



BMJ Open Health programmes and services addressing the prevention and management of infectious diseases in persons who inject drugs in Canada: a systematic integrative review protocol

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ABSTRACT

Introduction Injection drug use (IDU) and intravenous drug use (IVDU) are of concern to the people using drugs, their families and health systems. One of the complications of IDU/IVDU is the risk of infection. Clinical experience has shown that persons who inject drugs (PWID) are hospitalised and re-hospitalised frequently. In Canada there are sparse data about the reasons for which PWID are admitted to hospital and their health trajectories, especially for infectious diseases. There are special concerns regarding PWID with infections who leave the hospital against medical advice and those who leave with a peripherally inserted central catheter line in place for administration of long-term antibiotics or other therapies. Improving our understanding of current programmes and services addressing the prevention and management of infectious diseases and their complications in PWID could lead to focused interventions to enhance care in this population.

Methods and analysis An integrative systematic review allows for inclusion of a variety of methodologies to understand a health issue from different viewpoints. PubMed, CINAHL, Web of Science Databases and websites of the Public Health Agency of Canada, Canadian Institute for Substance Use Research, and Canadian Centre on Substance Use and Addiction will be searched using terms for infectious diseases, drug use and geography (Canada) and limited to the last 10 years (2009–2019). The Quality Appraisal Tool in Studies with Diverse Designs will be used to appraise the quality of identified studies and documents. Quantitative, qualitative or mixed methods data synthesis will be used as needed.

Ethics and dissemination This study is a secondary analysis of publicly available documents; therefore, no ethics approval is required. This information will inform a research agenda to further investigate interventions that aim to address these issues.

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Strengths and limitations of this study

- A systematic integrative review allows for a holistic view of the literature, including grey literature, and is useful for informing policy and practice.
- Practising clinicians were involved in the development of the research questions and methods to address gaps in practice.
- Multiple reviewers will be screening documents for inclusion/exclusion, maximising reproducibility.
- A quality appraisal tool that captures diverse methodological designs will be used.
- An integrative review only captures published information, which could leave out programmes or services not described in the literature and could leave out programmes or services addressing prevention or treatment considerations for newer illicit drugs.

INTRODUCTION

Injection drug use (IDU) impacts the lives of persons who inject drugs (PWID), their families and the healthcare system, and is a major challenge to public health.¹ In Canada, data on incidence and prevalence of injection drug use are scarce.² An estimated 171 900 individuals (0.70%) in Canada injected drugs in 2016, up from 130 000 (0.55%) in 2011.³ In Ontario, the rate of opioid-related deaths increased from 3/100 000 in 2003 to 10.2/100 000 in 2018.⁴ In addition, rates of hospitalisation in Ontario increased from 9.7/100 000 to 14.6/100 000 in 2003 and 2018, respectively, and emergency room visits increased from 15.2/100 000 to 63.4/100 000 in the same time frame.⁴ Drug use is not limited to Canada. In 2018–2019, around 3.2 million (9.4%) of 16–59 year olds in England and Wales used a drug in the previous year, and there were approximately 103 185

PWID in England in 2011.⁵ In the USA in 2011, lifetime PWID for those over the age of 13 was 2.6% (95% CI: 1.8%–3.3%), and the population estimate of past-year PWID was 0.30% (95% CI: 0.19%–0.41%) or 774 434 PWID (range 494605–1 054 263).⁶

One of the challenges of injection drug use is the risk for infections. PWID are at high risk for blood-borne viral infections, such as HIV and hepatitis B and C; bacterial infections, including sepsis and endocarditis; and fungal infections, such as candidal endocarditis.^{7–9} For example, in 2011, the estimated prevalence of hepatitis C in PWID was about 66% in Canada.¹⁰ The prevalence of HIV in PWID was 14.6% in 2016,¹¹ and of all reported cases of HIV in adults in Canada in 2017, 16.3% were PWID.¹² Previous cohort studies have examined the relationship between specific infectious diseases, such as HIV or hepatitis C and intravenous drug use (IVDU). These studies have not looked at all injection drug-related infections, healthcare trajectories or their effects on the health system.^{13–15} Even though the issue of infectious diseases in PWID is a concern in many countries, the programmes and services provided to address the prevention and management of infectious diseases in PWID may vary widely given the country's past policies (eg, legalisation of illicit drugs) and health systems arrangements (eg, public vs private funding of health services).

Clinical experience has shown that PWID are hospitalised and re-hospitalised frequently. However, relatively little is known about the clinical trajectory of this population during and following hospitalisation. In Canada, there are sparse data about the reasons for which PWID are admitted to hospital and how frequently health services are accessed, especially for infectious diseases. The risk factors for complications once a PWID is hospitalised, such as death or admission to critical care, are not clearly defined. There are special concerns around PWID with infections who leave the hospital against medical advice and those who leave with a peripherally inserted central catheter (PICC) line in place for administration of long-term antibiotics or other therapies.^{16 17} For example, these concerns include patients not completing antibiotic treatment, easier access for intravenous drug use with potential for overdoses and infections at the site of the PICC line especially if there is loss to follow-up. An overview of health programmes and services available in Canada to address the prevention and management of infectious diseases in PWID is warranted.

Based on a widely used health systems and policy framework, a health problem may be defined as arising due to one or more of the following: (1) a risk factor, disease or condition, (2) the programmes, services or drugs currently being used to address a risk factor, disease or condition, (3) the current health system arrangements (financial, governance or delivery arrangements) within which programmes, services and drugs are provided, or (4) the current degree of implementation of an agreed on course of action, such as a policy or guideline.^{18–21} For the purposes of this study, the risk factor is considered to be intravenous or injection drug use in relation to infectious diseases. As there are

existing clinical guidelines addressing the pharmacological treatment of specific infectious diseases,^{22–25} medications will not be included in this systematic review. Instead, this study will focus on exploring the literature as a first step to identifying health programmes and services in Canada and their key features, such as: who they target (eg, immigrants, women); where they are provided (eg, in one city or throughout Canada; in hospital or in the community); what infectious diseases are addressed (eg, HIV, endocarditis); whether the programme or service has been evaluated and, if so, what outcomes were measured and their findings; and practice or research gaps identified. Addressing our understanding of the current problem of preventing and managing infectious diseases in PWID in Canada from a holistic perspective could help us make informed decisions around health service delivery to prevent infectious diseases and their complications in PWID. Achieving such an understanding could lead to focused interventions to enhance care in this population.

Canada's healthcare system is unique in several aspects. Healthcare is decentralised and is the responsibility of provincial or territorial governments, except for: prison, military, specific refugee and indigenous services which are the domain of the federal government.²⁶ The healthcare system offers universal publicly funded healthcare with no parallel private system for publicly covered services.²⁶ Canada does not have universal pharmacare or medical drug coverage but covers medication provided in the clinic or hospital, with additional coverage through private insurers or government-run assistance programmes.²⁶ Canada has a well-developed public health system and offers a range of social services in the community that vary geographically.²⁷ However, Canada does not have a comprehensive registry for PWID. There is a national study, the I-Track, which is a behavioural and biological surveillance system that monitors the prevalence of HIV and hepatitis C as well as the associated risk behaviours among people who inject drugs in Canada,⁸ and there are multiple local cohort studies of PWID.^{13–15} Since healthcare is provincial, billing claims data for healthcare vary from province to province, which do not allow for the direct evaluation of quality indicator adherence or practice variation.

With this in mind, we propose a broad and encompassing study to examine the current state of knowledge on health programmes and services addressing the prevention and management of infections in PWID in Canada. The purpose of this work is to inform a programme of research on infectious diseases in PWID in Canada and complement a citizen panel and evidence brief looking at the prevention and management of infectious diseases in PWID in Ontario.^{2 28}

Main objective

To understand the key features of health programmes and services in Canada for preventing and managing infectious diseases in PWID.

METHODS AND ANALYSIS

Research design

A systematic integrative review allows for richer understanding of the depth and breadth of a health issue, notably when compared with most traditional systematic reviews that focus mainly on efficacy and largely include randomised controlled trials.^{29,30} The integrative approach is an important feature for gathering diverse evidence that has the potential to inform policy and practice. The integrative review allows for inclusion of a variety of methodologies in order to understand a health issue from different viewpoints. The methodology from Whitemore and Knafelz will be used in this review and it includes problem definition, literature search, data evaluation, data analysis and presentation.²⁹

Problem definition

As described above, a health problem can relate to one or many aspects of health systems or care delivery.¹⁸ Injection or intravenous drug use is known to be a risk factor for infectious diseases. This integrative review will consider the programmes and services that are currently in place to address the prevention and management of infectious diseases in PWID within Canada in order to determine, for example, what options may be feasible, where services are located and who they target within a Canadian context, and to identify gaps in knowledge. While there is evidence that sexual behaviours are also linked to infectious diseases and high-risk sexual behaviours are correlated with IVDU/IDU,^{31,32} sexual health services will not be included in this review in order to focus on programmes and services addressing IVDU/IDU as the risk factor for infectious diseases.

Literature search

Data collection

In order to allow for a broad perspective on the topic of preventing and managing infections in PWID, both empirical and grey literature will be included. Grey literature includes non-peer-reviewed or non-traditional academic works, such as conference proceedings, dissertations or technical or government reports, which can be useful for informing policy and practice.³³ Databases will include PubMed, CINAHL and Web of Science Core Collection. In addition, Public Health Agency of Canada, the Canadian Institute for Substance Use Research, and Canadian Centre on Substance Use and Addiction websites will be searched. These websites, as well as CINAHL and Web of Science, can include empirical as well as grey literature. A preliminary search string has been tested for relevance and will include terms for infectious diseases (infecti*, endocarditis, hepatitis, HIV, AIDS, pneumonia, abscess, osteomyelitis, septicemia, tetanus), drug use (drug use*, drug abuse, drug misuse, injection drug, drug inject*, IDU, IVDU, PWID, intravenous, overdose, illicit) and geography (Canada, Alberta, British Columbia, BC, Manitoba, New Brunswick, Newfoundland Labrador, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan, Nunavut,

Northwest Territories, Yukon). Time limits will be placed for documents from the last 10 years (2009–2019) to provide more recent and relevant information. Additional documents will be hand searched by reviewing references from included articles. Other relevant documents identified by the research team will be included.

Search results will be downloaded into Zotero,³⁴ a reference management software program and imported into Covidence,³⁵ a systematic review software program. Duplicates will be removed using Covidence and any that are missed will be manually excluded during the review process. Covidence allows for multiple researchers to work on a project simultaneously and facilitates the systematic review process including multistage screening (title and abstract, full text), duplicate screening and data extraction, identification of discrepancies and reference management.

Inclusion/exclusion of documents

Articles or documents relating to injection or intravenous drug use and the prevention and/or management of infectious diseases in Canada, including a health programme or service will be included. Articles or documents will be excluded if they are: not Canadian; not addressing intravenous or injection drug use; not addressing the prevention and/or management of infectious diseases; not including a health programme or service; drug efficacy trials; not in English or French; prior to 2009. Purposeful sampling may be used if too many documents remain after full-text review. If this is the case, articles will be prioritised based on non-HIV, non-hepatitis C infectious diseases, since these are the most studied infectious diseases in PWID. For example, the I-Track Study in Canada monitors the prevalence of HIV and hepatitis C in PWID.⁸

A subset of articles (5%) will be reviewed by all data collectors to help with calibration of decisions at each step of the research process (ie, title and abstract review, full-text review, data extraction). Titles and abstracts of each record will then be reviewed for inclusion/exclusion by two independent reviewers. If conflicts arise, these will be resolved by a third reviewer. For articles that pass the title and abstract screen, full text will be assessed by two independent reviewers and conflicts decided again by a third reviewer.

Data extraction

A data extraction form will be used and will include the following:

- ▶ Bibliographic data: author, year, journal or document source.
- ▶ Type of research study: empirical or non-empirical.
- ▶ Location: Canada, specific province or territory, multi-country or multi-jurisdiction.
- ▶ Site of programme or service: hospital, clinic, community, home.
- ▶ Infection(s) discussed: HIV/AIDS, hepatitis B, hepatitis C, endocarditis, osteomyelitis, skin infections, multiple infections, others.
- ▶ Description of health programme or service.

- ▶ Population of study within PWID: indigenous people, sex workers, immigrants, men who have sex with men, homeless, women, transgender, minors, others.
- ▶ If part of cohort study, description of cohort: year of inception, number of participants, location, inclusion and exclusion criteria.
- ▶ Purpose of study.
- ▶ Outcomes measured and indicators used, if any.
- ▶ Summary of findings.
- ▶ Implications for policy and/or practice, as reported by authors.
- ▶ Implications for research, as reported by authors.
- ▶ Gaps identified, as reported by the authors.

Data evaluation

The Quality Appraisal Tool in Studies with Diverse Designs will be used to appraise the quality of the diverse methodological designs included in this study.³⁶ The tool consists of 16 items and focuses on methodological and reporting quality, using a 4-point scale (0—not at all to 3—complete). As added by Bradford *et al*,³⁷ a not-applicable additional item will be included for narrative discussions, if any are to be included. Two reviewers will assess the quality of each included study. This protocol paper follows the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist for reporting of systematic review protocols.³⁸

Data analysis and presentation

Data will be entered into Covidence and downloaded into Microsoft Excel (2016) for data analysis. The columns in Excel will be set up to allow for high-level classification of variables where possible, such as type of study design, to allow for descriptive statistics to be reported, as for example, the number and percent of different study types. If sufficient and comparable quantitative studies are found, further statistical analyses will be conducted based on the level of information provided. Otherwise, a narrative description of the studies will be provided. For qualitative data, qualitative content analysis, a dynamic form of verbal or visual data analysis oriented to summarising informational content of data, will be used.³⁹ A template analysis style will be followed with constant comparison to organise new information with prior information based on preliminary codes.³⁹ Tables of included and excluded studies and relevant data will be presented in the final report, along with tables of synthesised findings.

Patient and public involvement

This study is meant to inform policy and practice. Clinicians involved in the care of PWID are part of this research team and have been involved in the development of this protocol to address practice-specific concerns. In addition, related projects incorporated former and current IDU and other stakeholders in a series of strategies including an evidence brief and citizen dialogue looking at the issues of preventing and managing infectious diseases in PWID in

Ontario.^{2 28} The objective of this current study aligns with priorities identified in these related projects.

ETHICS AND DISSEMINATION

This study aims to describe what is known about the current landscape around existing health programmes and services for the prevention and management of infections in PWID in Canada. A systematic approach will be used to enhance rigour in analysis and reporting. Findings from this study will help inform practice and research related to infections in PWID, an important public health issue. This study will also identify data gaps in the literature regarding the prevention and management of infectious diseases among PWID. In turn, this information will help set up a research agenda to further investigate programmes, services and interventions that aim to address these issues. Even though the context for this study is Canada, the methodology can be applied to other contexts.

Knowledge translation initiatives will include peer-reviewed publications and conference presentations to reach health professionals and researchers in Canada working on this topic. Presentations will be geared towards local stakeholders to support them in the prevention and management of infections in PWID. Preliminary testing of the search string has started and this study is expected to be completed by December 2020. As a secondary analysis of publicly available documents, no ethics approval is required.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not required.

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