



# Interventions to Improve Care for People Who Inject Drugs in Rural Areas

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## Abstract

As morbidity and mortality from the opioid epidemic grow, it has become apparent that there are significant differences between rural and non-rural communities. Rural communities face different challenges in battling the opioid epidemic than their urban counterparts, including populations affected, types of opioids used, attitudes about opioids, and availability and utilization of harm-reduction strategies. Differences between rural and non-rural opioid outcomes may be explained by examining the differences in availability of medical and harm reduction services, such as syringe exchange programs (SSP), and differential utilization of services amongst rural and urban drug users. The authors highlight drivers of opioid pandemic inequalities in rural areas and reviews tailored strategies that may help ameliorate those inequalities.

**Keywords:** Rural, Opioid, Harm Reduction, Syringe Exchange

## Introduction

Opioid use has boomed in the US, with rural areas seeing the greatest increases in mortality in the past two decades [1]. In 2018, despite decreasing opioid prescriptions per person across the nation, 11% of US counties still had enough opioid prescriptions dispensed for every person in their county to have one, with a disproportionate number of those counties being rural [2,3]. The exact sources of the opioid epidemic is also different in rural communities. In rural communities, prescription opioid analgesics (POAs) account for the greatest share of overdose deaths, in contrast to urban areas where non-prescription synthetic opioids like fentanyl account for a greater proportion of overdose deaths [1,4].

Rural communities also experience unequal access to resources to combat the harms of opioid addiction. People who inject drugs (PWID) in rural areas often travel longer distances to access scarcer support services while confronting greater community stigma [5]. For instance, even as urban areas have expanded access to syringe services programs (SSP) in the last 30 years, in rural areas SSP have struggled to reach affected populations [6]. There is more competition for scarce support resources in rural areas, with rapidly expanding younger populations of PWID in rural areas compared to stably sized groups of PWID in urban regions [7].

In this review, we examine social and structural obstacles to accessing opioid services in rural areas and propose interventions beyond SSP that are tailored to the needs of at risk communities.

## Characterizing the Problem

### Populations Affected by the Opioid Epidemic

Rural PWID are demographically distinct from urban PWID. Rural PWID are more likely than other PWID to be under 30 years of age, and are more likely to be adolescents [8,9]. Rural adolescents exhibit 28% greater risk of recent prescription opioid misuse compared to their urban counterparts [8]. Females in rural areas have higher rates of overdose deaths than their urban counterparts [10].

### Opioid Types in Rural Areas

Types of opioids used by rural and urban PWID vary. Though heroin was once the most frequently injected drug in rural areas, rural PWID are now significantly more likely than non-rural counterparts to inject POAs [11], which have become the greatest contributor to overdose deaths in those areas, which is in contrast to urban areas where illicitly manufactured fentanyl has increased the proportion of deaths [1].

## **Distinctive Epidemiology of PWID in Rural Areas** ***Social Characteristics that Increase Utilization of Opioids in Rural Areas***

Social factors such as employment involving physical labor, and opioid risk perception, may explain differences in opioid use in rural versus urban communities. It has been postulated that rural patients are more likely to experience chronic pain from jobs involving manual labor, resulting in increased gateway prescriptions of POAs [1]. Qualitative data suggest that because rural individuals are more likely to perform jobs requiring heavy manual labor, they are also more likely to culturally normalize prescription opioid misuse [12]. Adolescents in rural areas are less likely to identify POA misuse as being risky or dangerous [8] than their urban counterparts, further supporting the idea of POAs being more culturally normalized in rural communities. Rural young people with greater economic means are more likely to leave for urban areas in pursuit of attaining higher education than those of lower means [12]. This is relevant because lower economic status has been linked to increased risk of opioid dependence [12], and the economic migration of young people from rural to urban areas contributes to rural communities' likelihood of normalizing addiction within remaining social environments for adolescents.

## ***Social Characteristics that Decrease Utilization of Addiction and Harm Reduction Services in Rural Areas***

There is a complex social interplay between PWID and non-PWID community members, creating fear and stigma in rural communities that can deter PWID from accessing harm reduction services [13]. In many rural areas there is concern from non-PWID community members that SSP invite drug use and crime into the community, despite a lack of data suggesting correlation between increased substance use with the presence of an SSP [13]. PWID have fears about SSP as well. In one study, 72% of rural PWID reported concerns of being arrested if carrying needles in public [14], and in another study rural PWID were less likely to access syringe based programs if they feared being surveilled by police or arrested at them [14].

Confidentiality is a concern among rural PWID [11], given life in smaller communities. Rural PWID report increased hesitancy to access services due to community stigma and lack of anonymity [1]. These concerns are especially important for clients who were part of methadone maintenance programs attempting to access SSP, as they risk being seen violating the agreements of methadone programs [15]. Clients whose family or community members work in support services may lose their anonymity by accessing services [1].

Purchasing injection supplies from pharmacies is a potential route of access to harm reduction supplies that unfortunately may perpetuate these social barriers to rural community members [16]. The drawbacks of pharmacy-based sales are that many require identification to purchase syringes, preventing

anonymity [17], and that pharmacies may participate with law enforcement agencies at their discretion [14], both chief concerns expressed by rural PWID.

## ***Structural Characteristics Influencing Traditional Opioid Medical Services in Rural Areas***

The increased prevalence of overdose deaths in rural areas is partly attributable to increased distance to addiction services [18]. Costs to transport rural patients to urban methadone facilities in Washington state were greater than \$3 million in one year [1] and in Vermont transportation difficulties often prevented rural patients from accessing treatment for addiction [19,20]. Emergency vehicles are more likely to experience delays in providing naloxone in rural areas, and because of regional variability in scope of practice laws, EMTs in rural areas are less likely to be trained or legally permitted to administer naloxone to reverse overdoses [6,21-23].

## **Medical Support Services for PWID Living in Rural Areas**

Physicians have an important role in addressing the crisis of addiction and associated co-morbid diseases that affect PWID in rural areas, though current data suggest ongoing unmet need. In many rural areas of the US, there is a dire lack of addiction specialists, infectious disease specialists, mental health professionals, and primary care providers (PCP) [5]. SSP commonly attempt and struggle to connect their clients to substance use disorder treatment, PCP, HCV treatment, mental health care, and housing assistance, reflecting that many of the needs of rural PWID could be met by physicians [24]. The dearth of PCP hits rural communities hard, with elevated risk of opioid mortality in areas with fewer PCP [25]. At the same time the need for physicians in rural areas is increasing, interest in rural medicine among physicians has decreased. Rural Healthy People 2010 reported that by year 2000, there were only 156 PCP per 100,000 population compared to 280 in metropolitan counties [26], and in 2017, the number of primary care physicians per 100,000 in non-metro areas fell to 53 [27,28].

Not only is there a need to increase the number and availability of PCP treating PWID in rural areas, but those PCP must also prescribe opioids judiciously. Rurality is an independent variable that increases the likelihood a physician will prescribe opioids for non-malignant chronic pain [2], and high risk prescribing is more common in rural areas [29]. It is unclear if this is due to disparities in prescribing practices or other factors such as decreased access to multidisciplinary teams to assist with treatment of chronic pain in rural areas [30], warranting further inquiry. Nonetheless, the number of prescription opioids in rural communities is significantly higher per capita, increasing the risk of opioid related morbidity to those communities [3].

## ***Structural Characteristics that Decrease Access to Harm Reduction Services in Rural Areas***

Harm reduction services can be a safety net that promote the

health of drug users when traditional intervention services are unavailable or undesired by the user. Lack of a federal system to dispense these harm reduction services and prohibitions against using federal funds to purchase syringes for these programs has resulted in a patchwork system across the country with significant variability in services and availability [31,32]. The morbidity associated with decreased access to traditional addiction services in rural areas is intensified by decreased access to harm reduction services; rural areas face significant disparities in the availability of SSP programs despite an increase of injection drug use in rural populations [11]. Only 20% of syringe exchange programs nationally are in rural areas, with high variation in program numbers across rural areas in the US [11]. Rural SSP that do exist are more likely to experience funding shortages and less likely to operate full time, and existing rural SSP are less likely to offer participants naloxone [11].

The distance to SSP is a significant barrier to accessing services that have been shown to reduce the infectious disease burden in rural communities. PWID are three times more likely to access SSP that were within 10 minutes of them [33] whereas in one study the median distance to an SSP in rural areas was 37 miles [18]. In rural areas where SSP were not accessible, there was increased sharing of syringes, purchasing syringes on the street, and hoarding and reusing syringes [34].

### **Inadequacy of Current Pharmacy Workarounds for Rural PWID**

Rural areas, like urban areas, have attempted to expand the network of harm reduction services by providing access to SSP in pharmacies. At present, however, many pharmacies do not always follow harm reduction best practices, such as requiring a physical identification [17], distributing syringes that harbor larger quantities of blood and increase risk of infectious transmission [5], not functioning as syringe disposal sites [11], and due to rural legal sanctions preventing the purchase of syringes [35].

In some rural states where syringe purchase in pharmacies is not explicitly illegal, PWID have reported being denied syringe purchase at the discretion of pharmacy staff. One study found a 23-79% rate of pharmacy refusal of syringe sales in states where such sales were legal [14]. Another study found that 41% of surveyed pharmacists in Kentucky reported having ethical concerns about dispensing syringes to PWID [36]. The harm of this is two-fold in that pharmacy refusal has also been shown to drive costs of used syringes on the street in rural communities to as high as \$10 each [22], thus impacting entire networks of PWID. As a confluence of many such factors, only 3% of rural PWID report pharmacies as their preferred location for syringe access [37].

### **Interventions tailored to the epidemiology of rural PWID**

No single intervention is likely to address all factors needed to improve the outcomes of PWID in rural areas. We suggest

a multifaceted approach (Figure 1).

### **Age- and Family-centered Harm Reduction for PWID in Rural Areas**

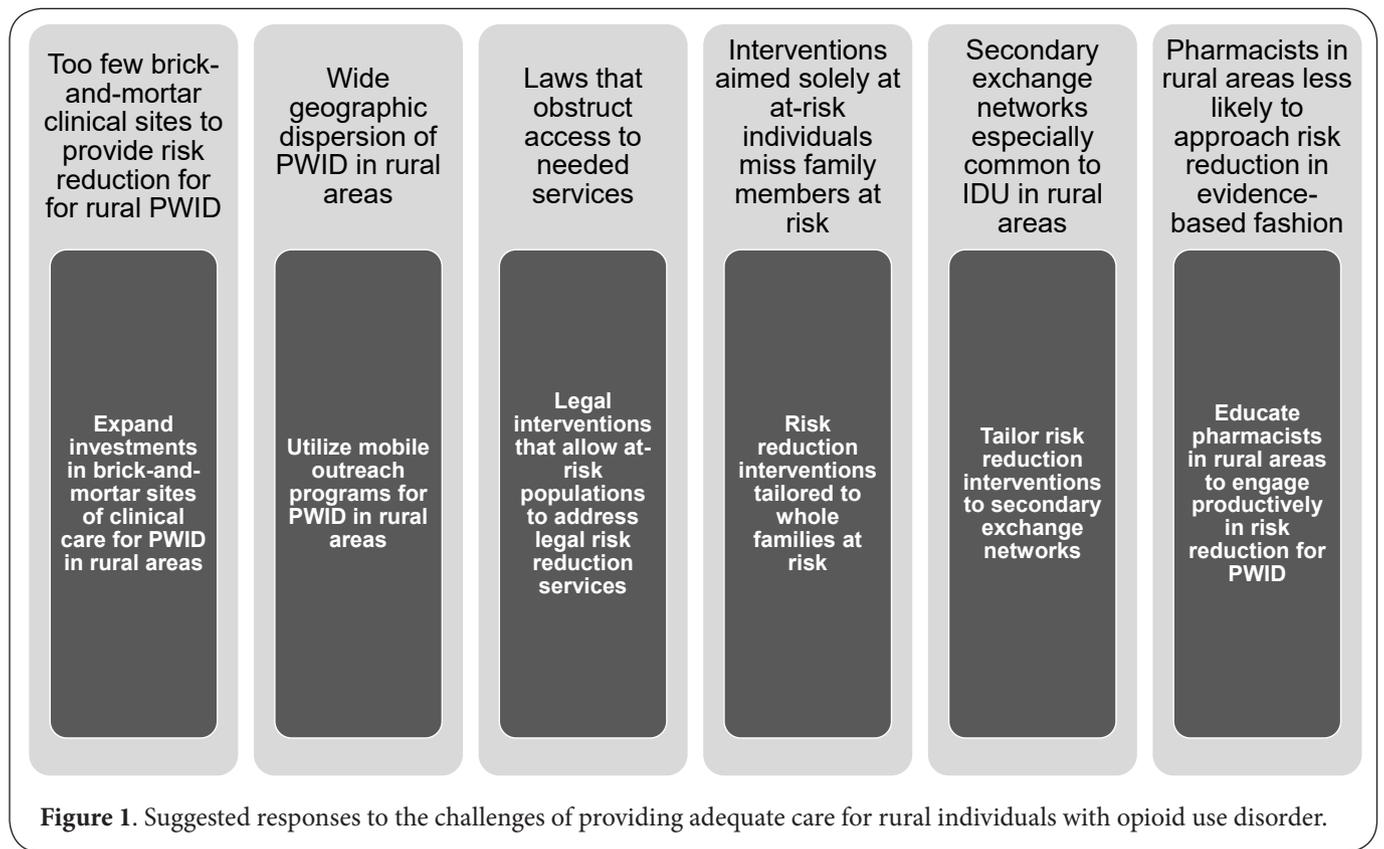
To overcome the inadequacy of current harm reduction services for rural PWID, we propose epidemiologic-based interventions more likely to address local need. For instance, because we know that rural opioid users tend to be younger, and that having an older family member with an opioid prescription confers a twofold risk in overdose death [38] it would be logical to design an intervention to reach this specific age bracket and family dynamic. This might be accomplished by introducing opioid specific counselling to rural children and parents as anticipatory guidance in pediatric care. Because we know there is an intertwining of opioid normalization among rural manual laborers as a result of injury [1], it would be appropriate to consider ways to decrease injury among laborers in the workplace, such as a greater emphasis on safety techniques in licensing procedures and to normalize physical therapy and non-opioid therapeutics as the primary treatment for such injuries. Key to developing effective interventions in rural populations that consider social conditions is further research to identify modifiable risk factors.

### **Building on Pre-existing Secondary Exchange Networks**

The shortcomings in accessibility of rural SSP have yielded distinctive local adaptations to increase access to harm reduction, including encouragement of secondary exchange, a process by which one person will pick up supplies for other PWID [6,11,18]. The more geographically isolated a community, the more likely that community is to have a secondary exchange network [37]. One study found that 60% of individuals obtaining supplies from a rural SSP routinely picked up for people other than themselves, and that 13% of rural PWID reported secondary exchange as their primary source of clean syringes, compared to 1% amongst their non-rural counterparts [37]. Secondary exchange in rural settings facilitates privacy and confidentiality of recipients [11]. SSP should incorporate this knowledge into their practices and encourage secondary exchange as available data show that 24% of SSP prohibit or do not specifically promote secondary exchange [6]. Harm reduction services in rural areas can build on the existence of secondary exchange networks by developing additional support programs including people who use drugs as peer support persons, community informants, and organizers of harm reduction services [39-41].

### **Fixing the Shortcomings of Pharmacy-based Harm Reduction in Rural Areas**

Despite the current shortcomings of pharmacy-based harm reduction services for rural PWID, pharmacy-based harm reduction has important advantages. Not only is there greater geographic accessibility to pharmacies, PWID also report less social stigma associated with entering pharmacies than with harm



reduction facilities [15,21,42-44]. This is important because much of the physical infrastructure already exists, so modifications would mostly be in the form of policy change. Explicit legalization of harm reduction services in pharmacies would give pharmacy patrons wanting to purchase syringes safe ground without worry of being hassled by law enforcement or pharmacy staff. Abolishing requirements for identification may quell the social concerns around confidentiality. Such movements toward normalizing syringe-based pharmacy sales for PWID would allow for conversation about ensuring that there is an adequate supply of appropriate types of syringes (as opposed to high-deadspace syringes), and an appropriate way to dispose of them in pharmacies as well. Similarly, in some countries vending machines are used as syringe distribution points [45], which decreases the potential for interactions with members of one's own community [46]. Additionally, pharmacies are more capable of providing 24-hour services and drive-thru options, both of which are associated with greater access and likelihood of prescribing naloxone [21].

### Mobile Outreach to PWID in Rural Areas

Because a fixed location SSP is intrinsically problematic in sparsely populated rural areas, and secondarily may exacerbate concerns of crime and arrest by rural community members, mobile SSP are a promising harm reduction method in

rural areas [47]. Mobile van SSP occupy a specific niche in the harm reduction community and having them available as an adjunct to fixed sites is preferred by many PWID [48]. Mobile vans have the advantage of being more discreet and potentially less intensively policed, thus addressing privacy and incarceration concerns of PWID [48]. Additionally, mobile vans are more likely to attract beginner PWIDs who do not see themselves as having a substance use disorder, are more difficult to reach, and are less likely to be in addiction treatment [47]. Because of the greater cultural normalization of opioid use in rural areas, mobile vans may be particularly effective in serving this demographic. While mobile van SSP cannot replace a fixed site, they are useful in maintaining relationships with PWID for which fixed site SSP are not available or poorly accessible [48]. Mobile SSP are able to serve people with limited mobility due to transport issues or disability, and have greater evening availability [48]. Mobile SSP thus are poised to be an effective intervention if their use is expanded, given the hesitancy expressed by many rural communities regarding accessing harm reduction services via other modalities.

### Expanding the Brick-and-Mortar Infrastructure for Harm Reduction in Rural Areas

To reverse the dwindling supply of rural healthcare providers [49] in a fashion that supports the growing needs of the rural

population of PWID, investments in the expansion of general and subspecialty medical care, the preservation of rural hospitals and recruitment of well-trained clinicians [50-53] should be tethered to clinical training aimed at enhancing rural provider proficiency with harm reduction for PWID.

Increasing the capacity of rural physicians to provide harm reduction services for PWID can be accomplished in part by decreasing administrative barriers, for instance removing restrictions regarding number of patients a physician can have on Medication Assisted Therapy (MAT) [54]. Some rural communities have markedly improved access to opioid replacement therapy by implementing a “hub and spoke model” [55] in which there are few primary “hubs” in which high intensity and specialized addiction treatment is provided, and several “spokes” in which more routine maintenance care is available. The use of telemedicine can also increase the reach of such hub and spoke models [56].

### Addressing Legal Barriers to Harm Reduction in Rural Areas

One contributor to the variability in utilization of harm reduction services in rural areas is varying degrees of legality across states. Presently, federal funds cannot be used to purchase syringes [31], states do not have uniform Good Samaritan laws for callers seeking first responder assistance in overdoses [57], or for EMTs to administer naloxone [23], and pharmacy staff are not adequately and uniformly educated about harm reduction laws [14]. Consolidating this patchwork of legislation and broadening legal protection for all PWID seeking treatment or harm reduction is an important step to dismantle unequal policy that disparately impacts PWID by region. Policy geared at decreasing harm for PWID would do best to include rural PWID as consulting members of the decision-making team [39,40,41].

### Conclusions

Rural PWID face unique challenges that require a distinct social and medical response. We propose tailored interventions aimed at shoring up harm reduction services in rural areas including age- and family-appropriate harm reduction services, harm reduction programming that builds on pre-existing secondary exchange networks, improvements to pharmacy-based services, an intensification of mobile outreach to PWID in rural areas, investments in rural medical infrastructure that align to expanded harm reduction services along with expansions of legal protections for harm reduction in rural areas. Unfortunately, few studies are available that parse out the rural-urban differences in opioid dependence in a way that is granular enough to improve understanding of how people in rural areas interact with their specific risk factors. Future investigation into this topic will help to identify additional interventions specific to rural PWID. No single intervention is adequate in isolation to meet the needs of all rural PWID but these interventions in concert can reverse the growing harm of the rural opioid epidemic.

### Competing interests

The authors declare that they have no competing interests.

### Authors' contributions

Authors' contributions	NDA	TL	AJH
Research concept and design	--	--	--
Collection and/or assembly of data	✓	--	--
Data analysis and interpretation	✓	✓	✓
Writing the article	✓	--	✓
Critical revision of the article	✓	✓	✓
Final approval of article	✓	✓	✓
Statistical analysis	--	--	--

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