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RAPID REVIEW

Unlimited versus Restrictive Distribution Policies in Needle and Syringe Programs

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Key Findings

- Needle and syringe programs (NSPs) have demonstrated effectiveness for decreasing human immunodeficiency virus (HIV) infection and injecting risk behaviours.[1] Structural-level, multi-component programs with high-coverage are the most beneficial.[1]
- Globally, people who inject drugs (PWID) face many barriers in NSP access and coverage, with many programs restricting the number of needles/syringes provided and limiting strategies that could enhance sterile needle/syringe access such as peer distribution.[2-4] Removal of restrictions during the COVID-19 response facilitated peer distribution by increasing the number of needles/syringes given and offering mobile services and delivery.[5,6]
- NSP distribution policy restrictiveness impacts population health and safety, for both PWID and their communities. **Less restrictive NSPs** increased needle/syringe access and decreased needle/syringe re-use and sharing, and were also associated with proper disposal of used needles/syringes. **More restrictive NSP** distribution policies resulted in reduced program uptake.
- Newer programs and programs that distributed fewer needles/syringes were associated with higher costs, indicating that purchasing volume may reduce costs.
- In addition to restrictions on needle/syringe distribution, there are a range of physical, social, and economic barriers to accessing NSPs that create inequities and impact community coverage (e.g., stigma, transportation, lack of outreach to priority groups).

Scope

- This synthesis addresses the following question: How does unlimited distribution versus restrictions on distribution of needles/syringes in NSPs impact population health and safety, for both PWID, as well as their community?
- Distribution policies are the focus of this synthesis, which compares unlimited distribution versus restrictions on distribution of needles/syringes at NSPs for harm reduction. Distribution policy restrictions may include one-for-one exchanges or individual eligibility criteria limits, predefined number of needles/syringes distributed per visit, limits on the number of needles/syringes distributed during a defined time period, distribution only when used needles/syringes are returned, geographic boundaries, or other factors. NSPs may or may not include harm reduction counselling.

Background

This synthesis addresses the impact of NSP distribution policies – either unlimited or restrictions on distribution of needles/syringes – at the individual level for PWID, and for the community at large. Ensuring the well-being of PWID, reducing spread of blood-borne infections, and safeguarding public health are issues requiring an evidence-based approach to inform policies. For example, re-using a needle used by another person facilitates the spread of both HIV and hepatitis C virus (HCV).[7] Studying the efficacy of differing needle distribution policies is pertinent, given both the number of PWID in Canada and needle-and-syringe coverage have increased over time.[8]

The Canadian Drugs and Substances Strategy aims to improve Canadians' health and safety via a harm reduction approach.[9] Harm reduction encourages the development and implementation of policies and programs that adopt non-judgemental and non-coercive knowledge and skill building to decrease harm and help people who use substances live safer, healthier lives.[10] In Ontario, Boards of Health collaborate with local partners to reduce substance use harms including providing harm reduction supplies (i.e., sterile needles and syringes, and safer drug use supplies) and support the Ontario Harm Reduction Program Enhancement.[11] The Enhancement includes a) designing and implementing local opioid response initiatives; b) implementing or supporting implementation of opioid overdose early warning systems; and c) serving as naloxone distribution leads, providing training and other supports.[11]

There exists a strong body of evidence for the effectiveness of NSPs in reducing transmission of infectious diseases among PWID.[12,13] In order to meet global targets for HIV and HCV set by the Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO), respectively, many countries will need to scale up evidence-based harm reduction interventions, such as NSPs, to prevent HIV and HCV transmission.[13] Cultural and societal values also play a pivotal role in shaping these programs.[14] In jurisdictions in which drug use is deeply stigmatized, programs like NSPs that support PWID become contentious. Lastly, economic considerations are a factor in the establishment of NSPs. The establishment and sustainability of NSPs require funding, and economic constraints can determine the extent of support or restriction for these programs.[15] Ultimately, the degree of restrictiveness on needle distribution policies emerges as an outcome of socio-cultural, economic, political, and public health factors.

Methods

A rapid review was conducted to facilitate a timely response for decision making, feasibility, and to keep the review question within scope.[16] Public Health Ontario (PHO) Library Services designed and executed scientific and grey literature searches, limiting the search to English language articles published 2018 to the present. We conducted database searches December 28, 2023, with grey literature searches conducted Jan 25 – Feb 2, 2024. The full search strategy is available upon request from PHO.

Sources published 2018 onward were eligible for inclusion if they: 1) included PWID; 2) compared unlimited distribution versus restrictions on distribution of needles/syringes at NSPs (e.g., unlimited; one-for-one exchange; restrictions based on individual eligibility criteria, number of needles/syringes, return of used needles/syringes, hours of operation, geography, or other factors); and 3) provided results from Organization for Economic Co-operation and Development member countries for (any) outcomes at the individual, community, and program/policy levels (e.g. health behaviours and outcomes, public safety, equity of policies). Both review-level evidence and guidelines/recommendations were eligible. Where sources use alternate terms, we use needle and syringe programs (NSPs) for consistency.

One PHO staff member extracted relevant data. Quality appraisal was conducted for included reviews using the Healthevidence.org Quality Assessment Tool for Review Articles; the methodological quality of a review scoring ≤4, 5 to 7, or ≥8 out of a total score of 10 was rated as weak, moderate, or strong, respectively.[17] Guidelines were appraised using the Appraisal of Guidelines for Research & Evaluation II (AGREE II) instrument.[18] The set of included papers was divided between two reviewers (TP, KW) who made independent assessments of quality and resolved uncertainties via discussion.

Results

Characteristics of Included Papers

We included 13 published review articles and eight guidance documents' with recommendations relevant to distribution policies in NSPs.

Review-level evidence from 13 papers included systematic reviews (n=7)[2,5,13,19-22] with narrative reviews (n=4)[3,4,23,24] and one each of rapid[6] and scoping[25] reviews. While the reviews were conducted by research groups in the United States (U.S.) (n=5), United Kingdom (UK) (n=5), Canada (n=2), and Australia (n=1), several of the reviews examined NSPs from multiple jurisdictions[2,5,19,25] or at the global level[21,22]. Included reviews incorporated published literature with searches ranging from inception of databases through 2020, with two searches conducted after 2020 in 2021 and 2022. Based on ten quality criteria, two[2,19] of the 13 reviews rated high in quality (i.e., score of 8 or 10), five[5,13,20,21,25] rated moderate in quality (i.e., score of 6 or 7), and six[3,4,6,22-24] rated low in quality (i.e., score of 1 to 4). Search strategies varied greatly in comprehensiveness across the included reviews with varying quality in terms of strategy. Most reviews did not conduct quality appraisal of their included studies, and subsequently did not interpret results in the context of study quality.

Eight guidance documents included NSP best practice recommendations (n=4)[7,26-28], guidelines on applying for NSP materials and funding (n=1)[29], a technical package to support the planning, design, implementation, and sustainability of NSPs (n=1)[30], guidance for NSPs in collecting data on assessing syringe coverage (n=1)[31], and a surveillance report on infections and associated risks and behaviours among PWID (n=1)[32]. The jurisdictions covered by the guidance documents included the U.S. (n=4), Canada (n=3), and UK (n=1). Half of the guidance documents were issued by national organizations (i.e., Working Group on Best Practice for Harm Reduction Programs in Canada, U.S. National Alliance of State and Territorial AIDS Directors, University of Washington's Supporting Harm Reduction Programs (SHaRP), and UK Health Security Agency), with the remainder issued by provincial/state level organizations (i.e., Ontario Harm Reduction Network, British Columbia Centre for Disease Control, California Department of Public Health Office of AIDS, and Washington State Department of Health). Most guidance documents did not report their methods, including whether systematic searching was done, criteria for selecting the evidence were described, strengths and limitations of the body of evidence, methods for formulating their recommendations, and health benefits, side effects, and risk consideration in formulating the recommendations.

The 21 included papers addressed a range of harms and benefits of NSP distribution policies including individual-level behavioural and health outcomes (i.e., needle/syringe reuse and sharing, incidence of HIV, HCV and other infections, and overdose rates), community-level outcomes (i.e., public safety in terms of needle/syringe disposal), program- or policy-level outcomes (i.e., program uptake), as well as accessibility and equity of policies (i.e., inclusion/equitable access and barriers associated with access). None of the included papers reported on the impacts of NSP distribution policies on perceptions of public safety, drug use rates, program cost-effectiveness, and referrals to other services.

The study populations of the 21 papers included PWID among the general population, with one paper including incarcerated PWID[13]. The interventions across the papers consisted of NSP operations in general, in non-urban settings[20], and during the COVID-19 pandemic[5,6] that ranged in service delivery modes, including needles/syringes distributed via fixed site NSPs, pharmacies, mobile NSPs, primary care or hospital systems, vending machines, home/mail delivery, and peer-distribution.

Overall, distribution policies were considered **unlimited/less restrictive** in this rapid review if they were characterized in the papers as follows: unlimited, needs-based, adequate or high coverage defined as ≥100% of injections/coverage such that a new sterile needle/syringe is used for every injection, population-level coverage of >200 needles/syringes distributed per PWID per year, syringe saturation, regular attendance at a NSP at least once per week, low threshold, or without or fewer limits (e.g., on syringe quantity, geography, intake processes). In contrast, distribution policies were considered **more restrictive** in this rapid review if they were characterized in the papers as follows: one-for-one exchange (i.e., used syringes returned for an equal number of new syringes), one-for-one-plus exchange (i.e., fixed number of additional syringes provided beyond the number returned), return of used syringes required, inadequate or low coverage defined as <100% of injections/coverage, population-level coverage of ≤200 needles/syringes distributed per PWID per year, syringe scarcity, or based on limits or requirements (e.g., maximum number of syringes acquired during a single transaction, need for identification or prescription, evidence of co-existing health condition requiring an injection, high minimum sales quantity).

Findings below include a summary of findings on the impact of restrictions based on published review-level evidence, equity and accessibility considerations addressed across all of the included sources, and relevant recommendations from the published guidance documents.

Summary of Findings on Impact

Outcomes reported in this section pertain to findings from published review-level evidence related to individual behaviour and health outcomes, community outcomes, and program or policy outcomes. Thirteen reviews reported the impact of distribution policies in NSPs.

INDIVIDUAL BEHAVIOURAL AND HEALTH OUTCOMES

Needle/Syringe Re-Use and Sharing

Three reviews of published evidence reported needle re-use and or sharing, with all three reviews' authors reporting that increasing needle and syringe access decreased needle re-use and sharing.[3,21,25] These reviews operationalized access via mobile clinics (i.e., mobile clinic/van format resulted in 'missing the van' and increased needle re-use and sharing)[25]; via sales without prescriptions at pharmacies, syringe access in hospitals, home/mail delivery, and vending machine access[3]; and via estimates of coverage (as low or high) at the country level[21]. In the case of country-level coverage of NSPs, all countries with low or no NSP coverage (<50 needles distributed per PWID per year) showed a pooled estimate of >50% prevalence of receptive needle/syringe sharing in the past 6-12 months.[21] Countries with higher NSP coverage (n=184) reported lower injecting risk estimates. This difference was less distinct for the time frame of a month versus 6-12 months.[21] Separately from the three reviews reporting on re-use and sharing, Palmateer et al. (2022) reported no significant difference in injecting risk behaviour between pharmacies and other NSPs (pooled OR = 1.46, 95% CI: 0.78, 2.73).[13] Injecting risk behaviour refers to the collective behaviours related to sharing of needles/syringes or other drug preparation equipment.[33]

HCV

Three reviews reported HCV infection outcomes of NSPs[2,4,13]; however, two of the reviews[4,13] cited results from the third review by Platt et al. (2018)[2]. The highest-quality review included reported high NSP coverage resulted in a 76% reduction in HCV acquisition risk (RR = 0.24, 95% CI: 0.09, 0.62) with low heterogeneity (I^2 = 0%, P = 0.662) when pooling adjusted estimates from Europe.[2] There was no effect for North America (adjusted RR = 1.25, 95% CI: 0.63, 2.46) with high heterogeneity (I^2 = 77.0%, P = 0.013).[2] Overall the review described weak evidence that high NSP coverage was associated with a reduction in risk of new HCV infections globally.[2] Authors explain variation in how NSP exposure was measured likely accounts for the geographical difference in results; in Europe, NSP exposure was consistently measured as coverage of injections by sterile needles and syringes, whereas in North America the way NSP coverage is defined varied greatly across studies.[2]

Related to both HCV and HIV outcomes, coverage targets are not currently met globally. An international review demonstrated that among 68 countries, the current investment needs to increase by 2.1-times in order to achieve the WHO/United Nations Office on Drugs and Crime/UNAIDS 2020 target goals of 200 syringes distributed per PWID.[22]

HIV

Two included reviews reported HIV prevention outcomes.[3,22] A recent lower-quality review (2021) of less restrictive NSPs found that accessing a sterile syringe for each injection reduced HIV transmission by almost 60% in one study.[3] In a separate study on syringe access, 61% of PWID attending NSPs with needs-based syringe distribution policies obtained a sterile syringe for each reported injection compared with only 26% of PWID accessing programs with limited one-for-one syringe distribution policy (i.e., one sterile syringe exchanged for one used syringe).[3] A recent (2022) moderate-quality systematic review applied an algorithm that required a clear and consistent statement from multiple robust studies in order to generate an evidence statement. With the threshold for robust studies not reached, the review indicated there was insufficient evidence to generate a recommendation related to HIV transmission.[13]

COMMUNITY-RELATED OUTCOMES

Needle/Syringe Disposal

Two lower-quality narrative reviews reported public safety with regards to needle/syringe disposal as an outcome.[3,24] Overall, both reviews support the association between less restrictive NSP distribution policies and increased proper disposal of used needles/syringes (e.g., returning used needles/syringes to NSPs, using puncture-proof, closed, sharps containers). Specifically, as the number of distributed syringes increased, corresponding increases in the collection and safe disposal of used syringes among PWID were reported.[24] Concerns that increased syringe access may increase improper disposal of used syringes in the community were not substantiated by available evidence.[3] Furthermore, it was reported that HIV transmission following community-acquired needlestick injury was unlikely with no such cases reported to date.[3]

PROGRAM OR POLICY OUTCOMES

Program Uptake

One high-quality systematic review reported NSP uptake as an outcome.[19] Overall, the review supports the association between restrictive NSP distribution policies and reduced program uptake. The review operationalized the distribution policy via legal sales of needles/syringes without prescriptions in pharmacies, which conflict with drug paraphernalia laws in certain U.S. states. This conflict between pharmacy policy and law resulted in confusion and inconsistency during needle/syringe distribution with respect to the need for identification, prescriptions, evidence of co-existing health conditions requiring injections, and higher minimum sales quantities (e.g., boxes of 100 instead of bags of 10 needles/syringes). Based on these characteristics, the distribution policy in the review was considered restrictive. As refusal of needle/syringe sales was common in pharmacies, pharmacies were not the preferred choice for accessing sterile needles/syringes among PWID,[34] thereby reducing program uptake in pharmacy settings.

Equity and Accessibility

Equity and accessibility were not consistently addressed across the included sources, which reported on (in order of frequency): population subgroups such as people who recently started injecting, people who are unhoused, people who use anabolic steroids (who perceived themselves as different from other people who use drugs), and racial sub-groups (n=9), physical or environmental barriers (e.g. distance/rural and associated need to travel, policing practices, mobility issues, poor availability of public transportation) (n=8), accessibility (e.g. support for peer distribution, vending machines to increase available time frames) (n=4), social barriers (e.g. stigma, need for low threshold services) (n=3), and economic barriers (i.e. cost of syringes) (n=2). Other equity and accessibility factors identified included linking a NSP to research participation[30], unwillingness to carry needles (due to fear of police contact)[7], needing to obtain needles from alternative locations to the NSPs[7], and potential for mobile NSPs to respond to client requests for access through secondary peer distribution[25].

U.S. recommendations on syringe coverage indicate coverage rarely meets peoples' needs.[31] Most NSPs restrict number of syringes provided which limits opportunities for peer distribution.[4] The COVID-19 pandemic response removed restrictions and facilitated peer distribution (increasing number of syringes given, offering mobile services and delivery).[5,6] Removing restrictions removed the barriers to harm reduction; for example, removing the barrier of availability only during open hours for programs enabled longer periods between clients' visits. Removing the barrier of restrictions on numbers of syringes allowed for more outreach and encouragement of peer-to-peer supply/distribution (e.g., providing enough supplies to clients so they can distribute to other PWID who may be unwilling or unable to visit the program to ensure sterile supplies are reaching people who need them most). Removal of restrictions on service delivery types allowed for the provision of supplies through mobile services, delivery, or mail-order services. Wilkinson et al. (2020) propose that in a pandemic-type scenario, NSPs should offer as many needles and syringes to clients as requested and that flexible NSPs, such as mobile or outreach models will increase access, supporting a 'low threshold' approach (as opposed to one-for-one exchange) to needle/syringe provision.[6] This low threshold is one of the general principles underpinning harm reduction approaches.[35]

Newer programs and programs that distributed fewer syringes were associated with higher costs, indicating that purchasing volume may reduce costs.[22]

Recommendations from Relevant Guidance

Six of the eight guidance documents relevant to this rapid review addressed the issue of whether unlimited distribution is recommended for NSPs. All six specifically recommended implementing unlimited needs-based distribution policies.[7,26-30] With the exception of the guidance issued by the Washington State Department of Health[27], the other five guidance documents explicitly advised against implementing restrictive policies that impose limits on the number of needles/syringes that may obtained, such as one-for-one exchange.[7,26,28-30] In the University of Washington's SHaRP's guidance for NSPs in collecting data on assessing syringe coverage, a recommendation on distribution policy was not provided by the organization; however, the U.S. Centre for Disease Control's recommendation for needs-based distribution was cited.[31] The remaining guidance document was a surveillance report on infections and associated risks and behaviours among PWID and did not provide a recommendation on distribution policy.[32]

Conclusion

The review evidence and guidance documents included in this synthesis do not support restrictions on distribution policies in NSPs. Restrictive distribution policies for NSPs have negative impacts on population health and safety, for both PWID and their communities. More restrictive NSP distribution policies resulted in reduced program uptake, while less restrictive NSPs increased needle/syringe access, decreased needle/syringe re-use and sharing, and were also associated with proper disposal of used needles/syringes.

The available review-level evidence did not show a statistically significant impact of distribution policies on HCV and HIV infection, with the evidence limited by individual study quality.

Global coverage of NSPs has increased slightly in the past five years but remains low, with coverage falling short of needs.[31,36] Worldwide, many programs restrict the number of needles/syringes provided and limit strategies that could enhance sterile needle/syringe access such as peer distribution.[2-4] Removal of restrictions during the COVID-19 response facilitated peer distribution by increasing the number of needles/syringes given, and offering mobile services and delivery.[5,6]

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