



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

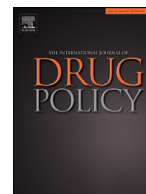
Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



ELSEVIER

Contents lists available at ScienceDirect

## International Journal of Drug Policy

journal homepage: [www.elsevier.com/locate/drugpo](http://www.elsevier.com/locate/drugpo)

Research Paper

## Barriers to engaging people who use drugs in harm reduction services during the COVID-19 pandemic: A mixed methods study of syringe services program perspectives



Elizabeth J. Austin<sup>a,\*</sup>, Maria A. Corcorran<sup>b</sup>, Elsa S. Briggs<sup>a</sup>, Madeline C. Frost<sup>a,c</sup>,  
Czarina N. Behrends<sup>d</sup>, Alexa M. Juarez<sup>b</sup>, Noah D. Frank<sup>b</sup>, Elise Healy<sup>b</sup>, Stephanie M. Prohaska<sup>e</sup>,  
Paul A. LaKosky<sup>e</sup>, Shashi N. Kapadia<sup>d,f</sup>, David C. Perlman<sup>g,h</sup>, Bruce R. Schackman<sup>d</sup>,  
Don C. Des Jarlais<sup>i</sup>, Emily C. Williams<sup>a,c</sup>, Sara N. Glick<sup>b</sup>

<sup>a</sup> Department of Health Systems and Population Health, University of Washington, 3980 15th Ave NE, Seattle, WA, USA

<sup>b</sup> Division of Allergy and Infectious Diseases, Department of Medicine, University of Washington, 1959 Pacific Street NE, Seattle, WA, USA

<sup>c</sup> Health Services Research & Development Center of Innovation for Veteran-Centered and Value-Driven Care, Veterans Affairs Puget Sound Health Care System, 1660 S Columbian Way, Seattle, WA, USA

<sup>d</sup> Department of Population Health Sciences, Weill Cornell Medical College, 1300 York Avenue, New York, NY, USA

<sup>e</sup> Dave Purchase Project, North American Syringe Exchange Network, 535 Dock Street, Tacoma, WA, USA

<sup>f</sup> Division of Infectious Diseases, Weill Cornell Medical College, 1300 York Avenue, New York, NY, USA

<sup>g</sup> Center for Drug Use and HIV Research, School of Global Public Health, New York University, 708 Broadway, New York, NY, USA

<sup>h</sup> Division of Infectious Diseases, Mount Sinai Beth Israel, Icahn School of Medicine at Mount Sinai, 1 Gustave L. Levy Place, New York, NY, USA

<sup>i</sup> School of Global Public Health, New York University, 708 Broadway, New York, NY, USA

## ARTICLE INFO

## Keywords:

Syringe services programs  
COVID-19  
Patient engagement  
Harm reduction

## ABSTRACT

**Background:** Syringe services programs (SSPs) provide critical evidence-based public health services that decrease harms from drug use for people who use drugs (PWUD). Many SSPs have experienced significant and evolving COVID-19-related disruptions. We aimed to characterize the impacts of COVID-19 on SSP operations in the United States approximately one year into the pandemic.

**Methods:** Participating sites, selected from a national sample of SSPs, completed a semi-structured interview via teleconference and brief survey evaluating the impacts of COVID-19 on program operations. Data collection explored aspects of program financing, service delivery approaches, linkages to care, and perspectives on engaging PWUD in services one year into the pandemic. Interview data were analyzed qualitatively using Rapid Assessment Process. Survey data were analyzed using descriptive statistics and triangulated with qualitative findings.

**Results:** 27 SSPs completed study-related interviews and surveys between February 2021 – April 2021. One year into the pandemic, SSPs reported continuing to adapt approaches to syringe distribution in response to COVID-19, and identified multiple barriers that hindered their ability to engage program participants in services, including 1) isolation and decreased connectivity with participants, 2) resource restrictions that limit responsiveness to participant needs, 3) reduced capacity to provide on-site HIV/HCV testing and treatment linkages, and 4) changing OUD treatment modalities that were a “double-edged sword” for PWUD. Quantitative survey responses aligned with qualitative findings, highlighting increases in the number of syringes distributed, increases in mobile and home delivery services, and reductions in on-site HIV and HCV testing.

**Conclusion:** These data illuminate persistent and cascading risks of isolation, reduced access to services, and limited engagement with program participants that resulted from COVID-19 and continue to create barriers to the delivery of critical harm reduction services. Findings emphasize the need to ensure SSPs have the resources and capacity to adapt to changing public health needs, particularly as the COVID-19 pandemic continues to evolve.

## Background

Harms from injection drug use and associated blood-borne pathogens such as HIV and hepatitis C virus (HCV) are increasing and impact

\* Corresponding author.

E-mail address: [austie@uw.edu](mailto:austie@uw.edu) (E.J. Austin).

some of the most marginalized populations in the United States (U.S.). Increased HIV incidence, new HIV outbreaks among people who use drugs (PWUD), and syndemic HCV outbreaks highlight the continued vigilance needed to address HIV and HCV (Broz et al., 2021; Des Jarlais et al., 2020). Syringe services programs (SSPs) provide critical, evidence-based public health services that decrease harms from drug use, including reducing skin and soft tissue infections and transmission of blood borne viruses, such as HIV and HCV (Ruiz et al., 2016; Aspinall et al., 2014; Broz et al., 2021). For example, a meta-analysis by Aspinall et al. (2014) estimated that SSP services reduced HIV transmission by an average of 58% among people who inject drugs. Key to this are the diverse approaches SSPs use to engage PWUD in syringe exchange and other harm reduction services. For example, SSPs may: 1) use a combination of fixed site (i.e., syringe exchange occurring at a set location) and mobile or outreach-based syringe delivery, 2) vary the volume of syringes they exchange per program participant (e.g., exchanging syringes at a rate of one sterile syringe for each return of one used syringe (“1-to-1”), in fixed quantities based on the volume of used syringes participants return, via a “needs-based” model where syringe volume is tailored to each program participant based on participant-expressed need, or via a “negotiated exchange” model where participant need and available supply of syringes are negotiated and balanced on a per-participant basis), or 3) utilize “secondary exchange” strategies in which PWUD acquire syringes from the SSP to distribute to their network of peers directly (Turner-Bicknell, 2021; Bluthenthal et al., 2007).

However, SSPs often lack the necessary support and autonomy needed to optimize their engagement of PWUD in harm reduction services, in large part due to the multilevel stigma associated with drug dependency and harm reduction approaches specifically (Broz et al., 2021; Jones et al., 2019; Davis et al., 2018). In the U.S., SSPs are often subject to federal and local policies that restrict (and even criminalize) their services, including restricting the ways that they can receive and allocate funding and the ways they can approach syringe distribution (Broz et al., 2021). SSPs may be further limited by impacts associated with the COVID-19 pandemic. Prior work by our team and others has documented the early experiences and challenges SSPs faced while rapidly adapting to changing regulations and environments resulting from COVID-19 (Glick et al., 2020; Frost et al., 2021; Behrends et al., 2022; Wenger et al., 2021; Bartholomew et al., 2020). Specifically, our team explored the impacts of COVID-19 on a national cohort of SSPs in the U.S. during the initial phases of the pandemic and found that SSPs made sweeping changes to how they provided syringe services, transitioning to outdoor-only models to accommodate social distancing requirements and increasing mobile and outreach-based delivery formats (Frost et al., 2021). Programs also described changes to their approach to syringe distribution that included increasing the number of syringes offered per participant and relying much more on the use of secondary exchange. Additionally, many programs described pausing their HIV and HCV testing and having decreased capacity to provide linkages to OUD treatment during this time. These changes were intended to accommodate the fact that programs had fewer contact opportunities with participants as pandemic-related restrictions took effect. Yet our study and others also found that disruptions to SSP services during the pandemic may have increased risk for infectious disease transmission and overdose among PWUD in the immediate phases of the pandemic (Seaman et al., 2021; Frost et al., 2021). There is therefore an urgent need to ensure SSPs are able to continue uninterrupted provision of harm reduction services, recognizing that the fluctuating impacts of COVID-19 may persist.

While earlier reports of SSP experiences describe their responses in the initial stages of the COVID-19 pandemic (Glick et al., 2020; Frost et al., 2021; Wenger et al., 2021; Bartholomew et al., 2020), further investigation a year into the pandemic may better characterize which impacts have had a more lasting effect on SSP operations. The rapid changes to syringe distribution that SSPs made in the beginning of

the pandemic, for example, may have allowed them to be responsive to participant needs but may not be sustainable over the long term or may exacerbate disparities for subgroups of PWUD. Importantly, there is a need to identify the specific barriers resulting from COVID-19 that SSPs continue to face when trying to engage PWUD in needed harm reduction services, so as to inform a public health response that minimizes downstream harms for PWUD health and well-being. In this mixed methods study, we re-approached our original cohort of SSPs for a second round of data collection. Our objective was to characterize SSP perspectives on the ongoing impacts of COVID-19 on harm reduction service delivery and potential barriers to sustainability and participant engagement approximately one year into the pandemic.

## Methods

### *Study overview and sample*

The study sample was recruited from a national cohort of 31 SSPs that are being followed to assess the impacts of COVID-19 at different stages of the pandemic. The cohort was drawn from a stratified random sample of SSPs from the North American Syringe Exchange Network (NASSEN) directory that were identified to reflect geographic and programmatic diversity but not necessarily generalizability of all SSPs in the U.S.. The cohort participated in a prior study that explored their experiences in the first six months of the pandemic (data collection occurring between April – June of 2020), described elsewhere (Frost et al., 2021). For the present study, the 31 participating SSPs were approached again and invited to participate in follow-up interviews and brief surveys. Members of the study team conducted recruitment via email and phone outreach to the original programs who participated, inviting one staff person (of leadership, programmatic, or volunteer roles) from each SSP to complete study activities. Outreach was directed at the staff person who participated in the first study’s interviews; in many cases the same staff person participated in the present study, but in some cases new staff participated. For clarity, SSP program staff who participated in interviews for this study will be referred to as “respondents” and people who utilize SSP services will be referred to as “program participants.”

### *Data collection*

Each responding SSP completed one semi-structured interview and a brief structured electronic survey. The goal of gathering both qualitative and quantitative data was to triangulate overall programmatic impacts (i.e., via quantitative results) with on the ground perspectives of service delivery experiences (i.e., via qualitative discussions). Interviews occurred remotely by either phone or teleconference between February 2021 – April 2021 and were conducted by members of the study team with qualitative interview experience and knowledge of SSP operations (MAC, AMJ, NDF, EH). Interviews were guided by a semi-structured guide. The interview guide was developed by the full study team and asked respondents open-ended questions regarding current program operations, adaptations made in response to COVID-19, approaches to service delivery, and recommendations for future practice (see Supplemental Table 1). Interview guide questions covered the same breadth of topics as the first study’s interviews, including reflections on how aspects of SSP service delivery has changed, however asked respondents to focus on experiences one year into the pandemic. Given the prior study provided an in-depth exploration of adaptations SSPs made as a result of COVID-19, the present study had a particular emphasis on persisting barriers to service delivery. Qualitative interviews were recorded and professionally transcribed. One interview was conducted in Spanish and translated into English during the transcription process. Respondents were also asked to complete a brief, 20-item electronic survey via

REDCap (Harris et al., 2009) in the few days before their scheduled interview. The survey asked respondents about their current syringe distribution model and volume, and the degree to which COVID-19 had impacted specific aspects of their service delivery (e.g., hours of operation, number of staff, frequency of HIV/HCV testing). Respondents received a \$50 e-gift card for their participation. Study activities were reviewed by the University of Washington Institutional Review Board and determined not to be human subjects research given that data were only collected about programs and not about individuals.

### Data analysis

Using a parallel mixed methods design, qualitative and quantitative data were analyzed separately, and then merged for the final analysis and data presentation. Interview transcripts were analyzed using Rapid Assessment Process (RAP) rooted in grounded theory and using both deductive and inductive approaches given that the context of the COVID-19 pandemic is both novel and emergent (Deterding & Waters, 2021). RAP is an iterative, team-based approach to generating an understanding of qualitative data and is appropriate when rapid learning is needed to inform adaptations, such as to inform a public health response during the COVID-19 pandemic (Beebe, 2001; Hamilton & Finley, 2019; Taylor et al., 2018). RAP methods utilize templated coding summaries, often in Microsoft Word or Excel, that enable more rapid data reduction and identification of salient learnings than traditional coding done in qualitative software (Hamilton & Finley, 2019). In tandem, RAP methods encourage larger teams for data analysis, which improves the efficiency of analysis while including multiple perspectives that can increase confirmability of coding and themes. Prior to the start of analysis, our study team developed semi-structured coding templates with *a priori* index codes that followed the interview guide content. In keeping with RAP methods for team-based analysis, we involved four members of the team with qualitative experience (MAC, EJA, MCF, ESB) in double-coding of the interview transcripts (n=14 transcripts). All coding was reviewed and compared for coding alignment and consistency. After two rounds of double-coding, the team transitioned to single-coding for the remaining 13 transcripts. Coders used the RAP coding templates to create summaries in Microsoft Word® that incorporated detailed descriptions of the data and respondent quotes to support data credibility (Korstjens & Moser, 2018).

Coded templates were combined into a matrix in Microsoft Excel© to iteratively review within and across codes, assess potential connections between *a priori* codes, and identify emergent codes. Summarized data were then presented to the qualitative study lead (ECW) after each coding round to identify preliminary and emergent themes, and then to the full study team for further theme refinement based on current theory and practice. Lastly, the team engaged in member checking by preparing a brief written summary of qualitative themes and providing all respondents the opportunity to review and comment on their accuracy. No changes to themes were requested by study respondents. Once qualitative analysis was complete, quantitative data from the surveys were analyzed using descriptive statistics. Qualitative and quantitative data were then summarized and triangulated using joint data displays that paired each qualitative theme with relevant quantitative results to provide additional perspective and meta-inferences on COVID-19's ongoing impact on SSP operations and program participant engagement.

### Results

Of the 31 SSPs in the cohort, 27 participated in the present study with one respondent completing study activities on behalf of each SSP. Of the 27 SSPs, 8 (30%) were in the Northeast, 9 (33%) in the Midwest, 5 (18%) in the South, 4 (15%) in the West and 1 (4%) in other territories of the U.S. Twenty (74%) programs were located in urban areas, and 23 (85%) identified as a nonprofit or community-based organization with 4 (15%) identifying as health department-affiliated. At the time of data

collection (February 2021 - April 2021), 16 (59%) of programs were utilizing a needs-based distribution model, while only 2 (7%) used a 1-for-1 model; the remaining 9 (33%) used other syringe distribution models including models with fixed quantity exchange volumes (e.g., exchange of 1 for 10, 1 for 20, or 1 for 40) or negotiated exchange where syringe volume is tailored to each program participant. Most programs incorporated both fixed site and mobile delivery formats, and 18 (67%) employed secondary exchange approaches. Programs reflected a range of service availability beyond syringe exchange; some programs provided onsite HIV and HCV testing, whereas others provided linkages to external testing sites. Most programs did not directly provide SUD treatment but did provide linkages and at times care navigation support for SUD treatment access. Additional demographic details of respondent sites are provided in Table 1.

Respondents reported that approaches to SSP service delivery have continued to adjust to the changing restrictions and realities of the COVID-19 pandemic. One year into the pandemic, respondents described the persistence of many of the barriers they experienced at the beginning of the pandemic that made it difficult to rely on traditional fixed site distribution approaches. As one respondent reported, there was a need for “being creative and relying on staff that are plugging in gaps, because people have been deployed, redeployed to COVID stuff” such as in the case of health department staff, and to be “very flexible and very nimble, and sort of think outside of the box that we were used to thinking of in terms of how to provide service and how to show up” [Respondent 8, urban, West]. Respondents acknowledged that some adaptations made in response to COVID-19 improved services for PWUD, such as through increased flexibility and accessibility. Yet many respondents still expressed concern over their limited ability to engage program participants in needed harm reduction services. Four themes emerged that characterize SSP perspectives on how harm reduction services have adapted during COVID-19 and persisting barriers to partici-

**Table 1**

Description of SSP programs, February-April 2021 (N=27).

	N	%
Geographic region		
Northeast	8	30%
Midwest	9	33%
South	5	18%
West	4	15%
U.S. Territories	1	4%
Urbanicity / rurality		
Urban	20	74%
Rural	7	26%
SSP type		
Health department-operated	4	15%
Nonprofit / community-based organization	23	85%
Current distribution model <sup>a</sup>		
1 for 1	2	7%
Needs based	16	59%
Other	9	33%
Current distribution approach(es) <sup>b</sup>		
Fixed site	20	74%
Mobile delivery	21	78%
Secondary exchange	18	67%
Other	4	15%
Number of sites operated		
1	13	48%
2-3	8	30%
4-9	3	11%
10+	3	11%
Estimated annual syringe distribution <sup>c</sup>	300,000	10,000-5,800,000

<sup>a</sup> “1-for-1” refers to distributing one syringe for every syringe returned; “needs based” refers to distributing syringes without restrictions/requirements related to returning used syringes.

<sup>b</sup> SSPs could report using more than one distribution approach.

<sup>c</sup> Missing one program that was unable to respond to this question.

**Table 2**  
Summary of qualitative themes and additional representative quotes from syringe services programs, February-April 2021 (N=27).

Theme	Summary	Representative Quote
Isolation and decreased connectivity with program participants	<ul style="list-style-type: none"> <li>• COVID-19 increased isolation for program staff &amp; participants</li> <li>• Program staff feel less able to understand participant needs</li> </ul>	<p>“You got to build that trust with them because a lot of times once you do that, they will tell you. They will tell you. They want a share especially when they feel like, ‘I know these people really care because this is how they show up for us.’ Most of the clients we’re on a first name basis with because we’ve been able to build that relationship over time. And it’s really nice when that happens, because we are able to have those sidebar conversations and let them know about other resources that they may be lacking that they don’t know about... being able to have those conversations and build the relationship is really what’s most important to us because I feel like, that’s we’re able to bridge those gaps.” [Respondent 12, urban, Midwest]</p>
Program resource restrictions (e.g., staff, supply, financial) limit responsiveness to participant needs	<ul style="list-style-type: none"> <li>• Changing distribution models added strain on program staff &amp; resources</li> <li>• Restrictions on funding felt like more of a burden</li> <li>• Programs experienced multilevel barriers to syringe supply</li> </ul>	<p>“So, very quickly, when COVID hit, we started getting less supplies, and that’s continued for over a year now. So, the major impact is rationing. The other issue we’ve had is our supplier, which is the state, can’t get the same brand syringes as what they used to get. [...] Sometimes we get a few, but very little, if any. So, instead, they switched to [brand] syringes and the [brand] syringes are significantly bad in quality. The main issues are that the vacuum is not as strong [...], so it’s really hard for participants to effectively flag a vein and know that they’re in a vein. [...] So, there’s two pieces to this: one is that the syringes aren’t good quality, and the other is that people don’t have enough syringes. So, the result of those two issues is we’ve seen a dramatic increase in flesh wounds. [...] So, we’ve done more ER referrals than we are used to. And just a lot more wound care.” [Respondent 27, urban, Northeast]</p>
Reduced capacity to provide effective linkages to HIV/HCV testing and treatment	<ul style="list-style-type: none"> <li>• HIV/HCV testing services decreased</li> <li>• HIV/HCV care linkages were challenging given COVID-19 restrictions</li> </ul>	<p>“It’s very frustrating right now because we suspended testing, and we have not gotten it back going again. [...] But really, we haven’t been getting requests, and we’ve got grave concerns that when COVID passes, we’re going to see real spikes in numbers. [...] I think, there’s a concern [for the] safety factor, especially, amongst staff. No direct guidance from our health department with any specific recommendations. And now that we’re buying our own test kits, it’s really challenging to invest in instant, you know, rapid tests and then shift to, like, home test kits where you have to get a whole different technology. We’ve also had some concerns about home test kits because of the inability to do good counseling with folks.” [Respondent 14, rural, Midwest]</p>
Changing OUD treatment modalities were a “double-edged sword” for PWUD	<ul style="list-style-type: none"> <li>• Telehealth presented benefits and challenges</li> <li>• Telehealth may increase disparities for PWUD</li> </ul>	<p>“There’s still a large gap between the amount of folks who need help and what’s actually available to them, and the waiting time that they have to wait, and whether they can get inpatient, and that’s all likelihood “no” compared to outpatient. What method of medication-assisted treatment they want to take being available to them; dosing and all that being questionable, sometimes, but I think we’re getting people to the door. Now, the question is, what do the service providers do to keep people in the door, keep them inside and get them the help they need.” [Respondent 15, urban, Northeast]</p>

**Table 3**  
SSP-reported impacts of COVID-19 on program operations, February-April 2021 (N=27).

Operations compared to pre-COVID	Less than pre-COVID	About the same	More than pre-COVID	N/A
Hours of operation	8 (30%)	14 (52%)	5 (19%)	0 (0%)
Number of staff	3 (11%)	17 (63%)	5 (19%)	2 (7%)
Number of volunteers	11 (41%)	7 (26%)	5 (19%)	4 (15%)
Number of participants per week	11 (41%)	5 (19%)	11 (41%)	0 (0%)
Number of syringes distributed per week	7 (26%)	5 (19%)	15 (56%)	0 (0%)
Number of syringes per participant	3 (11%)	8 (30%)	16 (59%)	0 (0%)
Overall naloxone distribution	4 (15%)	3 (11%)	20 (74%)	0 (0%)
Home delivery	1 (4%)	3 (11%)	13 (48%)	10 (37%)
Any mobile delivery	1 (4%)	6 (22%)	14 (52%)	6 (29%)
HIV testing	14 (52%)	8 (30%)	1 (4%)	4 (15%)
HCV testing	14 (52%)	8 (30%)	1 (4%)	4 (15%)
Linkages to SUD treatment	10 (37%)	11 (41%)	5 (19%)	1 (4%)

\*Note: All estimates are row percentages.

pant engagement, described below and summarized in Table 2. Quantitative results, integrated below, are also further described in Table 3.

**Theme 1: Isolation and decreased connectivity with program participants**

Respondents described how COVID-19 has created “the perfect storm” [Respondent 3, urban, Northeast] by increasing isolation among SSP program participants, and fostering separation between PWUD, their peer networks, and available resources such as SSPs.

“Everything that we know, everything that we teach people against, COVID is the perfect storm for just the opposite. It separates people. We know the opposite of addiction is connection. But we’re less connected. [...] But nothing replaces that fellowship of other people in social settings,

social environments, social people. So, this has pushed a marginalized population even further underground.” [Respondent 3, urban, Northeast]

Another expressed concern for how COVID-19 has increased feelings of isolation for SSP participants and staff, saying: “It is isolating. It’s isolating for service providers, and it’s isolating for the people that are seeking services.” [Respondent 22, urban, Midwest]. Many respondents felt the “pandemic’s just pushed [them] backward really far” [Respondent 24, urban, South] and expressed a sense of loss for the PWUD they have become disconnected from or are still unable to serve, particularly as a result of SSP service disruptions at the beginning of the pandemic: “I feel like once we lost our clients, just even those couple of weeks, we

haven't gotten as many of them back" [Respondent 17, rural, Midwest]. While service disruptions and short-term closures were common in the early phases of the pandemic, one year into the pandemic, 8 (30%) SSPs reported continued reduced hours of operation and 11 (41%) reported seeing consistently fewer participants per week, which contributed to their sense of loss over participant engagement. In contrast, 16 (60%) of respondents reporting seeing as many or more participants per week as compared to before COVID. Yet respondents reported that even when they interacted with program participants, interactions still felt isolating for staff and participants.

*"In terms of having one person at the exchange at a time, I can't wait to see that go. Many a times we'd have somebody here that it's the first time that they can just sit down and relax, and feel like somebody's watching them. Or they've got an audience and can talk, and tell stories, and share. [...] So, I definitely am looking forward to the days where it can feel more like a community space."* [Respondent 8, urban, West]

Overall, many respondents expressed that the ways in which COVID-19 continues to limit their ability to connect with PWUD in meaningful ways raises substantial concerns for the well-being of PWUD and for the SSP providers themselves. In response to these challenges, 14 (52%) programs reported continuing to increase their use of mobile delivery and 13 (48%) reported increasing home deliveries and other outreach-based formats that are individually-tailored and flexible, including informal meet-ups with program participants. Overwhelmingly, programs have increased secondary exchange formats for syringe distribution as the pandemic has progressed. As one respondent described, "it just feels like we're seeing a lot more people who are reaching other people" [Respondent 7, urban, West], highlighting the increase in secondary exchange as a means to reach program participants who were not engaging with SSP services directly.

**Theme 2: Program resource restrictions (e.g., staff, supply, financial) limit responsiveness to participant needs**

Many respondents recognized that their changing distribution models were also straining their resources, especially as these changes persisted over the last year. To start, respondents reported changes in available funding, as well as added barriers to resource allocation that were "exacerbated by COVID" [Respondent 24, urban, South]. Respondents emphasized that "we just don't have enough money; there isn't the capacity to get all the work done that is necessary and needed, including finding the money to fund it" [Respondent 22, urban, Midwest].

Respondents also reported that existing policies that limit how SSPs can spend money, such as restrictions in the U.S. on using some forms of federal funding to purchase syringes, felt like an added burden as the impacts from COVID-19 transitioned from short term adjustments to long term operations. One respondent expressed they "need other money that is less restrictive" [Respondent 22, urban, Midwest]. Another respondent reported frustration with the need to allocate funding away from syringe supplies toward personal protective equipment (PPE):

*"I guess it's us having to spend, not having government support, and us having to spend our precious unrestricted funding to buy PPE, and it really sucks. It's hundreds of dollars we could have used on pipes or more [sterile] needles"* [Respondent 19, urban, South].

In addition to funding limitations, eleven (41%) programs continued to have reduced numbers of volunteers one year into the pandemic, which impacted their capacity to deliver services. Others described barriers related to the transportation resources needed to maintain new distribution models, saying:

*"It really just depends on our capacity. Most of our volunteers don't drive or don't have cars [...] sometimes we just don't have enough capacity to drive to everybody who wants the home delivery"* [Respondent 19, urban, South]

Respondents reported substantial challenges in their ability to maintain adequate syringe supplies (see Fig. 1) during COVID-19. Overall, 20

(74%) of programs indicated increasing syringe volume in some way. For example, 15 (56%) SSPs reported that they distributed more syringes per week and 16 (59%) indicated that they distributed more syringes per participant than before COVID-19. This increase in syringe volume was a consequence of the adaptations many programs made in response to fewer contact opportunities with participants, induced by COVID-19-related restrictions. Yet almost all respondents reported that syringe "supplies are a little more difficult to get because of COVID," in part due to national and international supply chain delays. Respondents noted that "trying to stay ahead of the supply order" was a constant challenge in this past year [Respondent 16, rural, Midwest]. As one respondent stated, "swapping from one-to-one to needs-based made it impossible for us to keep up" [Respondent 11, rural, Northeast]. Another respondent described challenges with syringe suppliers, saying,

*"Sometimes it's more just around the suppliers of the syringes being sticklers for payment, even in a pandemic when you know that some of the funding is being altered or changed, or just around federal response, or lack of federal response"* [Respondent 15, urban, Northeast].

Limitations on syringe supply often resulted in new rationing policies for program participants. One program said:

*"I think that the negotiated exchange is probably here to stay. That, of course, creates another challenge, just in terms of sustainability, budget-wise, right, because if we're putting more product out there – and luckily getting more product back in, then our supply budget and our disposal budgets are just going to rise and rise and rise and rise."* [Respondent 8, urban, West]

Another respondent echoed the challenges of changing distribution models and limited syringe supply:

*"We started just going through way more supplies than we are capable of going through... So, we had to scale back and put some common-sense limits in place. Like, 'Hey, you can come back every day if you want to, but this is as much as you can take at any given day.'" [Respondent 11, rural, Northeast]*

In response to these syringe supply constraints, one respondent reported having to educate participants about potential reuse of supplies, saying:

*"We are having to really talk to folks about what to do if they have to reuse their own supplies or they had to use someone else's supplies, things like bleach kits, washing their supplies, harm reduction methods for safer injection"* [Respondent 9, urban, Northeast]

Overall, many respondents acknowledged that changing distribution formats - such as increased flexibility in syringe volume per participant and secondary exchange - may benefit program participants, but also may not be sustainable given the strain they placed on staff, supplies, and financial resources.

**Theme 3: Reduced capacity to provide on-site HIV and HCV testing and effective linkages to treatment**

Survey responses highlighted that one year into the pandemic, 14 (52%) programs continued to report less HIV and HCV testing as compared to before COVID-19. Qualitative data further illuminated that SSPs experienced multiple barriers to engaging PWUD in the HIV and HCV care continua. First, many respondents described continued disruptions to providing on-site HIV and HCV testing a year into the pandemic, including lack of testing supplies and funding, limited staffing, and safe social spacing requirements. Some respondents described how efforts to launch or increase HIV/HCV testing were put on hold as the pandemic began and were never revisited. As a result, some respondents described a continued scarcity of funding for HIV/HCV testing supplies one year into the pandemic. As one respondent said,

*"I desperately want to do testing. [...] And I desperately want the funds to be able to test, or even if I didn't have the money, if the health department*

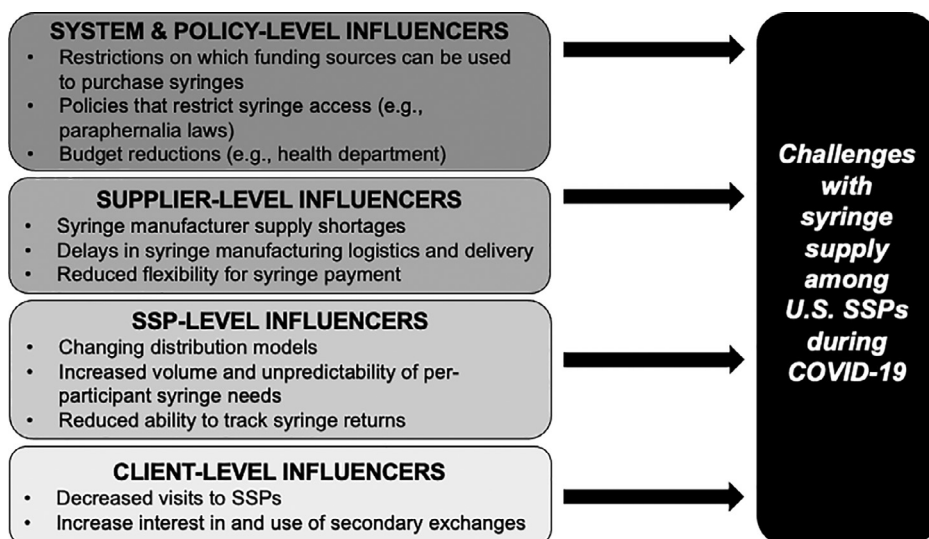


Fig. 1. Multilevel drivers of challenges with SSP syringe supply during COVID-19.

would provide the technologies so I can test people. [...] I need supplies, desperately.” [Respondent 22, urban, Midwest]

Another said, “we don’t have the staffing or the space to do it” [Respondent 6, urban, South]. Yet another respondent echoed,

“Our doors were always open for people to just come on in. We don’t even let people sit down in our lobby anymore. . . we were doing sometimes 10 tests a week. Now, we’re lucky to do that many in a month” [Respondent 2, urban, Northeast]

Respondents expressed concern over the looming potential increased incidence of HIV and HCV, given the barriers to providing testing services for program participants:

“We’re just gonna end up with a bunch of Hep C and the possibility of HIV after this year. . . it worries me completely because here we are keeping ourselves safe from COVID and we’re not putting any efforts into the other areas that also need some prevention.” [Respondent 5, rural, West]

Respondents stressed the importance of supporting testing services at similar levels to essential public health services, saying:

“Being preventative around the spread of HIV and hepatitis, and overdose prevention, and wound care . . . is a lot cheaper than being reactive and, let’s say a year from now, finding out that there’s been a 500% increase in new HIV cases” [Respondent 15, urban, Northeast]

In contrast, eight (30%) programs reported that they were providing HIV/HCV testing at similar volume as before COVID-19. However, these programs felt stymied by their inability to be involved in treatment linkages and provide navigation support for testing follow-up as a result of COVID-19-related impacts. One said,

“It’s really difficult to link people to care because you can’t walk in. Using a harm reduction approach, you want to – more than a warm handoff. Right? And so, being able to go with somebody to advocate for somebody . . . , that’s not possible with COVID” [Respondent 22, urban, Midwest].

Another described that: “once they leave – it’s hard to get them back. And I can’t take them in my car, and that was something that I used to do.” [Respondent 21, rural, Northeast]. Respondents also reflected that the need to get tested for COVID-19 prior to HIV/HCV treatment access was an added barrier, particularly when SSPs were not able to offer COVID-19 testing services themselves.

Finally, several respondents described concerns about care follow-through. Respondents noted that many of the care services agencies they

had existing partnerships with had reduced services or closed during the pandemic. As one respondent explained:

“What happens if someone gets tested and they get tested positive? Where are you gonna send them? If you have to do more testing, when are they available to do more testing, like the follow-ups that [had] not been solidified earlier during COVID?” [Respondent 15, urban, Northeast]

Uniformly, respondents expressed concern for the deleterious impacts on PWUD engagement in HIV and HCV testing and treatment. Respondents emphasized the need to establish new approaches to testing and to care linkages that address the pandemic-related barriers that persist.

Theme 4: *Changing OUD treatment modalities are a “double-edged sword”* [Respondent 27, urban, Northeast] for PWUD engagement and disparities

Within the survey results, 10 (37%) programs reported facilitating fewer linkages to SUD treatment as compared to before COVID-19, while 11 (41%) programs reported no changes and 5 (19%) reported an increase in their capacity to link program participants to SUD care. During interviews, many respondents described that the expansion of telehealth services for OUD treatment, resulting from COVID-19-related policies in the U.S., was a “double-edged sword” [Respondent 27, urban, Northeast] for PWUD. From one perspective, the expansion of remote OUD care offered increased treatment access and less stigmatizing care (particularly for OUD medications). As one respondent said:

“Because [buprenorphine] is now allowed to be telemedicine and you don’t have to come on site, it’s really been a miracle for [buprenorphine]. The barriers were completely lifted. I think we’re all worried that the barriers are gonna come back, but it’s definitely more effective to be able to call a provider, get screened, get [buprenorphine] same day, and then not have to worry about coming in and getting drug tested.” [Respondent 27, urban, Northeast]

However, respondents also posited that telehealth offers “two sides of the coin” [Respondent 6, urban, South] in that lack of in-person care potentially reduced engagement and furthered disparities for some PWUD. As one described,

“Sometimes less interaction or less questions or intake process leads to broader and more accessible participation, but it also leaves some space where those conversations don’t happen” [Respondent 6, urban, South]

Respondents perceived that the transition to virtual care may exacerbate disparities in treatment access, especially given the resources needed for telehealth participation:

*“I think we’re losing people because, like I said, what homeless person is walking around with a 250 gig memory iPhone? Most of them have SafeLink phones, and they can barely let them last through the month because the minutes are limited. And there’s also a lot of people that are not technically savvy, who would just, ‘Forget it then. I’m not gonna be involved if I can’t figure it out.’ They’re giving up before they even try.”* [Respondent 2, urban, Northeast]

Another respondent described that the transition to telemedicine may have disrupted OUD care that was already ongoing, in part due to the other unmet social needs many program participants were juggling:

*“And it’s like these are people who – there’s a few in particular who stopped injecting for a while and were on Suboxone, and I feel like I’m watching some people get worse. And it’s 100% connected to their socioeconomic situation in some way, whether it’s facing incarceration, losing housing, losing welfare. . . . So, while I’ve seen access to care improve through telemedicine and things like that, I’ve also just seen people’s lives are really shitty.”* [Respondent 4, rural, Northeast]

Ultimately, respondents feared for the downstream impacts of virtual care delivery on OUD care access, engagement, and outcomes for PWUD if disparities are not addressed.

## Discussion

This mixed methods study sought to characterize SSP perspectives on how the COVID-19 pandemic has continued to impact SSP operations and ongoing barriers to engaging PWUD in needed harm reduction services. Quantitative and qualitative data provided complementary learnings that demonstrated diverse experiences with and responses to COVID-19 among SSPs in the U.S. In almost every aspect of service delivery, at least half of programs reported continued changes and limitations to harm reduction service delivery, such as needing to increase the flexibility of syringe distribution formats and continued disruptions to HIV/HCV testing and OUD treatment linkages one year into the pandemic. The themes that emerged from our qualitative data, in tandem with survey responses, characterized many complex challenges associated with these adaptations, including barriers to sustaining changing models of syringe distribution and limited capacity to maintain supportive relationships with the PWUD they serve. Findings from this study reinforce our prior work (Glick et al., 2020; Frost et al., 2021) and other recent studies (Wenger et al., 2021; Seaman et al., 2021) that describe multilevel impacts of COVID-19 on SSP operations, including changes to syringe distribution approaches, increases in secondary exchange, and reductions in SSP’s ability to provide necessary onsite or off-site linkages to HIV, HCV and OUD care. However importantly, our data also showed that many SSPs are not experiencing service disruptions, and in some cases are experiencing an increased capacity to provide harm reduction services. These findings demonstrate the substantial resilience SSPs in the U.S. exhibit as they continue to try and counterbalance the restrictions and harmful impacts associated with the pandemic. Future work should continue to explore the factors that contribute to programmatic resilience for SSPs and other harm reduction organizations.

This study illuminates how existing regulatory and funding restrictions on SSP operations (e.g., policies that limit the ways that SSP can utilize funds, or policies that disallow needs-based syringe distribution), paired with the impacts of COVID-19, hinder SSPs’ nimbleness to adapt. For example, despite evidence that less restrictive syringe distribution leads to improved syringe access and reduced harms, several states in the U.S. continue to limit SSPs to 1:1 distribution formats or restrict syringe distribution altogether (Bluthenthal et al., 2007). While restrictions are not new, they strongly limit what SSPs can accomplish and their ability to respond to changing public health needs, such as during the COVID-19 pandemic (Jones et al., 2019). Further, SSPs high-

lighted multiple and multilevel factors that limited their syringe supply, including increased demand, increased costs, competing program needs (e.g., PPE), and restrictions on program ability to reallocate funds to increased syringe purchasing. These constraints, paired with an increased need to provide flexible syringe distribution in light of COVID-19 social distancing restrictions, left several programs unable to offer program participants the volume of syringes needed to avoid syringe reuse. This example and other data from this study highlight how COVID-19 has reinforced the pathways between structural-level stigma (e.g., policies that limit syringe distribution flexibility) and individual-level harms for PWUD (Collins et al., 2022; Wilkinson et al., 2020; Broz et al., 2021; Csak et al., 2021).

These data also echo concerns identified in our own and other data around the critical adverse impacts of COVID-19 on reduced HIV and HCV testing and linkages to HIV, HCV, or OUD care, which persist over a year into the pandemic (Glick et al., 2020; Frost et al., 2021; Wenger et al., 2021; Seaman et al., 2021). SSPs are uniquely well positioned to provide both sterile syringe services and other vital health and social services to PWUD, needs which continue and often increase in the context of public health crises such as COVID-19. Further, SSPs are needed not only for the syringe and testing and treatment services they provide, but also for the critical social connections they have with and provide for PWUD communities. The informal feedback SSPs garner on PWUD perspectives and experiences within the community allow SSPs to rapidly identify and address outbreaks and emergent public health needs such as overdose surges (Broz et al., 2021). Prior research has demonstrated that SSPs are most effective at reducing the sequelae of harms associated with injection drug use when they are able to offer holistic, integrated services including testing for HIV and HCV as well as care navigation support, such as assistance with travel or participation in HIV, HCV, or OUD-related care appointments (Broz et al., 2021). SSPs in our study reflected a range of services, with some offering on-site HIV/HCV testing and some offering referrals to external partners for testing. Our data demonstrated that regardless of testing approach though, many SSPs experienced disruptions resulting from an ongoing pandemic which may contribute to increased risk for HIV and HCV infection and overdose. This is in part because of barriers SSPs described around reduced partnerships and capacity to engage PWUD via patient-centered treatment linkages (Allen et al., 2019; Seaman et al., 2021). Importantly, given the ways in which our respondents described lost connections with program participants, it is possible that even when HIV and HCV testing resumes, engaging PWUD in testing services may continue to falter.

Learnings from this study also highlighted the ways in which national policies related to OUD care delivery, which changed in the U.S. in response to COVID-19, may contribute to benefits and harms for PWUD. Early in the pandemic, regulations related to requirements for telehealth and take-home dosing of medications for OUD relaxed to allow for more flexible care delivery in light of COVID-19 (Buchheit et al., 2021). Our respondents foreshadowed the ways in which telehealth modalities may widen disparities for PWUD seeking OUD care. This is an important perspective to explore as preliminary research hypothesizes that the transition to telehealth improves engagement for some patient groups (Langabeer et al., 2021; Harris et al., 2020; Buchheit et al., 2021). Our respondents emphasized that some OUD care via telehealth may require tailored outreach to engage more vulnerable patient groups like those who are unstably housed or experience more severe marginalization. As the U.S. considers options to continue, adapt or reverse these OUD-related policy changes, it will be critical to understand the impacts on OUD care outcomes across diverse people with OUD so as to inform equitable directions in policy improvement.

There are several limitations to acknowledge in this work. First, qualitative methods are by nature not intended to be generalizable. Second, while our sample of SSP respondents was diverse, it does not fully re-



flect the breadth of SSP programs across the U.S. and does not address experiences outside the U.S. Our sample was small and did not allow for sub analyses of results by geographic region, state, or other program characteristics, which would be valuable for future studies. Notably, the four SSPs who participated in the prior study but did not participate in the present study all reflected urban, health department-affiliated programs located in the Western region of the U.S. Third, the COVID-19 pandemic is rapidly evolving. The data for this study were collected between February - April of 2021, before the emergence of the Delta and Omicron variants and expanded rollout of COVID-19 vaccinations, which may have impacted SSP operations in new ways. However, the findings from this work reinforce results of prior studies and add context to our understanding of the barriers SSPs face during COVID-19. Additionally, future work is planned to continue to assess SSP perspectives as the pandemic unfolds.

## Conclusion

This mixed methods study explored SSP perspectives on the ongoing impacts of COVID-19 on SSP operations one year into the pandemic. Qualitative and quantitative data from this study characterized the ways in which COVID-19, combined with existing policies and stigma surrounding drug use, continue to hinder SSP operations and create barriers to the delivery of critical harm reduction services. At the same time, these findings highlight the creative ways SSPs have adapted services to be able to continue to effectively function during the pandemic including an increased use of secondary syringe exchange, mobile delivery services, and telehealth, although reliance on each of these service adaptations also raised sustainability issues, and in the case of telehealth may raise important equity issues. Findings from this study emphasize the commitment needed to ensure SSPs have the resources and capacity to adapt to changing public health needs, and the continued need to critically assess the impacts of policy changes on outcomes for marginalized PWUD, especially given the variability in needs and harm reduction service offerings across SSPs in the U.S.

## Ethics approval

University of Washington Institutional Review Board reviewed this protocol and determined this research to be exempt.

## Funding

This work was supported by the National Institute on Drug Abuse (R01 DA027379 and P30DA040500). The statements presented in this work are solely the responsibility of the author(s) and do not necessarily represent the views of the National Institutes of Health.

## Declarations of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Acknowledgement

The authors thank the SSP staff and leadership who participated in this study.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.drugpo.2022.103825](https://doi.org/10.1016/j.drugpo.2022.103825).

## References

- Allen, S. T., Grieb, S. M., O'Rourke, A., Yoder, R., Planchet, E., White, R. H., & Sherman, S. G. (2019). Understanding the public health consequences of suspending a rural syringe services program: A qualitative study of the experiences of people who inject drugs. *Harm Reduction Journal*, 16(1), 33. [10.1186/s12954-019-0305-7](https://doi.org/10.1186/s12954-019-0305-7).
- Aspinall, E. J., Nambiar, D., Goldberg, D. J., Hickman, M., Weir, A., Van Velzen, E., Palmateer, N., Doyle, J. S., Hellard, M. E., & Hutchinson, S. J. (2014). Are needle and syringe programmes associated with a reduction in HIV transmission among people who inject drugs: A systematic review and meta-analysis. *International Journal of Epidemiology*, 43(1), 235–248. [10.1093/ije/dyt243](https://doi.org/10.1093/ije/dyt243).
- Bartholomew, T. S., Nakamura, N., Metsch, L. R., & Tookes, H. E. (2020). Syringe services program (Ssp) operational changes during the COVID-19 global outbreak. *International Journal of Drug Policy*, 83, Article 102821. [10.1016/j.drugpo.2020.102821](https://doi.org/10.1016/j.drugpo.2020.102821).
- Beebe, J. (2001). *Rapid assessment process: An introduction*. AltaMira Press.
- Behrends, C. N., Lu, X., Corry, G. J., LaKosky, P., Prohaska, S. M., Glick, S. N., Kapadia, S. N., Perlman, D. C., Schackman, B. R., & Des Jarlais, D. C. (2022). Harm reduction and health services provided by syringe services programs in 2019 and subsequent impact of COVID-19 on services in 2020. *Drug and Alcohol Dependence*, 232, Article 109323. [10.1016/j.drugalcdep.2022.109323](https://doi.org/10.1016/j.drugalcdep.2022.109323).
- Bluthenthal, R. N., Ridgeway, G., Schell, T., Anderson, R., Flynn, N. M., & Kral, A. H. (2007). Examination of the association between syringe exchange program (Sep) dispensation policy and SEP client-level syringe coverage among injection drug users. *Addiction*, 102(4), 638–646. [10.1111/j.1360-0443.2006.01741.x](https://doi.org/10.1111/j.1360-0443.2006.01741.x).
- Broz, D., Carnes, N., Chapin-Bardales, J., Des Jarlais, D. C., Handanagic, S., Jones, C. M., McClung, R. P., & Asher, A. K. (2021). Syringe services programs' role in ending the HIV epidemic in the U.S.: Why we cannot do it without them. *American Journal of Preventive Medicine*, 61(5), S118–S129. [10.1016/j.amepre.2021.05.044](https://doi.org/10.1016/j.amepre.2021.05.044).
- Buchheit, B. M., Wheelock, H., Lee, A., Brandt, K., & Gregg, J. (2021). Low-barrier buprenorphine during the COVID-19 pandemic: A rapid transition to on-demand telemedicine with wide-ranging effects. *Journal of Substance Abuse Treatment*, 131, Article 108444. [10.1016/j.jsat.2021.108444](https://doi.org/10.1016/j.jsat.2021.108444).
- Csák, R., Shirley-Beavan, S., McHenry, A. E., Daniels, C., & Burke-Shyne, N. (2021). Harm reduction must be recognised an essential public health intervention during crises. *Harm Reduction Journal*, 18(1), 128. [10.1186/s12954-021-00573-6](https://doi.org/10.1186/s12954-021-00573-6).
- Collins, A. B., Edwards, S., McNeil, R., Goldman, J., Hallowell, B. D., Scagos, R. P., & Marshall, B. D. L. (2022). A rapid ethnographic study of risk negotiation during the COVID-19 pandemic among unstably housed people who use drugs in Rhode Island. *International Journal of Drug Policy*, 103, Article 103626. [10.1016/j.drugpo.2022.103626](https://doi.org/10.1016/j.drugpo.2022.103626).
- Davis, S. M., Davidov, D., Kristjansson, A. L., Zullig, K., Baus, A., & Fisher, M. (2018). Qualitative case study of needle exchange programs in the Central Appalachian region of the United States. *PLoS One*, 13(10), Article e0205466. [10.1371/journal.pone.0205466](https://doi.org/10.1371/journal.pone.0205466).
- Deterding, N. M., & Waters, M. C. (2021). Flexible coding of in-depth interviews: A twenty-first-century approach. *Sociological Methods & Research*, 50(2), 708–739. [10.1177/0049124118799377](https://doi.org/10.1177/0049124118799377).
- Des Jarlais, DC, Sypsa, V, Feelemyer, J, Abagiu, AO, Arendt, V, Broz, D, Chemtob, D, Seguin-Devaux, C, Duwve, JM, Fitzgerald, M, Goldberg, DJ, Hatzakis, A, Jipa, RE, Katchman, E, Keenan, E, Khan, I, Konrad, S, McAuley, A, Skinner, S, & Wiessing, I (2020). HIV outbreaks among people who inject drugs in Europe, North America, and Israel. *The Lancet HIV*, 7(6), e434–e442 Jun. [10.1016/S2352-3018\(20\)30082-5](https://doi.org/10.1016/S2352-3018(20)30082-5).
- Frost, M. C., Sweek, E. W., Austin, E. J., Corcorran, M. A., Juarez, A. M., Frank, N. D., Prohaska, S. M., LaKosky, P. A., Asher, A. K., Broz, D., Jarlais, D. C. D., Williams, E. C., & Glick, S. N. (2021). Program adaptations to provide harm reduction services during the COVID-19 pandemic: A qualitative study of syringe services programs in the U.S. *AIDS and Behavior*. [10.1007/s10461-021-03332-7](https://doi.org/10.1007/s10461-021-03332-7).
- Glick, S. N., Prohaska, S. M., LaKosky, P. A., Juarez, A. M., Corcorran, M. A., & Des Jarlais, D. C. (2020). The impact of COVID-19 on syringe services programs in the United States. *AIDS and Behavior*, 1–3. [10.1007/s10461-020-02886-2](https://doi.org/10.1007/s10461-020-02886-2).
- Hamilton, A. B., & Finley, E. P. (2019). Qualitative methods in implementation research: An introduction. *Psychiatry Research*, 280, Article 112516. [10.1016/j.psychres.2019.112516](https://doi.org/10.1016/j.psychres.2019.112516).
- Harris, M., Johnson, S., Mackin, S., Saitz, R., Walley, A. Y., & Taylor, J. L. (2020). Low barrier tele-buprenorphine in the time of covid-19: A case report. *Journal of Addiction Medicine*, 14(4), e136–e138. [10.1097/ADM.0000000000000682](https://doi.org/10.1097/ADM.0000000000000682).
- Harris, PA, Taylor, R, Thielke, R, et al., (2009). Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *Journal of Biomedical Informatics*, 42, 377–381.
- Jones, C. M. (2019). Syringe services programs: An examination of legal, policy, and funding barriers in the midst of the evolving opioid crisis in the U.S. *International Journal of Drug Policy*, 70, 22–32. [10.1016/j.drugpo.2019.04.006](https://doi.org/10.1016/j.drugpo.2019.04.006).
- Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice*, 24(1), 120–124. [10.1080/13814788.2017.1375092](https://doi.org/10.1080/13814788.2017.1375092).
- Langabeer, J. R., Yatsco, A., & Champagne-Langabeer, T. (2021). Telehealth sustains patient engagement in OUD treatment during COVID-19. *Journal of Substance Abuse Treatment*, 122, Article 108215. [10.1016/j.jsat.2020.108215](https://doi.org/10.1016/j.jsat.2020.108215).

- Ruiz, M. S., O'Rourke, A., & Allen, S. T. (2016). Impact evaluation of a policy intervention for HIV prevention in Washington, DC. *AIDS and Behavior*, *20*(1), 22–28. [10.1007/s10461-015-1143-6](https://doi.org/10.1007/s10461-015-1143-6).
- Seaman, A., Leichtling, G., Stack, E., Gray, M., Pope, J., Larsen, J. E., Leahy, J. M., Gelberg, L., & Korthuis, P. T. (2021). Harm reduction and adaptations among PWUD in rural Oregon during COVID-19. *AIDS and Behavior*, *25*(5), 1331–1339. [10.1007/s10461-020-03141-4](https://doi.org/10.1007/s10461-020-03141-4).
- Taylor, B., Henshall, C., Kenyon, S., Litchfield, I., & Greenfield, S. (2018). Can rapid approaches to qualitative analysis deliver timely, valid findings to clinical leaders? A mixed methods study comparing rapid and thematic analysis. *BMJ Open*, *8*(10), Article e019993. [10.1136/bmjopen-2017-019993](https://doi.org/10.1136/bmjopen-2017-019993).
- Turner-Bicknell, T. (2021). Implementing best-practice with a local syringe service program: Needs-based syringe distribution. *Public Health Nursing (Boston, Mass.)*, *38*(1), 85–92. [10.1111/phn.12823](https://doi.org/10.1111/phn.12823).
- Wenger, L. D., Kral, A. H., Bluthenthal, R. N., Morris, T., Ongais, L., & Lambdin, B. H. (2021). Ingenuity and resiliency of syringe service programs on the front lines of the opioid overdose and COVID-19 crises. *Translational Research*, *234*, 159–173. [10.1016/j.trsl.2021.03.011](https://doi.org/10.1016/j.trsl.2021.03.011).
- Wilkinson, R., Hines, L., Holland, A., Mandal, S., & Phipps, E. (2020). Rapid evidence review of harm reduction interventions and messaging for people who inject drugs during pandemic events: Implications for the ongoing COVID-19 response. *Harm Reduction Journal*, *17*(1), 95. [10.1186/s12954-020-00445-5](https://doi.org/10.1186/s12954-020-00445-5).