Development and Implementation of an Opioid Overdose Prevention and Response Program in Toronto, Ontario

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ABSTRACT

OBJECTIVES: We describe the development of the first community-based opioid overdose prevention and response program with naloxone distribution offered by a public health unit in Canada (Prevent Overdose in Toronto, POINT).

PARTICIPANTS: The target population is people who use opioids by any route, throughout the City of Toronto.

SETTING: The POINT program is operated by the needle exchange program at Toronto Public Health (The Works) and offered at over 40 partner agency sites throughout Toronto.

INTERVENTION: POINT is a comprehensive program of overdose prevention and response training, including naloxone dispensing. Clients are instructed by public health staff on overdose risk factors, recognizing signs and symptoms of overdose, calling 911, naloxone administration, stimulation and chest compressions, and post-overdose care. Training is offered to clients one-on-one or in small groups. Clients receive a naloxone kit including two 1 mL ampoules of naloxone hydrochloride (0.4 mg/mL) and are advised to return to The Works for a refill and debriefing if the naloxone kit is used.

OUTCOMES: In the first 8 months of the program, 209 clients were trained. Clients have reported 17 administrations of naloxone, and all overdose victims have reportedly survived. Client demand for POINT training has been high, and Toronto Public Health has expanded its capacity to provide training. Overall, reception to the program has been overwhelmingly positive.

CONCLUSION: We are encouraged by the initial development and implementation experience with the naloxone program and its potential to save lives in Toronto. We have planned short-, intermediate-, and long-term process and outcome evaluations.

KEY WORDS: Naloxone; narcotic antagonists; opioid-related disorders; overdose; prevention & control; resuscitation

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Overdose is the most common cause of death among heroin and opioid users worldwide,¹ and Canadian opioid users commonly report non-fatal overdoses.² Although over 65% of Canadian injection drug users report normally injecting in the presence of others,³ fears of police involvement may inhibit bystanders from activating emergency services in overdose situations.⁴ Community-based overdose prevention and resuscitation programs that include dispensing naloxone represent an opportunity to decrease opioid overdose mortality.

Naloxone is a safe and effective opioid reversal agent that has been used routinely in hospital and prehospital settings. Over 180 local overdose prevention and response programs involving naloxone dispensing have been reported in the United States.⁵ Similar programs exist in at least four cities in Canada (with additional programs planned), and British Columbia recently launched a provincial program. Several others are reported throughout Europe and Australia. Published evaluations of these programs document many uses of naloxone during overdose emergencies and few adverse events.⁶⁻²²

Drug-related mortality in Toronto mirrors the global escalating trend.^{5,23} Following a Toronto City Council recommendation to expand overdose prevention strategies,²⁴ Toronto Public Health explored the feasibility of adding naloxone distribution to The Works, the health unit's needle exchange and harm reduction program.

In August 2011, Toronto Public Health launched POINT, a comprehensive program of overdose prevention and response training,

including dispensing naloxone. This paper describes the development and implementation of the program, with the aim of assisting other agencies interested in developing similar opioid overdose response programs.

The goals of the POINT program are to: 1) decrease opioid overdose deaths in Toronto; 2) increase appropriate responses to overdose among opioid users; 3) decrease non-fatal overdose events through prevention education.

PARTICIPANTS, SETTING, AND INTERVENTION

Target population

The target population for POINT is people who use opioids (by any route) in the City of Toronto. The promotional strategy for the program involves posters and flyers at participating sites, word of mouth, media coverage, and the mobile needle exchange van.

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Conflict of Interest: None to declare.

Setting

POINT operates through the needle exchange program (The Works) at Toronto Public Health and is offered at over 40 partner agency sites. The Works was established in 1989 and currently offers harm reduction programs, including needle distribution and safer drug use equipment, testing and vaccination, as well as methadone services. The use of needle exchange programs in Toronto is estimated at 52,000 visits per year (The Works, Toronto Public Health, internal statistics).

Development of the program

The development of POINT was undertaken by management and staff at The Works. During the development process, the team gathered information on similar programs from scientific literature and directly from programs in other jurisdictions. Details on training curricula, program manuals, acceptability, and implementation were collected from key informants and presentations at harm reduction conferences.

The team undertook a feasibility survey of 20 local opioid users, demonstrating support for a pilot program.²⁵ Participants were recruited by word of mouth and by outreach workers.

Three objectives for the feasibility study were to:

1. Gain a deeper understanding of opioid users' prior experience and attitude regarding overdose and the use of naloxone to reverse overdose;
2. Identify whether opioid users are interested in participating in an overdose management program where they would be provided naloxone with instruction in its use;
3. Identify whether providing naloxone would increase the risk for an opioid user, potentially leading to a change in behaviour such as using increased amounts of heroin or other opioids.

The majority of participants had personal experience with overdose: 75% had overdosed, 40% had been given naloxone by medical professionals, and 90% had witnessed overdose. Participants also reported positive attitudes toward naloxone administration among peers: 80% would want naloxone administered to them, 60% would allow peers to use naloxone on them, and 65% said they would participate in a naloxone training program if one were available.

A range of stakeholders were consulted for their advice on content and implementation issues for the proposed program, including Toronto Emergency Medical Services (EMS), Rescu at St. Michael's Hospital, Toronto, the City of Toronto legal department, and the College of Physicians and Surgeons of Ontario. With regard to third-party dispensing of medications, there are precedents such as patient-delivered partner therapy for sexually transmitted diseases and administration of medications in an emergency such as epinephrine auto-injectors for anaphylaxis.

Members of the senior management team of Toronto Public Health reviewed the program documents and training materials and advised the development team on program initiation and implementation. Senior management met with Toronto Emergency Medical Services, after which the Medical Officer of Health (MOH) approved the program. The MOH then sent a letter to Toronto Police Service informing them of the program prior to its launch.

Public health intervention

Opioid overdose training is offered to clients one-on-one or in a small group on a drop-in basis at The Works, and sessions are also

Figure 1. POINT Resuscitation Protocol

arranged at partner agencies. Training is delivered in a 20-minute session by a registered nurse or counsellor from The Works. Clients must complete the training curriculum and knowledge assessment prior to obtaining a naloxone prescription.

The curriculum includes training on opioid overdose prevention techniques and a response protocol that includes recognizing signs and symptoms of overdose, calling 911, chest compressions, intramuscular naloxone administration, and post-overdose care (see Figure 1). Information is provided about naloxone storage and handling, safe management of overdose victims following naloxone administration, and how to properly dispose of the used needles. The training includes side effects of naloxone for someone who is dependent on opioids, such as mild to severe withdrawal symptoms (agitation, anxiety, muscle aches, sweating, nausea, vomiting), and how the responder can assist in managing these symptoms. Finally, clients are encouraged to return to The Works to replace used naloxone kits and debrief overdose incidents if the naloxone kit is used.

The naloxone kit contains two 1 mL ampoules of naloxone hydrochloride (0.4 mg/mL), three syringes equipped with 1" safety-engineered needles, a Naloxone Prescription Identifier Card, a simplified instruction pamphlet for administration of intramuscular naloxone, and alcohol swabs to assist with opening the naloxone ampoules.

Program administration

The medical directive for naloxone prescription at Toronto Public Health is based on the standard template of the organization. It is tailored to the operation of The Works and scope of practice of the relevant regulated professionals. The directive outlines specific measures to ensure the quality of client and staff training, including use of the approved training manual, which undergoes periodic review, and the assurance of staff competence described below. To ensure quality service delivery, prescriptions are available only from nurses and counsellors trained to dispense naloxone.

An Associate Medical Officer of Health at Toronto Public Health (author RS) is responsible for overseeing the training of the nurses and counsellors involved and the quality assessment of the program. The Works' manager (author SH) is responsible for ensuring that these staff members are trained in the approved curriculum and program guidelines. POINT nurses and counsellors demonstrate understanding of the training guide and naloxone product monograph and deliver a training session observed by The Works' Health Promotion Consultant (author CM) to demonstrate teaching competence. The manager also oversees policies for safe storage of naloxone, secure program documentation, and program reporting. The program collects data on the number of people trained and incidents of administering naloxone.

Costs and funding requirements for the program are minimal; existing staff administer the program, and The Works' operating budget absorbs the cost per naloxone kit (approximately \$25).

Preliminary evaluation method

There are three phases of evaluation planned for the program. The first phase consists of a review of the program documentation from the first eight months of operation and interviews with staff, community agencies, and clients. Second, a prospective study will follow participants for six months following program enrolment to examine objective performance during a standardized overdose simulation, knowledge retention, experiences related to overdose and overdose response, willingness and confidence to administer naloxone, barriers to implementing the resuscitation protocol, and risky drug use behaviours. The third phase will study the program's longer-term impacts on morbidity, mortality, and health care costs related to opioid overdose.

OUTCOMES

The POINT program trained 209 clients in the first eight months. Most clients described to our staff that they heard about the program through word-of-mouth. Clients have told the staff they feel a sense of empowerment after completing the training. Clients have reported 17 naloxone administrations during the first eight months, all with successful outcomes. Detailed evaluation results are forthcoming.

No community groups or other organizations have opposed the program. Overall, POINT has been positively received by partner agencies and the media. Media coverage included major national and municipal news outlets, with headlines such as "New program helps Toronto drug addicts" and "A second chance for overdose victims." There has been only one report of police confiscating a naloxone kit, the circumstances of which are unknown.

Capacity to offer training was the initial challenge identified by POINT staff. Clients' demand for training was high in the first

months of the program as knowledge spread among the target population. Several months after program start, Toronto Public Health increased its capacity to offer training by expanding the staff complement to include non-nurse counsellors. Currently, The Works is exploring opportunities to train health professionals (i.e., physicians and nurses) who could prescribe naloxone in other settings. The current exclusion of naloxone from the Ontario Drug Benefit formulary is a major impediment to program expansion to other settings.

The POINT program aims to expand its services and client base. Program materials will be translated into various languages and adapted into multimedia training tools. Although the training sessions are flexible for people with limited literacy skills, this will be evaluated and the program revised accordingly. The program will also strive to increase flexibility by offering training in the evenings and on weekends and out of The Works' mobile needle exchange vans. Media and promotional strategies could increase awareness of the program among opioid users who do not access harm reduction supplies through The Works. The program will explore other promotional strategies and ways to better understand how to reach target groups.

POINT staff have indicated that naloxone administration could be more user-friendly if it were available in the form of intranasal atomizers or auto-injectors. These options for naloxone administration are not currently approved in Canada; future work is needed to explore how take-home naloxone programs could work with pharmaceutical companies to offer new devices for administration.

The program's resuscitation protocol has come under scrutiny for its decision to include chest compressions but exclude mouth-to-mouth ventilations, as most other naloxone programs teach a rescue protocol incorporating ventilations without chest compressions. This highlights uncertainties related to the optimal approach to the bystander resuscitation of suspected opioid overdose victims. Respiratory depression is an important component of opioid overdose.²⁶ However, the POINT's rescue protocol is based on the assertions that 1) first responders are unable to identify unresponsive pulseless patients reliably,²⁷ 2) naloxone administration has no role in cardiac arrest (including those due to opioid overdose),²⁶ 3) ventilations may complicate bystander resuscitation, making it harder to teach, learn, execute and perform under challenging circumstances,²⁸ and 4) significant numbers of opioid-related deaths involve polysubstance overdose with cardiotoxic drugs.²⁹ Painful stimulation (such as chest compressions) may be an effective means of increasing respiratory drive.³⁰ Additionally, failure to provide continuous chest compressions to overdose patients in cardiac arrest constitutes a failure to provide basic resuscitative necessities. Attempting to teach both ventilations and chest compressions can complicate bystander resuscitation without providing a demonstrable benefit. Enhancing collaboration between resuscitation science and harm reduction experts might generate basic life support guidelines for lay rescuers attending to opioid overdose with naloxone.

DISCUSSION

The initial development and implementation experiences of the POINT program – and its potential to save lives – are encouraging. Recruitment has exceeded expectations, and the program has enjoyed a positive community reception. This intervention may be

cost-effective: if the provision of 209 kits represented approximately \$5000 in capital cost and saved one life out of the 17 who received naloxone during the program, it would meet the National Institute for Health and Clinical Excellence (NICE) cost-effectiveness threshold of £20,000-£30,000 (roughly CAD \$30,890-\$46,335) per quality-adjusted life year (QALY) gained. However, more research on cost-effectiveness is needed.

From the available literature, it appears that the POINT program has the second-highest reported recruitment rate (a mean of 26 per month versus 41 per month in Baltimore).²⁰ With 17 reported naloxone usages in 8 months, the POINT program appears to be in the lower range of naloxone use among clients. However, in this initial phase, we did not actively contact all clients to ensure we captured all events of naloxone use. A naloxone program in Jersey, UK, reported 5 naloxone administrations among 101 clients in 16 months (lower use than our clients),⁸ whereas a program in New York City had 82 uses of naloxone among 122 clients over 9 months (higher use than our clients).¹⁶ Like most other programs, the POINT program has reported no deaths among victims administered naloxone. San Francisco's program reported 6 deaths over 75 months.¹⁰

This description of the POINT program highlights its novelty and innovation in the Canadian setting, and other public health units might learn from its development and implementation process. Our program development process may also be useful to programs and services outside of public health as well, including methadone treatment programs, discharge planning in emergency departments, drug treatment programs, and prison settings.

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RÉSUMÉ

OBJECTIFS : Nous décrivons l'élaboration du premier programme communautaire de prévention et de lutte contre les surdoses d'opioïdes par la distribution de naloxone offert dans un bureau de santé publique au Canada (*Prevent Overdose in Toronto, POINT*).

PARTICIPANTS : La population cible est constituée des personnes consommant des opioïdes, par n'importe quelle voie, dans la ville de Toronto.

LIEU : *Prevent Overdose in Toronto* est exécuté par le programme d'échange de seringues du Service de santé publique de Toronto (*The Works*) et offert sur plus de 40 sites d'organismes partenaires à Toronto.

INTERVENTION : POINT est un programme complet de formation à la prévention et à la lutte contre les surdoses incluant la distribution de

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naloxone. Le personnel de santé publique explique aux clients les facteurs de risque de surdose, les signes et les symptômes de surdose, quand composer le 911, le mode d'administration de la naloxone, la stimulation cardiaque et les compressions thoraciques, ainsi que les soins après une surdose. La formation est offerte aux clients individuellement ou en petits groupes. Les clients reçoivent une trousse de naloxone avec deux ampoules de chlorhydrate de naloxone de 1 mL (0,4 mg/mL); s'ils ont utilisé la naloxone, on leur demande de retourner à *The Works* pour renouveler leur trousse et faire un bilan.

RÉSULTATS : Au cours des huit premiers mois du programme, 209 clients ont été formés. Les clients ont fait état de 17 administrations de naloxone; toutes les victimes de surdoses auraient survécu. La demande des clients pour la formation POINT étant élevée, le Service de santé publique de Toronto a renforcé ses capacités d'offrir cette formation. Globalement, l'accueil réservé au programme est extrêmement positif.

CONCLUSION : Nous sommes encouragés par l'expérience d'élaboration et de mise en œuvre initiale du programme de naloxone et par les vies qu'il pourrait sauver à Toronto. Nous planifions des évaluations à court, moyen et long terme du processus et des résultats.

MOTS CLÉS : naloxone; antagonistes narcotiques; troubles liés aux opiacés; overdose; prévention et contrôle; réanimation