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Commentary

‘Safer opioid distribution’ as an essential public health intervention for the opioid mortality crisis – Considerations, options and examples towards broad-based implementation

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1. Context

Canada has been experiencing a long-standing public health crisis from excessive opioid-related mortality (i.e., acute overdose poisonings) [1]. In 2018 – the most recent ‘peak year’ - there were 4623 opioid-related deaths in Canada, with mortality rates similar to those in the United States. Opioid deaths – a large extent of which occur among young adults – have negatively impacted on life expectancy in the Canadian population.

While earlier in this crisis, a large proportion of overdose fatalities were caused by pharmaceutical opioid products, these patterns have recently shifted also in conjunction with decreasing opioid prescribing, to increasingly involve illicit/synthetic opioid products [2–4]. These illicit/synthetic opioid products (e.g., fentanyls and analogues etc.) are highly potent and toxic, and have vastly increased the incidence and fatal outcomes of opioid-overdose incidents [3,5]. In 2018/2019, three-quarters of opioid-related fatalities in Canada involved some element of fentanyl. Crucially, many of the illicit/synthetic opioid products are not recognizable yet often either mimic other (e.g., prescription) drugs in appearance, or are mixed in with other psychoactive substances (e.g., cocaine, heroin etc.) [6].

2. Current interventions

In response to the excessive opioid mortality toll, a large menu of – both prevention and treatment – interventions have been implemented or expanded. These interventions, mainly, have included supervised consumption services, naloxone distribution (for overdose reversal) and increasing (e.g., oral, injectable) opioid pharmacotherapy options [7,8]. Unquestionably, these measures have prevented a substantial extent of additional opioid-related harm; however, the above – mostly behavioral or environmental – measures have been naturally limited in their reach and mortality-preventive impact among at-risk opioid users [9,10] for multiple reasons, including resource and inherent or practical limitations for scale-up. For example, many opioid-users at overdose-risk use their drugs alone or in private settings, and so cannot be reached for timely assistance in case of overdose [11]. A fundamental limitation of the above measures is that most are not designed to eliminate users’ exposure to toxic opioid products driving the recent overdose mortality crisis; in fact, many measures (e.g., SCS, naloxone) are ‘reactive’, and chiefly aim to reduce or revert the adverse consequences of toxic drug exposure [12]. Further important, the ‘at-risk’ non-medical opioid user population is uncertain in size yet estimated to be large, likely comprising 500,000 or more individuals across Canada [13].

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3. Rationale and community-based models for SOD

On this basis, persistent calls have been voiced for 'safer opioid distribution' (SOD) programming as an essential, while currently lacking strategic response to the opioid mortality crisis, specifically to directly and better protect at-risk opioid users from risk for overdose death [14]. From a public health perspective, illicit/synthetic opioids constitute the primary risk vector or pathway for fatal overdose in current circumstances; thus, there is primary reason to aim for replacement of these high-risk products – especially in contexts of addictive use – with 'safer' (i.e., less toxic, more predictable in quality) opioid products for at-risk users towards reducing overdose and death risks [12,15]. While the SOD concept had long been neglected by key decision-makers, it is increasingly being embraced by user advocates, scientists and service-providers alike. Recognizing the need for SOD as an essential public health intervention to reduce opioid fatalities, arising questions include how to feasibly organize, deliver and scale up SOD especially for large at-risk populations. For this, useful practical experiences and models from both addiction and other public health arenas currently exist, for example, including:

Injection opioid agonist treatment (IOAT): Following multiple, international clinical trials demonstrating the effectiveness of injectable diacetylmorphine as a 'last-resort' treatment for severe opioid dependence, a small number of IOAT programs have been implemented in Canada [16]. However, these programs typically are highly-resource-intensive (e.g., specialist clinic-based) and expensive, operate mainly within a 'treatment' (e.g., rehabilitation) paradigm, including (e.g., psycho-social) ancillary measures, and involve small (e.g., 50–60) patient numbers [17]. Present IOAT programs are not realistically scalable towards population-wide SOD provision. For illustration, only about 0.5% of opioid agonist therapy (OAT)-patients in British Columbia received IOAT in 2020 [18].

Local 'safer opioid prescribing': A small number of local, adhoc 'safer opioid prescription' programs providing 'strong opioid' medication to high-risk users operate in Canada. A first one was initiated in Ottawa, providing pharmaceutical-grade hydromorphone ('Dilaudid') to a small cohort of high-risk users with regular toxic opioid use [19]. A handful of similar, locally limited programs were or will be launched in Vancouver, and other Canadian sites [20]. A variation on the concept has been trialled in downtown Vancouver, where hydromorphone pills are distributed to a registered pool of high-risk users through an externally-mounted, biometrically controlled dispensing machine [21].

Community-based OAT provision: Oral (e.g., methadone- or buprenorphine-based) opioid-agonist therapy (OAT) is the 'gold standard' treatment for opioid dependence [22]. While OAT availability was highly restricted in Canada until pre-2000, systematic de-regulation and community-based programming led to major de-thresholding and increased utilization [23]. Concretely, this allowed OAT-prescribing by general practitioners (rather than mainly addiction specialists) and other health (e.g., nurse) professionals, together with community health centres and pharmacies for medication delivery [22,24,25]. Nowadays, an estimated >120,000 patients receive OAT through these structures in Canada.

Naloxone-distribution: Given rising opioid-related overdose deaths, widespread availability of naloxone – the opioid overdose 'antidote' agent – has become increasingly important [8,26]. Facilitated by respective regulatory revisions, naloxone distribution has been substantially broadened in recent years, including provision through community-based health service entities, pharmacies, as well as essential 'first responders' (e.g., ambulance, police, firefighters) [27]. Some 590,000 naloxone kits were distributed through some 8700 sites in Canada by 2019, indicating effective community-based mobilization and distribution.

Influenza vaccination and nicotine-replacement-therapy: Other exemplary, public health-focused interventions exist that have been implemented through community-based structures. For example, 'nicotine-replacement-therapy' programs to assist tobacco smokers in quitting are available across Canada, mostly through family practices, community health and pharmacy-based (or other remotely, e.g., via telephone helplines, organized) distribution structures for eligible individuals [28,29]. Similarly, seasonal 'influenza vaccinations' are regularly delivered to about one-third of general adults, and two-thirds of seniors in Canada through family practices, community health and pharmacies, as well as workplace and other institution-based clinics [30,31]. The above programs are mostly (provincial) government-organized, facilitating access for large target and risk populations [32].

4. Other organizational considerations

To more effectively reduce the excessive opioid mortality toll in Canada, broad-based 'SOD' programming for high-risk opioid users constitute an urgent intervention need complementing other measures already implemented [7,8,12,14]. Beyond conceptual acceptance, key issues of practical feasibility and organization warrant consideration. For example, candidate 'drugs' for SOD readily exist in Canada, and do not need to be developed or searched for: hydromorphone or slow-release morphine are orally-administered, pharmaceutical strong opioids widely-used for pharmaco-therapeutic purposes among various opioid-using populations [33–35]. Their advantages include that – other than diacetylmorphine – they can be used by different administration routes depending on preference. [36].

Key open questions include: 1) who would receive to access to 'SOD, and 2) how would broad-based distribution occur? Given the pharmacological characteristics of strong opioids, including risk for possible severe adverse outcomes (e.g., overdose, diversion), and despite the public health objectives described, access should probably not be universal or purely 'on-demand' yet involve reasonable, while minimal 'needs'-based criteria [37]. These, naturally, cannot be overly 'high--threshold' to ensure access by as many at-risk opioid users with risk for hazardous product exposure as possible. Basic 'eligibility'-testing for example, could involve a basic saliva-drug screen for opioids, combined with a brief questionnaire on opioid-related risks (e.g., similar to what is implemented for access to public health interventions like NRT) combined with registration (e.g., per personal health number) at community-based points of care. This process can be repeated in reasonably regular (e.g., monthly) intervals. While 'needs-testing' cannot perfectly safeguard against possible risks or misuse of such a public health-oriented intervention, it should assist in gearing SOD delivery mostly towards 'at-risk' users, while screening out those who opportunistically seek access to strong opioid drugs.

A second issue concerns the infrastructural organization for comprehensive SOD delivery. Current OAT programs or local 'safer opioid prescription' initiatives are not nearly sufficient nor scalable to serve the estimated 'at-risk' opioid user population [13,14,33]. A much more broad-based, efficient infrastructure for delivery is required for implementation. Building on other public health intervention experiences, a combined system of community-based health care, public health clinics, and pharmacy distribution, combined with shelters and drop-in facilities typically serving marginalized individuals appears to be most feasible and scalable [38]. Individuals eligible for SOD could select a principal SOD care access-point for central registration, with their individual file linked to either an 'open prescription' or other required endorsement to receive their SOD medication. Pharmacists or select other health care providers could be authorized for SOD endorsement. Distribution could be based on regular/daily dose distribution by on-site/over-the-counter provision at designated point-of-care, complemented by 'smart' infrastructure or hardware (e.g., biometrically-controlled distribution machines) already experimentally in use, offering easy control of drug access, frequency, dosing, etc.

5. Conclusions

Given the persistent opioid mortality crisis especially in North America, the time has come to move towards providing risk population-wide SOD as an essential public health intervention. While originally a

daunting idea to some, partly due to 'addiction'-related fears [12,22], similarly conceived and conceptualized interventions are standard and well-working practice in other areas of public health. These can serve as examples and blueprints for sensible, while comprehensive and effective design and implementation of broad-based SOD programming across Canada towards reducing the massive but certainly unnecessary opioid-death toll.

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Author contributions

BF prepared the original outline and draft, and led the overall manuscript writing. AL and LV provided significant intellectual content, and reviewed and edited several iterative drafts of the paper. All authors read and approved the final version of the manuscript submitted.

Declaration of competing interest

Other than the funding support stated, the authors have no interests to declare.

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