian T, Gasper JJ. Provision of naloxone without a prescription by California pharmacists 2 years after legislation implementation. *JAMA*. 2018;320(18):1933–1934.
21. Chen L, Lim J, Jeong A, Apollonio DE. Implementation of hormonal contraceptive furnishing in San Francisco community pharmacies. *J Am Pharm Assoc (2003)*. 2020;60(6):963–968.
22. Bellman R, Mohebbi S, Nobahar N, parizher J, Apollonio DE. An observational survey assessing the extent of PrEP and PEP furnishing in San Francisco Bay area pharmacies. *J Am Pharm Assoc (2003)*. 2022;62(1):370–377.
23. Esqueda H. "In California's rural cent ral valley, access to care is a growing challenge." Center for Health Journalism. Available at: https://centerforhealthjournalism.org/2016/02/29/california%E2%80%99s-rural-central-valley-access-care-growing-challenge. Accessed December 1, 2022.
24. "Welcome to the California overdose surveillance dashboard." CA overdose Dashboard. Available at: https://skylab.cdph.ca.gov/ODdash/; 2022. Accessed December 1, 2022.
25. Hedegaard H. "Products - data Briefs - number 403 - March 2021." CDC, CDC. Available at: https://www.cdc.gov/nchs/products/databriefs/db403.htm. Accessed March 17, 2021.
26. "Rural America in crisis: the changing opioid overdose epidemic." CDC, CDC. Available at: https://blogs.cdc.gov/publichealthmatters/2017/11/opioids/?platform=hootsuite; 2017. Accessed December 1, 2021.
27. NCPC Catchment Area. NCPC Catchment Area | Nicotine & Cannabis Policy Center. (n.d.). Available at: https://ncpc.ucmerced.edu/about/ncpc-catchment-area. Accessed January 5, 2022.
28. Chun TY, Birks M, Francis K. Grounded theory research: a design framework for novice researchers. *SAGE Open Med*. 2019;7, 2050312118822927.
29. Bill text - AB-2760 prescription drugs: prescribers: naloxone hydrochloride and other FDA-approved drugs. Available at: leginfo.legislature.ca.gov. Accessed January 23, 2022.
30. Peet ED, Powell D, Pacula RL. Trends in out-of-pocket costs for naloxone by drug brand and payer in the US, 2010-2018. *JAMA Health Forum*. 2022;3(8), e222663.
31. Lexicomp online, Lexi-drugs. Waltham, MA: UpToDate Inc. Available at: https://online.lexi.com; 2022. Accessed October 23, 2022.
32. Spivey CA, Wilder A, Chisholm-Burns MA, Stallworth S, James W. Evaluation of naloxone access, pricing, and barriers to dispensing in tennessee retail community pharmacies. *J Am Pharm Assoc (2003)*. 2020;60(5):694–701.
33. Adeosun SO. Stigma by association: to what extent is the attitude toward naloxone affected by the stigma of opioid use disorder? *J Pharm Prac*. 2022, 8971900221097173. https://doi.org/10.1177/08971900221097173.
34. Wood E, Elliott M. Opioid addiction stigma: the intersection of race, social class, and gender. *Subst Use Misuse*. 2020;55(5):818–827.
35. Fomiatti R, Farrugia A, Fraser S, Dwyer R, Neale J, Strang J. Addiction stigma and the production of impediments to take-home naloxone uptake. *Health*. 2022;26(2):139–161.
36. Green TC, Case P, Fiske H, et al. Perpetuating stigma or reducing risk? perspectives from naloxone consumers and pharmacists on pharmacy-based naloxone in 2 states. *J Am Pharm Assoc (2003)*. 2017;57(2S):S19–S27.e4.
37. "Pharmacists' role to expand amid pandemic and provider shortages." Search the website. Available at: https://www.publichealth.columbia.edu/public-health-now/news/pharmacists-role-expand-amid-pandemic-and-provider-shortages; 2022. Accessed December 1, 2021.

Micah Banawis, BS, PharmD Student, University of California San Francisco School of Pharmacy, San Francisco, CA

Gordon Mah, BS, PharmD Student, University of California San Francisco School of Pharmacy, San Francisco, CA

Rania Mohsin, BS, PharmD Student, University of California San Francisco School of Pharmacy, San Francisco, CA

Jethro Pobre, BS, PharmD Student, University of California San Francisco School of Pharmacy, San Francisco, CA

Darrin Tracy, PharmD, Instructor, Department of Psychological Sciences, University of California Merced, Merced, CA

Anna V. Song, PhD, Professor, Department of Psychological Sciences, University of California Merced, Merced, CA

Dorie E. Apollonio, PhD, MPP, Professor, Department of Clinical Pharmacy, University of California San Francisco School of Pharmacy, San Francisco, CA