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Pharmacy-related syringe access barriers: an audit of Oregon community pharmacies

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Abstract

Background Pharmacies often restrict access to over the counter (OTC) syringes. The objective of this study was to quantify the frequency that patients experience barriers when seeking to purchase a 10-pack of OTC syringes from community pharmacies in Oregon.

Methods To ascertain the availability of a 10-pack of OTC syringes, we conducted a telephone audit ("secret shopper") study of Oregon community pharmacies. Descriptive statistics and binomial logistic regressions were then performed to identify factors associated with willingness to sell a syringe 10-pack OTC. Factors included in the analysis were related to pharmacy type (chain vs. independent) and county characteristics (rurality, syringe service program presence, overdose rate).

Results We contacted 425 pharmacies (361 chain, 64 independent) between December 2023 and March 2024; of those, 62.8% were in urban counties. Staff at 184 (43.3%) pharmacies reported that they would not sell a syringe 10-pack OTC. Urban pharmacies were more likely to restrict OTC syringe sales compared to rural pharmacies (adjusted odds ratio [2.11]; 95% CI [1.22–3.65]). No significant differences existed between chain and independent pharmacies.

Conclusions Community pharmacies are well positioned to ensure access to sterile syringes, but our findings show that they are unreliable access points as nearly half of Oregon community pharmacies restrict patient access to OTC syringes. Unwillingness to sell OTC syringes was most pronounced in urban counties. Pharmacy-directed efforts are needed to ensure access to sterile syringes and address unmet health needs for people who inject drugs.

Keywords Community pharmacy services, Harm reduction, HIV infections, Oregon, Syringes

Background

Now lasting for nearly three decades, the opioid crisis in the United States (U.S.) is a public health disaster [1]. Originally fueled by the increased use and availability of prescription opioids, the crisis has since evolved with subsequent waves driven by heroin and synthetic analogs, namely fentanyl [1, 2]. Response efforts have targeted primary prevention, harm reduction, evidence-based treatment, and recovery support, with each playing a pivotal role in saving lives, reducing risk, and removing barriers to effective interventions [2]. While community pharmacy-based harm reduction initiatives have often focused on naloxone provision, expanding access to sterile syringes and drug use supplies for people who inject drugs (PWID) is also an important, evidence-based strategy to minimize the negative consequences of drug use and improve health outcomes [3]. Sterile syringes can reduce injection-related health risks and prevent the

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transmission of bloodborne diseases, such as hepatitis C and human immunodeficiency virus (HIV) [4, 5].

Syringe services programs (SSPs) and syringe exchange programs (SEPs) have long provided access to sterile syringes and injection supplies for those with substance use disorders [3]. Unfortunately, SSPs and SEPs are often inaccessible for many PWID due to varying geographic coverage, restricted operating hours, and stigma-related barriers, creating a need for other access points for patients seeking sterile syringes [6–9]. With an estimated 90% of people living within a 5 miles radius of a pharmacy in the U.S., pharmacies are highly accessible for PWID and others impacted by substance use disorder [10]. Community pharmacies have already emerged as critical partners in naloxone provision and are similarly well positioned to expand access to sterile syringes [11, 12]. However, a growing body of evidence suggests that pharmacists exhibit varied attitudes in providing harm-reduction materials, and they often express hesitancy in selling syringes without a prescription, hereafter referred to as over the counter (OTC) syringes, due to a combination of personal moral and ethical convictions, misinterpretation of the law, and pharmacy-specific policies [9, 13–15].

A similar constellation of individual and structural-level factors has been shown to limit patient access to buprenorphine from community pharmacies [16]. Two different nationwide "secret shopper" studies have estimated that 19.9–36.0% of community pharmacies are unwilling to dispense buprenorphine, spurring dialogue into the underlying factors and potential solutions [17, 18]. Unfortunately, while research is building that community pharmacies are also unreliable access point for OTC syringes, thus far, research is limited. One study involving two California counties reported that only 21.0% of syringe purchase attempts were successful even after passage and implementation of legislation designed to expand nonprescription syringe sales [19], but the extent of access barriers across other geographic areas of the U.S. is unknown. Understanding these barriers is particularly important in Oregon given recent surges in opioid-related deaths, high rates of hepatitis C virus, and ongoing, high-profile public dialogue on drug use policies [20–22]. Using a similar "secret shopper" methodology as the previously conducted buprenorphine studies, this study addresses this need by quantifying access to a 10-pack of OTC syringes through Oregon community pharmacies.

Materials and methods

Study design

We performed a telephone-based audit ("secret" or "mystery shopper") study that used a standardized script to quantify access to a 10-pack of OTC syringes from Oregon community pharmacies. Availability of a 10-pack was selected because this package size is commonly sold by community pharmacies and more aligned with the needs of PWID as compared to 100-syringe boxes [19]. Supplementary data on cost and requests for additional information on the need for syringes or desired product (e.g., needle gauge) was also recorded. The audit script was initially developed by the research team and then refined with feedback from practicing community pharmacists with the goal of accurately simulating real-world interactions between patients and pharmacy staff. The audit script was improved further through a pilot test with 10 community pharmacies across rural and urban counties in a neighboring state (data not included in study sample).

Study sample

We obtained the list of Oregon-registered pharmacies and dispensing facilities from the Oregon Board of Pharmacy (OBOP) website, totaling 1,590 pharmacies [23]. The OBOP list included each pharmacy's name, address, and licensing details. Using this information, we conducted a manual review of the list to exclude pharmacies not located in Oregon ($n = 748$). We then excluded pharmacies not focused on the dispensing of commercially available medications to the general public (e.g., long-term care, compounding, and specialty pharmacies), as well as community pharmacies co-located in outpatient medical offices or hospitals ($n = 373$). Finally, we excluded pharmacies located in wholesale clubs due to membership criteria ($n = 14$). The final sample consisted of 455 pharmacies (Fig. 1).

Data collection

Using the standardized audit script, available as Appendix A, telephone calls were conducted during business hours by research team members. If the caller was placed on hold for 10 min or the call was deliberately disconnected by a pharmacy staff member, the outreach attempt was categorized as unsuccessful. Up to three attempts were made to speak to a pharmacy staff member at each pharmacy and collect data through a "secret shopper" telephone call.

The primary outcome of the study was the pharmacy staff's reported willingness to sell a 10-pack of OTC syringes. For pharmacies that indicated that they would sell a 10-pack of OTC syringes, we also inquired about the cost and attempted to ascertain willingness to sell a single syringe. The single syringe data was later excluded from the analysis due to concerns that the question was sometimes misinterpreted as any single syringe, including an intramuscular syringe, rather than a syringe from the 10-pack.

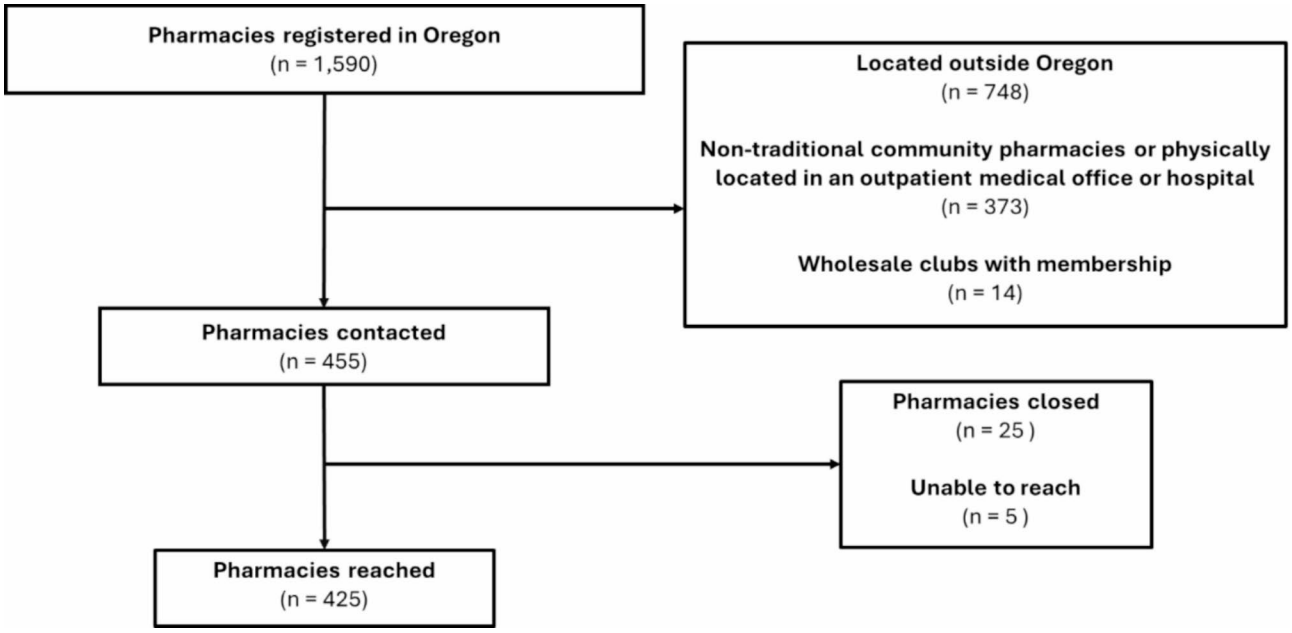

Fig. 1 Pharmacy flowchart

Other data sources

In addition to the information collected through the "secret shopper" telephone calls, the following data sources and definitions were used in the analysis. Chain pharmacies were those where four or more pharmacies were under shared ownership [24]. Zip codes from the Oregon Office of Rural Health were used to assign a county to each pharmacy, as well as classify pharmacies as located in a rural or urban area [25]. The Portland metropolitan area was then defined as encompassing Multnomah, Clackamas, and Washington counties. The list of counties with SSPs or SEPs was obtained from a 2020 report prepared for the Oregon Health Authority that summarized overdose-related services and projects across Oregon [26]. County-level data on rates of opioid overdose deaths were obtained from the Oregon Center for Health Statistics for the period of 2018–2021 [20].

Statistical analysis

Descriptive statistics were used to summarize study results using counts and proportions. We then utilized Chi-square tests to compare data by pharmacy type (chain vs. independent), level of urbanization (rural vs. urban; Portland vs. non-Portland metropolitan area), counties with SSPs, and quartile of county-level overdose rates. We then used multivariable logistic regression analysis to identify independent predictors that contribute to a willingness to sell OTC syringes. The variables included were syringe sale willingness, pharmacy type, level of urbanization, SSPs presence, and quartile of county-level overdose rates. Results were reported as unadjusted and adjusted odds ratios with 95% confidence intervals. The data was collected and managed using Microsoft Excel (Microsoft Corp, Redmond, WA) and statistical analysis was performed using StataNow version 18.5 (StataCorp, College Station, TX). A two-sided p-value less than 0.05 was considered statistically significant. All elements of this study were reviewed and approved by the Oregon State University Institutional Review Board.

Results

A total of 455 community pharmacies in Oregon were contacted between December 2023 and March 2024. After 3 outreach attempts, pharmacy staff at 5 pharmacies were unable to be reached. An additional 25 pharmacies had closed, resulting in a final sample of 425 pharmacies (Fig. 1). This included 361 (84.9%) chain pharmacies and 64 (15.1%) independent pharmacies.

Pharmacy and location characteristics are summarized in Table 1. Most pharmacies were in urban counties ($n = 267$, 62.8%) and in a county with a SSP ($n = 353$, 83.1%). There were 241 pharmacies (56.7%) where the pharmacy staff reported a willingness to sell a 10-pack of OTC syringes. Of those, pharmacy staff inquired about the need for the syringes or requested specific product information during 12.4% ($n = 30$) and 17.8% ($n = 43$) of conversations, respectively. Pharmacy staff provided a specific price during 217 conversations and then provided a range (e.g., \$3 - \$4) or general estimate (e.g., under \$10) in another 18 conversations. When a specific price was provided, the median sale price was \$4.99 for a 10-pack (interquartile range, \$3.19 - \$5.00). The percentage of pharmacies that reported a willingness to sell

Table 1 Pharmacy and County characteristics, N (%)

Characteristic		Total (*n* = 425)	Chain (*n* = 361)	Independent (*n* = 64)
County Type				
	Rural	158 (37.2)	119 (33.0)	39 (60.9)
	Urban	267 (62.8)	242 (67.0)	25 (39.1)
Portland Area[A]				
	Portland-metro	165 (38.8)	154 (42.7)	11 (17.2)
	Outside of the Portland-metro	260 (61.2)	207 (57.3)	53 (82.8)
Syringe Services Programs (SSPs)				
	Counties with SSPs	353 (83.1)	303 (83.9)	50 (78.1)
	Counties without SSPs	72 (16.9)	58 (16.1)	14 (21.9)
Quartile of County Overdose Rate[B]				
	Upper quartile	85 (20.0)	72 (19.9)	13 (20.3)
	Third quartile	114 (26.8)	89 (24.7)	25 (39.1)
	Second quartile	115 (27.1)	100 (27.7)	15 (23.4)
	Lower quartile	111 (26.1)	100 (27.7)	11 (17.2)

[A] Portland metro includes Multnomah, Clackamas, and Washington counties

[B] Overdose per 100,000 persons. Upper quartile > 25.5, third quartile > 16.5 to < 25.5, second quartile > 11.7 to < 16.5, lower quartile overdose rate (not reported < 11.7; rates not reported in counties with a count between 1 and 4)

Table 2 OTC syringe sale willingness by pharmacy and County characteristic, N (%)

		Would not sell	Would sell	*p*-value
Total (*n* = 425)		184 (43.3)	241 (56.7)	
Pharmacy Type				
	Chain	159 (44.0)	202 (56.0)	0.459
	Independent	25 (39.1)	39 (60.9)	
County Type				
	Rural	44 (27.8)	114 (72.2)	< 0.001
	Urban	140 (52.4)	127 (47.6)	
Portland Area[A]				
	Portland-metro	91 (55.2)	74 (44.8)	< 0.001
	Outside of the Portland-metro	93 (35.8)	167 (64.2)	
Syringe Services Programs (SSPs)				
	Counties with SSPs	165 (46.7)	188 (53.3)	< 0.001
	Counties without SSPs	19 (26.4)	53 (73.6)	
County Overdose Rate[B]				
	Above median overdose rate	95 (47.7)	104 (52.3)	0.083
	Below median overdose rate	89 (39.4)	137 (60.6)	

[A] Portland metro includes Multnomah, Clackamas, and Washington counties

[B] Counties above the median overdose rates has an overdose per 100,000 persons > 16.5

Table 3 Univariable and multivariable binomial regression of pharmacy willingness to OTC sell syringes (*n* = 425)

	Unadjusted Odds Ratio (95% Confidence interval)	Adjusted Odds Ratio (95% Confidence interval)
Pharmacy Type		
Chain	0.81 (0.47–1.40)	1.05 (0.58–1.89)
Independent	reference	reference
County type		
Rural	2.86 (1.87–4.36)	2.11 (1.22–3.65)
Urban	reference	reference
Portland Area[A]		
Portland-metro Area	0.45 (0.30–0.67)	0.80 (0.46–1.41)
Non-Portland-metro Areas	reference	reference
Syringe Services Programs (SSPs)		
Counties with SSPs	0.41 (0.23–0.72)	0.82 (0.41–1.63)
Counties without SSPs	reference	reference
Quartile of County Overdose Rate[B]		
Upper quartile	0.50 (0.28–0.89)	0.65 (0.36–1.20)
Third quartile	1.30 (0.77–2.22)	1.02 (0.55–1.88)
Second quartile	1.48 (0.87–2.53)	1.37 (0.79–2.37)
Lower quartile	reference	reference

[A] Portland counties include Multnomah, Clackamas, and Washington

[B] Overdose per 100,000 persons. Upper quartile > 25.5, Third quartile > 16.5 to < 25.5, Second quartile > 11.7 to < 16.5, Lower quartile overdose rate (not reported < 11.7; rates not reported in counties with a count between 1 and 4)

a 10-pack of OTC syringes by Oregon county is available as Appendix B.

As shown in Table 2, there was no difference in the willingness to sell a 10-pack of OTC syringes based on whether the pharmacy was chain or independent (56.0% vs. 60.9%, $p = 0.459$) or whether the pharmacy was in a county with an overdose rate above or below the state median (52.3% vs. 60.6%, $p = 0.083$). However, pharmacies were less willing to sell a 10-pack of OTC syringes if they were in an urban versus rural area (47.6% vs. 72.2%, $p < 0.001$), located within the Portland-metropolitan area (44.8% vs. 64.2%, $p < 0.001$), or in a county with at least one SSP (53.3% vs. 73.6%, $p < 0.001$).

Table 3 summarizes the univariable and multivariable binomial logistic regressions used to identify factors associated with restricted sales of a 10-pack of OTC syringes among the 425 pharmacies contacted. In the univariate analysis, pharmacies in the Portland-metropolitan area (unadjusted odds [uOR] 0.45; 95% confidence interval [CI] 0.30–0.67) or in counties with overdose rates in the highest quartile (uOR 0.50; 95% CI 0.28–0.89) or with SSPs (uOR 0.41; 95% 0.23–0.72) had a lower odds of reporting a willingness to sell a 10-pack of OTC syringes. Similarly, pharmacies in urban areas had a higher odds of restricting the sale of a syringe 10-pack as compared to those in rural areas (uOR 2.86; 95% CI 1.87–4.36). After controlling for all variables, differences between urban versus rural pharmacies persisted with

pharmacies located in urban areas having twice of greater odds of restricting the sale of a 10-pack of OTC syringes (adjusted odds ratio [aOR] 2.11; 95% CI 1.22–3.65) relative to those in rural areas.

Discussion

A lack of access to sterile syringes increases the transmission of bloodborne diseases and other injection-related health risks. Among community pharmacies in Oregon, we identified barriers for patients seeking syringes, as nearly half of pharmacy staff members reported an unwillingness to sell a 10-pack of syringes without a prescription. This was most prevalent in community pharmacies in urban areas, with urban pharmacies being twice as likely to restrict the sale of OTC syringes as compared to rural counterparts.

Syringe access in Oregon does appear to be greaterthan reported in older research in California and a more recent, smaller investigation of 38 pharmacies in Maricopa and Pima Counties in Arizona. In both of those studies, less than a quarter of syringe purchase attempts were successful [19, 27]. However, the degree of restricted practices around OTC syringes that exist in Oregon is disappointing from a public health standpoint. Additionally, our finding that pharmacy staff in urban areas of Oregon were less willing to sell OTC syringes is particularly interesting given that pharmacy barriers to accessing evidence-based tools to combat the opioid crisis have been frequently associated with rural areas [13, 18]. Drivers behind this flipped pattern for our findings is unknown. On one hand, it could be that urban areas have more established harm reduction and treatment services available, thus leading pharmacies to be less involved in selling OTC syringes. However, it is also possible that injection drug use within the community leads to restrictive practices, especially considering the stigma often faced by PWID [8]. This later speculation would be consistent with research involving Indiana community pharmacies where those practicing in communities with high opioid overdose rates were less likely to sell OTC syringes [14].

The dynamics surrounding syringe sales in Oregon are particularly complex. In 2020, Oregon voters passed Measure 110, or the Drug Addiction Treatment and Recovery Act [28]. Measure 110 was a significant shift in Oregon's drug policy because it decriminalized the personal possession of illegal drugs, with the aim of redirecting individuals with substance use disorder into treatment. Since its implementation, temporally, emergency department visits due to an opioid overdose and unintentional opioid overdose deaths have increased [20]. It is unclear to what extent Measure 110 contributed to this dynamic, as there are likely multiple contributing factors, including the timing of the coronavirus disease 2019 pandemic and emergence of fentanyl in the Oregon drug supply [29, 30]. However, there has been public backlash against the drug policy approach implemented by Measure 110, and legislative changes to the Drug Addiction Treatment and Recovery Act were passed in 2024, which coincided with the timing of this study [22]. Dialogue on drug policy approaches has been particularly charged in the Portland-metropolitan area, and it would not be unreasonable to speculate that this may have influenced pharmacy staff behavior, explaining study findings.

This study was not designed to assess why pharmacy staff declined to sell OTC syringes. However, existing literature provides some insight into potential barriers. A systematic review on OTC syringe sales in community pharmacies concluded that stigmatizing attitudes and beliefs from pharmacy staff impact decisions on whether to sell OTC syringes [9]. In addition, qualitative research has described how store-level policies that restrict or discourage syringe sales can further aggravate the scope of this problem [13, 14]. This combination of individual- and structural-barriers then leads to inconsistent and often contradictory practices in how pharmacies (and sometime pharmacy staff within the same pharmacy) approach OTC syringe sales. This likely reinforces that pharmacies are not safe spaces for those seeking syringes, so addressing these barriers is crucial for improving access and public health outcomes.

Community pharmacies have emerged as important partners in addressing the opioid crisis, with substantial effort dedicated to expanding naloxone access [11]. Like OTC syringes, naloxone provision is impacted by stigma-related barriers, and education has been essential to overcoming [31]. One model gaining traction is the use of academic detailing. Initially developed by the pharmaceutical industry, academic detailing has been embraced by academic and nonacademic partners as a strategy to provide peer-to-peer, in-person education and drive behavior change [32]. Recent work has illustrated how academic detailing is a scalable model to accelerate naloxone provision from community pharmacies, with a recent, similar efforts now focused on syringe access [33–36]. In Oregon, syringes were excluded from the definition of paraphernalia in the 1980s, and in 2018, the OBOP issued a position statement that specifically encouraged pharmacists and pharmacy staff to facilitate syringe access [37]. As a result, our findings suggest that more robust educational initiatives are likely needed to provide pharmacists with the knowledge, skills, and confidence to effectively support people with substance use disorders. This education might also include policies to streamline and standardize syringe purchasing as complementary research has shown that there can be substantial price variation and inappropriate addition

of sales tax even within national community pharmacy chains [38].

This study has several limitations. First, all data was collected through telephone interactions with pharmacy staff, and it is unknown how the information provided by telephone would align with in-person experiences. Second, due to the "secret-shopper" nature of this study, we did not collect information to ascertain the reason(s) for not selling a 10-pack of OTC syringes. While some pharmacy staff members provided this information unsolicited, many did not, thus preventing a systematic description and analysis of this data. Finally, this study was limited to community pharmacies in Oregon and during public scrutiny of Measure 110, which may limit the generalizability of our results to other geographic areas of the U.S.

Conclusions

Access to sterile syringes is essential to reduce transmission of bloodborne diseases and prevent other injection-related health risks. Community pharmacies are positioned to ensure access to sterile syringes, but our findings show that they are unreliable access points as nearly half of Oregon community pharmacies restrict patient access to a 10-pack of OTC syringes. This unwillingness to sell a 10-pack of OTC syringes was most pronounced in urban counties. Urban pharmacies were twice as likely to restrict the sale of OTC syringes as compared to rural counterparts.

As the opioid crisis continues in the U.S., multi-level interventions are needed to improve the health and well-being for PWID. Community pharmacies have already emerged as key partners in naloxone provision, and it is critical that the pharmacy profession embrace other strategies to expand access to harm reduction materials. Pharmacy-directed efforts are needed to ensure access to sterile syringes and address unmet health needs of PWID.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12954-025-01190-3.

Supplementary Material 1

Author contributions

A.N. Irwin conceived and supervised the study. V. Abreu led the data collection process with assistance from M. McGinnis and S. Justen. P. Duong completed the analysis. N. Suchy and D. Hartung provided content expertise and assisted in execution and/or interpretation of findings. V. Abreu led the writing. All authors reviewed the manuscript.

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Data availability

The data underlying this article will be shared on reasonable request to the corresponding author and with approval by the Oregon State University Institutional Review Board.

Declarations

Competing interests

The authors declare no competing interests.

Disclosures

None of the authors have any conflicts of interest to disclosure.

Previous presentation of work

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