Updated Environmental Scan (1980-2020): HIV and HCV **P**rograms, **P**rojects and **I**nitiatives in Saskatchewan

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We honour the people and lands of Saskatchewan. We honour those who have lived and living experience with human immunodeficiency virus (HIV) or hepatitis C (HCV). We honour those who have passed on to the spirit world. *Saskatchewan Stories (Sask Stories)* lives on Treaties 2, 4, 5, 6, 8 and 10, as well as the Homeland of the Métis.

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Contents

Tables and Figures

Glossary of Terms and Abbreviations

AIDS	Acquired immune deficiency syndrome
HCV	Hepatitis C virus
HIV	Human immunodeficiency virus
Initiative	Actions to support programs and projects, and to centralize knowledge that may or may not be adaptable
IDU	Injection drug use
NEP	Needle exchange program
PLWH	Person/People living with HIV/HCV
PPIs	Programs, projects and initiatives
Program	Services provided with a group to a distinct population
Project	Activities undertaken by a group with a definitive start and end date
PWID	Person/People who uses injection drugs
STBBI	Sexually transmitted and blood-borne infection
CTN	Canadian Institutes of Health Research HIV Trials Network

Executive Summary

Saskatchewan Stories (Sask Stories) is a community-based database development project to make centrally and freely available the rich history of Saskatchewan's HIV and HCV programs, project and initiatives (PPIs). An initial environmental scan covering Jan 1, 1995 to Aug 31, 2019 was completed last year, but more recently the timeframe of the scan was broadened to include PPIs from Jan 1, 1980 to May 31, 2020. The updated scan was completed using additional literature databases, key words, search terms, search filters unique to each database and boolean operators. The broadened scan provided opportunities to fill in gaps on HIV and HCV PPIs published or reported during the AIDS epidemic (1980s and early 1990s) and the academic and grey literature published in its wake. Extended to 2020, the scan also covers the landscape of PPIs leading up to and during the current COVID-19 pandemic (Sep 1, 2019 to May 31, 2020). In the next phase of this project, consultations and guided conversations by the Sask Stories team will help identify and include unpublished PPIs within the database, including those which may have been missed in this scan.

In total, 139 HIV-specific PPIs and 29 HCV-specific PPIs were found in the environmental scan (n=168; see Appendices 1-6). Of these PPIs, 27% (n=38) and 41% (n=12) were from academic literature, while 73% (n=101) and 59% (n=17) were from grey literature, for HIV and HCV, respectively. Among the 28 items of academic literature for HIV, seven articles were the base for a total of 17 PPIs. The updated search strategy accounted for new academic articles and grey literature which were missed in the previous search: (i) for HIV, eight academic articles and 17 pieces of grey literature; (ii) for HCV, six academic articles and 10 pieces of grey literature. All articles have been summarized within an annotated bibliography (see Appendix 7).

Even though the additional search terms, punctuation and filters did not provide academic articles and grey literature for the period of 1980 to 1995, they did provide new academic articles and grey literature for the period of 1995 to 2020, which were not captured in the preliminary scan.

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Introduction

Saskatchewan Stories (*Sask Stories*) is a digital database of programs, projects and initiatives (PPIs) related to HIV and HCV that have taken place in Saskatchewan from 1980 to 2020. The database will be a platform for stakeholders to share evidence, expertise and promising/wise practices. It will provide a comprehensive view of HIV and HCV in Saskatchewan and offer a knowledge network of the strengths and gaps in Saskatchewan's HIV and HCV landscape.

To populate the database, we conducted an environmental scan of published (academic and grey literature) PPIs. We are also in progress of gathering information from community-based organizations about PPIs that are unpublished. These two processes are complementary and together they will paint a broad picture of the activities in Saskatchewan that have aimed to address HIV and HCV over the last 40 years. The present report provides results of an updated environmental scan representing HIV and HCV PPIs from Jan 1, 1980 to May 31, 2020, which is a follow-up to the preliminary environmental scan performed with for the timeframe of Jan 1, 1995 to Aug 31, 2019.

Methods

Following the methods used in the preliminary environmental scan, Choo's conceptual framework for environmental scanning was adapted to conduct this updated scan. In brief, this framework involves scanning performed as a mode of information seeking and organizational learning (Choo, 2001) .

Terminology

The CAB co-defined and established a consensus of the terms used to search for PPIs in the preliminary environmental scan. The same was used for this updated scan:

- **Programs:** services provided with a group to a distinct population
- **Projects:** activities undertaken by a group with a definitive start and end date
- **Initiatives:** actions to support programs and projects

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Inclusion Criteria

To be eligible for full review, a PPI must be:

- Located in, or include, Saskatchewan
- About HIV and/or HCV
- Available in English
- Between Jan 1, 1980 and May 31, 2020, including any PPIs that are ongoing

Limits

- Targeted at human populations
- Full text filter
- Boolean operators and search filters unique to each database

Search Protocol and Sources

The PRISMA chart captures the results of the database search for HIV (shown in **Figure 1**) and HCV (shown in **Figure 2**), respectively. A grey literature search of community-based HIV and HCV organizations' websites was also completed for the updated scan, which may include reports, studies, articles, monographs produced by an organization or government agency, and which do not appear in peer-reviewed journal literature (Tipton *et al.* 2011). While there is slight variation between the literature databases (sources) searched, HIV and HCV searches followed the same protocol. The number of academic articles for the period of 1995 to 2019 (preliminary scan) and from 1980 to 2020 (updated scan) is compared for HIV (**Table 1**) and HCV (**Table 2**), respectively.

Figure 1: PRISMA chart of HIV search

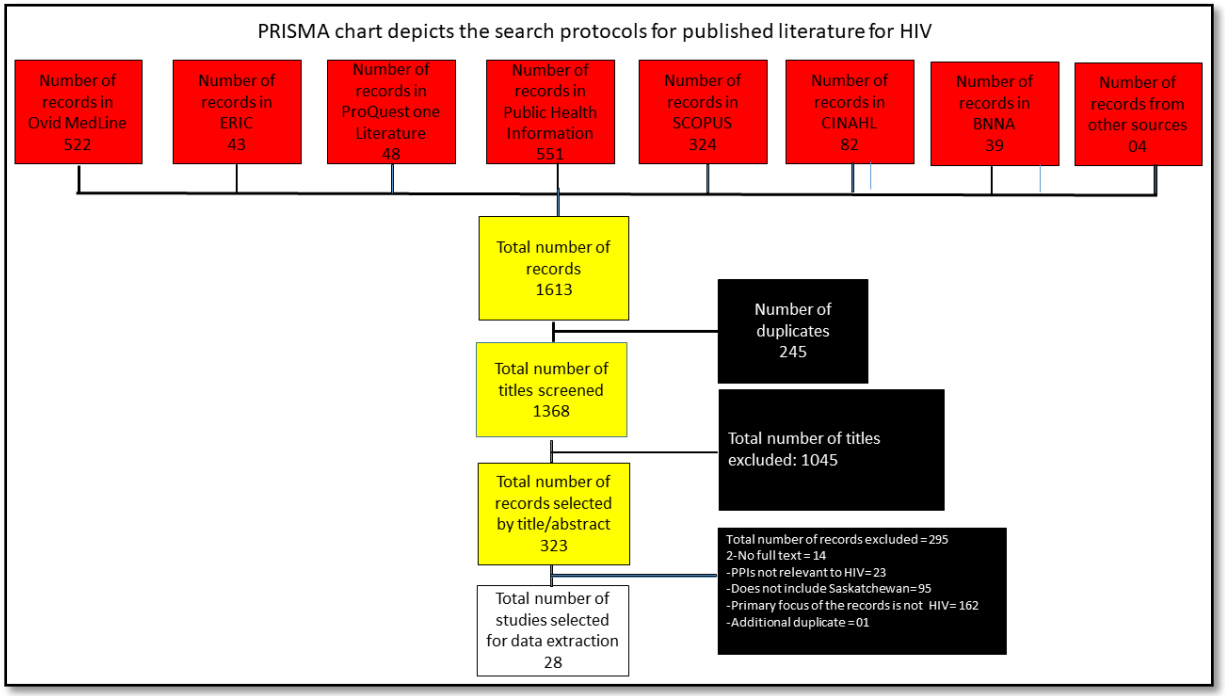

Figure 2: PRISMA chart of HCV search

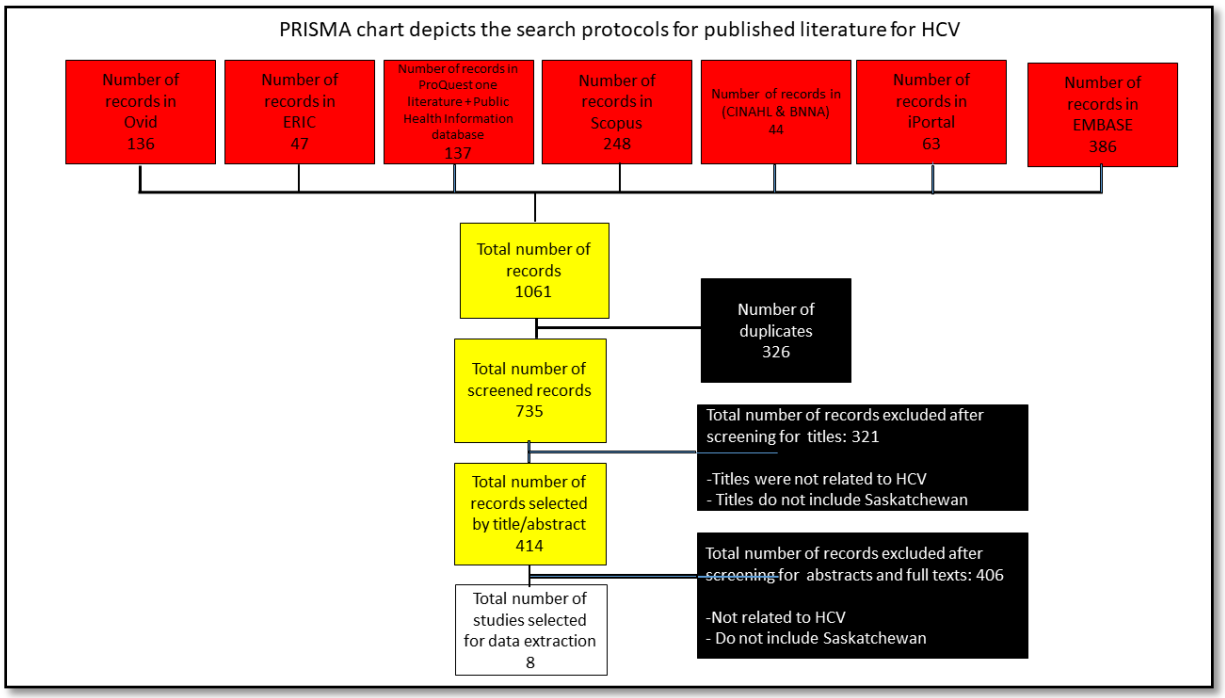

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Table 1: HIV search results compared for databases in preliminary environmental scan (1995-2019) *vs*. updated scan (1980-2020)

Database	Year (1995-2019)	Year (1980-2020)
Medline Ovid	1446	522
ERIC	48	43
ProQuest one literature	20	48
CINAHL	656	82
Public health info	387	551
SCOPUS	1257	324
BNNA	52	39
Miscellaneous (back referencing)	00	04
Total	**3866**	**1613**

When using ProQuest, the search in 'One literature' was used in the updated scan, compared to the preliminary scan which used ProQuest: 'Dissertations & Theses Global', which would limit the search to academic institutions.

Table 2: HCV search results compared for databases in preliminary environmental scan (1995-2019) vs. updated scan (1980-2020)

Database	Year (1995-2019)	Year (1980-2020)
Medline Ovid	81	136
EMBASE	00	386
ERIC	128	47
ProQuest one literature+ Public health info	13	137
CINAHL+ BNNA	51	44
SCOPUS	13	248
iportal studies	00	63
Total	**408**	**1061**

iPortal studies: Indigenous studies portal research tool at USask (https://iportal.usask.ca/).

When using ProQuest, the search in 'One literature' was used in the updated scan, compared to the preliminary scan which used ProQuest: 'Dissertations & Theses Global', which would limit the search to academic institutions.

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Additional Search Terms, Filters and Boolean Operators

Based on the initial search, some insights were gained and applied in this protocol, such as adding new search terms and filters with punctuation: (1) 'Indigenous people' or 'Indigenous', 'Aboriginal', 'Metis', 'Inuit', 'First Nation', and 'Indian (American Indian)'; (2) Injection drug use, PWID, and STBBI, as shown in **Figure 3**. To further explain the punctuation and conventions used in **Figure 3**, an asterisk (*) was used (as is common practice) to broaden a search by finding words that start with the same letters. For example: 'instruct*' will find similar words such as 'instruct*s*', 'instruct*ion*', 'instruct*or*', etc. Another variation is that a word could be seperated as syllables for a single word when looking for key words within a database (example: 'handsearch*' or 'hand search*' in CADTH search filters). The search strategies employed combinations of free text keywords, which helped identify as many relevant records as possible in a search compared to only using a keyword. A strategy for conventions was used when searching key words in OVID syntax. For example, in MEDLINE: (i) exp = "explodes" controlled vocabulary term (e.g., expands search to all more specific related terms in the vocabulary's hierarchy); and (ii) .mp. = combined search fields (default if no fields are specified) was used for controlled vocabulary terms (Tipton KN. et al, 2011). The use of boolean operators (three words: "AND"; "OR"; and "NOT") was used as conjunctions to combine, narrow down, broaden or exclude keywords in the literature search (**Figure 4**). The boolean operator "OR" was used as a filter for key terms searched with theMeSH convention (Systematic Reviews for Health). Once all key terms were included, the search was combined using "AND" to accommodate all key words (Systematic Reviews for Health 7: University of Tasmania, Australia).

Annotated Bibliography

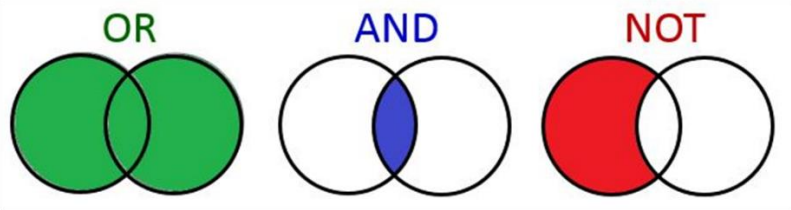
An annotated bibliography is a list of citations followed by a brief description or evaluative paragraph about each article. The criteria used for the annotation for both HIV and HCV academic literature includes the following: a brief summary of the source (author, purpose, relevance, accuracy); the strength and weakness of the research; project conclusions; relevance to your field of study; brief explanation of research methodology; and personal comments or opinion (if applicable).

Figure 3: New search terms and filters

exp indigenous people/ or Indigenous.mp.	32222	Advanced	Display Results | More
Aboriginal.mp.	7648	Advanced	Display Results | More
Metis.mp. or exp Metis/	286	Advanced	Display Results | More
Inuit.mp. or exp Inuit/	4429	Advanced	Display Results | More
First nation*.mp.	3918	Advanced	Display Results | More
Injection drug use*.mp.	5703	Advanced	Display Results | More
PWID.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	1305	Advanced	Display Results | More
STBBI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	11	Advanced	Display Results | More

Figure 4: Boolean Operators*

The three Boolean operators are **OR, AND, NOT**



'OR' = was used to accommodate for 'either' search term. This helps broaden the search and capture all articles regardless of which term was used in the search.

'AND' = was used to accommodate for 'both' key words. This is to **narrow** the search and to only capture articles in which all concepts appear.

'NOT' = A NOT search will **exclude** words from your search results. This is to **narrow** your search, telling the database to ignore concepts that may be implied by your search terms.

* From the website of the University of Tasmania, Australia. See full reference on page 18.

Fund #1718-HQ-000742

Results

Academic and Grey Literature for HIV

The academic literature review produced 1613 articles, of which 245 were duplicates. The abstracts of the remaining 1368 articles were screened according to the inclusion criteria, and 1045 records were removed. Next, a total of 323 documents were selected for review, by title and abstract. A total of 245 records were removed due to duplication, with a final tally of 28 articles remaining for full review and data extraction. Among these 28 academic articles, a total of 38 PPIs were identified which included 23 projects, nine programs and six initiatives specific to HIV in the context of Saskatchewan. The reason for higher number of PPIs (n=38), compared to the number of academic articles (n=28) was because 17 PPIs were stated as multiple combinations (project + program, program + initiative, or project + inititative) within single articles (**Table 3**).

In the grey literature search, 101 PPIs were found for HIV. Among the 101 items, 18 projects, 31 programs and 51 initiatives were PPIs for HIV in the context of Saskatchewan. However, one of these could not be classified as a program, project or initiative due to incomplete information (**Table 3)**. See **Appendix 1** for academic literature results, **Appendix 2** for PPIs from academic literature and **Appendix 5** for grey literature results.

Table 3: HIV search results for PPIs found within academic and grey literature

	Total	Projects	Programs	Initiatives	Not specified
Academic	38	23*#®ɦ	9®	6*ɦ	0
Grey	101	18¥	31	51	1

* This is included as a program, as well as an initiative.
# The data used in this project has also been used in article (Lemstra, et al 2011). The reason could be due to both articles being published by the same group.
¥ This report was referred to both project and program.
® This is included as a project as well as a program.
ɦ This is included as a project as well as an Initiative.

Fund #1718-HQ-000742

Academic and Grey Literature for HCV

The academic HCV literature search yielded an initial total of 1061 articles, from which 326 duplicates were removed and 735 abstracts were screened according to the inclusion criteria and 321 articles were removed. Next, a total of 414 documents were selected for review by title and abstract. A total of 406 records were removed due to duplication, with a final tally of eight articles remaining for full review and data extraction. Among these eight academic articles, a total of 12 PPIs were identified that included two projects, seven programs and three initiatives specific to HCV in the context of Saskatchewan. The reason for higher number of PPIs (n=12), compared to the number of academic articles (n=8) was due to two sources mentioning the same PPI (**Table 4**).

In the grey literature search, 17 PPIs were found. Among the 17 grey literature sources, two projects, six programs and nine initiatives for HCV were identified in the context of Saskatchewan (**Table 4**). Among the PPIs for projects, the same PPI was mentioned in two separate reports. See **Appendix 3** for academic literature results, **Appendix 4** for PPIs from academic literature and **Appendix 6** for grey literature results.

Table 4: HCV search results for PPIs found within academic and grey literature

	Total	Projects	Programs	Initiatives	Not specified
Academic	12	2	3	7*	0
Grey	17	2**	6	9	0

*Two sources have mentioned the same initiative for academic resources (HCV)

**Same project is mentioned in two different reports for grey literature (HCV)

In total, 139 HIV-specific PPIs and 29 HCV-specific PPIs were found (n=168). Of these PPIs, 27% (n=38) and 41% (n=12) were offered through academic literature, while 73% (n=101) and 59% (n=17) were from grey literature, for HIV and HCV, respectively. HIV accounted for 83% of total PPIs, compared to 17% for HCV (**Table 5**). The updated search strategy allowed for additional new academic articles and grey literature which were missed in the previous search: (i) For HIV, eight academic articles and 17 grey literature, and (ii) For

HCV, six academic articles and 10 grey literature. The new academic articles have been summarized within an annotated bibliography (**Appendix 7**).

Annotated Bibliography for HIV and HCV Academic Literature

An annotated bibliography for the academic articles not included in the preliminary environmental scan was completed for both HIV (new articles, n=8) and HCV (new articles, n=6) as stated in **Appendix 7**.

Table 5: Combined HIV and HCV scan results for PPIs found within academic and grey literature

	Total	**Projects**	**Programs**	**Initiatives**	**Not specified**
HIV (83% of total results)	139	41 (29%)	40 (29%)	57 (41%)	1 (1%)
HCV (17% of total results)	29	4 (14%)	13 (45%)	12(41%)	0 (0%)

Discussion

Previously, an environmental scan for the period 1995-2019 was completed, and a copy was submitted to PHAC and distributed to CAB members. The need for an updated environmental scan was discussed and agreed upon by the current Sask Stories team. The reason for an updated scan was two-fold. First, a global response to HIV (the virus which causes AIDS) began in the early 1980s after the first cases of AIDS were reported in 1981. In 1989, HCV was discovered followed by HCV testing in 1990. The previous environmental scan was limited to a period of 1995 to 2019. The additional 14 years (1980 to 1994) would help capture any PPIs which may have developed in the first years following identification of HIV and HCV. Second, there is an associated risk of COVID-19 in PLWH due to a compromised immune system that can be vulnerable to opportunistic pathogens. The

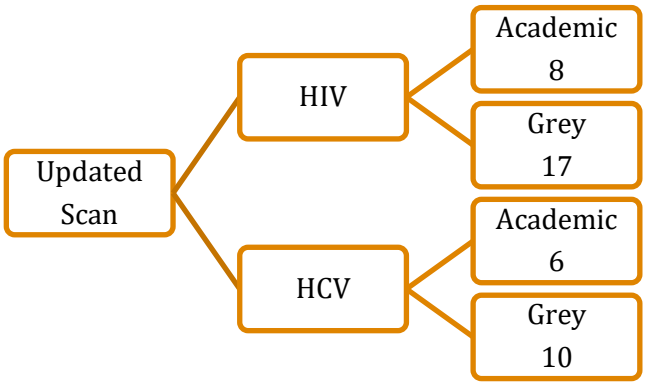
Fund #1718-HQ-000742

updated environmental scan (until May 31, 2020) will help gather information on current strategies for additional PPIs in Saskatchewan during the COVID-19 pandemic, which may have resulted in increased online services. For this scan, additional key words, methods, search terms, MeSH terms and punctuation were used. When using the database ProQuest, the search was conducted in 'One literature' including a broader library, compared to the preliminary scan that used ProQuest: 'Dissertations & Theses Global,' which limited the search to academic institutions. The use of the Indigenous Studies Portal Research Tool at the University of Saskatchewan (introduced by USask librarian, Vicky Duncan) was an additional platform not used in the preliminary scan. Finally, the use of the Canadian News Archives through Canadian Major Dailies was used for searching grey literature.

This environmental scan provides a compilation of published academic and grey literature about HIV- and HCV-specific PPIs in Saskatchewan from 1980 to 2020. To the best of our knowledge, this environmental scan represents the most comprehensive compilation of academic and grey literature specific to HIV and HCV in Saskatchewan. Building on the findings of the preliminary environmental scan, additional search terms, punctuation and filters did not provide academic articles and grey literature for the 14 year period from 1980 to 1995, but it provided new academic articles and grey literature for the period of 1995 to 2020, which was not captured in the previous scan (see **Figure 5**). In total, eight new additional HIV-specific academic articles and 17 new pieces of grey literature, and six new additional HCV-specific articles and 10 new pieces of grey literature were found in this updated scan (see **Appendix 7** for annotated bibliography, and **Appendices 1 to 6** for new academic and grey literature, for HIV and HCV, respectively). The next step of Sask Stories is to identify PPIs that have not been previously published in any platform. This will be accomplished with support from the CAB, the Indigenous Knowledge Facilitator and others who are currently leading this phase of consultations and conversations, and updating information in the environmental scan that is incomplete or missing. The information collected will be used to develop a participatory database that serves as a central portal for Saskatchewan's PPIs.

Fund #1718-HQ-000742

Figure 5: The number of additional new academic articles and grey literature found in the updated environmental scan



This environmental scan is an important contribution to evidence-based practice and research in Saskatchewan. This environmental scan is particularly useful to organizations, researchers, policymakers and PLWH to develop new evidence-based PPIs, to secure funding for PPIs and to support individuals and communities in Saskatchewan affected by HIV and HCV. Above all, this environmental scan is a testament to the enormous labour and love of the people of Saskatchewan working to address HIV and HCV.

Fund #1718-HQ-000742

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Appendices

Appendix 1: HIV: Published Academic Literature

(Articles in red text represents additional new articles obtained from the updated scan)

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Rogers MR, Lemstra ME, Moraros JS. Risk indicators of depressed mood among sex-trade workers and implications for HIV risk behaviour. The Canadian Journal of Psychiatry. 2015 Dec;60(12):548-55.

Sami M, Maposa S, Exner-Pirot H, Anonson J. Front-line service providers' appraisal of Saskatchewan's HIV services and strategy: A qualitative study. Journal of HIV/AIDS & Social Services. 2018 Apr 3;17(2):146-62.

Shercllife RJ, Hampton M, McKay-McNabb K, Jeffery B, Beattie P, McWatters B. Cognitive and demographic factors that predict self-efficacy to use condoms in vulnerable and marginalized Aboriginal youth. Canadian Journal of Human Sexuality. 2007 Mar 1;16(1-2):45-56.

Tarasuk J, Ogunnaike-Cooke S, Archibald C, Poitras M, Hennink M, Lloyd K, Faye R, Abbas Z, Bourassa C, Masching R, Bennett R. A pilot behavioural and biological surveillance survey for HIV and other bloodborne infections among Aboriginal people in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2014 Nov;40(18):388-96.

Tomas K, Dhami P, Houston C, Ogunnaike-Cooke S, Rank C. HIV in Canada: 2009 to 2014. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2015 Dec 3; 41(12):292–303.

Appendix 2: HIV PPIs from Published Academic Literature

(Articles in red text represents additional new PPIs obtained from the updated scan)

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Belle-Isle L, Hathaway A. Barriers to access to medical cannabis for Canadians living with HIV/AIDS. AIDS Care. 2007 Apr 1;19(4):500-6.	Project	Survey and qualitative study	A survey conducted by the Canadian AIDS Society in 2005 and focus groups were conducted in five Canadian cities, including Saskatoon, among PLWH to understand the barriers associated to accessing cannabis under existing regulations.
Bird Y, Lemstra M, Rogers M, Moraros J. Third-world realities in a first-world setting: A study of the HIV/AIDS-related conditions and risk behaviors of sex trade workers in Saskatoon, Saskatchewan, Canada. SAHARA-J: Journal of Social Aspects of HIV/AIDS. 2016 Sep 14;13(1):152-61.	Project	Survey among people who are engaged in sex trade work	From the months of Sep 2009 to Apr 2010, 340 people who engage in sex trade work in Saskatoon, at risk of HIV, were recruited to participate in a survey. One of the objectives of this survey was to determine independent risk indicators for people who are engaged in sex trade work who self-report a chance of greater than 50% of becoming infected with HIV/AIDS.
Brumme ZL, Kinloch NN, Sanche S, Wong A, Martin E, Cobarrubias KD, Sandstrom P, Levett PN, Harrigan PR, Joy JB. Extensive host immune adaptation in a concentrated North American HIV epidemic. AIDS. 2018 Sep 10;32(14):1927-38. * Chelico L, King A, Ticknor J, McDonald M, Rosenes R, Mercredi J, Saddleback J, Bailey G, King M. Perspectives of Saskatchewan researchers and community members on HIV-1	Project	Comparative analysis of population level data sets from SK and BC	The authors hypothesized that accelerated HIV progression among the Indigenous population is associated with the carriage of certain human leukocyte antigen (HLA) alleles, especially mutated HLA-B 51 which is associated with protection from HIV. 1144 HIV subtype B Pol sequences collected in Saskatchewan from 2000 to 2016 were anlyzed for HLA associate pol mutations. Despite the good intentions of the Brumme et al, article, this study

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
strains circulating in Saskatchewan. AIDS (London, England). 2020 Nov 1;34(13):1987.			created an ethical issue in which the HIV virus was depicted as "nastier in Saskatchewan" which further stigmatized HIV-1 in a province already dealing with the ongoing effects of colonialism and racism. This issue was addressed through a publication by Chelico and King which provides an educational opportunity to explore how to better consider research ethics as an ongoing and changing process which is important when working with Indigenous communities in Canada*.
Clarke JN, Friedman DB, Hoffman-Goetz L. Canadian Aboriginal people's experiences with HIV/AIDS as portrayed in selected English language Aboriginal media (1996–2000). Social Science & Medicine. 2005 May 1;60(10):2169-80.	Project	Research study	Research aimed at describing the ways in which HIV/AIDS and people with HIV are described in select English newspapers specifically directed towards Indigenous people in Canada published from 1996 to 2000. This study includes *Saskatchewan Sage*, which is published in Saskatchewan.
Forbes JC, Alimenti AM, Singer J, Brophy JC, Bitnun A, Samson LM, Money DM, Lee TC, Lapointe ND, Read SE, Canadian Pediatric AIDS Research Group. A national review of vertical HIV transmission. AIDS. 2012 Mar 27;26(6):757-63.	Project	Retrospective study using data from the Canadian Perinatal HIV Surveillance Program	The aim of this study is to describe the rate of vertical HIV transmission and changing epidemiology of HIV+ pregnancies in Canada. Charts from 1990 were retrospectively analyzed.
Hall HI, Geduld J, Boulos D, Rhodes P, An Q, Mastro TD, Janssen RS, Archibald CP. Epidemiology of HIV in the United States and Canada: Current status and ongoing challenges. JAIDS Journal of	Project	Canadian National Surveillance System	This is a national surveillance system that records HIV/AIDS cases across Canada's 10 provinces and three territories.

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Acquired Immune Deficiency Syndromes. 2009 May 1;51:S13-20.			
Harvey CD, Migliardi P, Mignone J. The nature of family life among marginalized people living with HIV/AIDS in the Canadian prairies. Families in Society. 2014 Jul;95(3):195-203.	Program	Unspecified	A residential facility is provided for people with HIV in Regina.
Harvey CD, Migliardi P, Mignone J. The nature of family life among marginalized people living with HIV/AIDS in the Canadian prairies. Families in Society. 2014 Jul;95(3):195-203.	Project	Qualitative study	The project reports on the family life of people living with HIV with an objective of capturing social support and experiences across all kinds of relationships.
Hatala AR, Bird-Naytowhow K, Pearl T, Peterson J, del Canto S, Rooke E, Calvez S, Meili R, Schwandt M, Mercredi J, Tait P. Being and Becoming a Helper: Illness Disclosure and Identity Transformations among Indigenous People Living With HIV or AIDS in Saskatoon, Saskatchewan. Qualitative Health Research. 2018 Jun;28(7):1099-111.	Project	Qualitative study	Researchers were interested in understanding the experiences and needs of PLWH and their perceptions of health service gaps while also following a community-based research (CBR) process that included partnership building, capacity building, research promotion and support, and knowledge translation and exchange. The project was initiated by SHARE at the request of AIDS Saskatoon and SIMFC.
Hatala AR, Bird-Naytowhow K, Pearl T, Peterson J, del Canto S, Rooke E, Calvez S, Meili R, Schwandt M, Mercredi J, Tait P. Being and Becoming a Helper: Illness Disclosure and Identity Transformations among Indigenous People Living With HIV or AIDS in Saskatoon, Saskatchewan. Qualitative Health	Initiative	AIDS Saskatoon and Saskatoon Indian and Métis Friendship Centre (SIMFC)	Both these organizations seek to build research capacity in Saskatoon, provide evidence-based support for front line healthcare workers, and develop solutions to key issues affecting HIV treatment, care and preventive programming. These organizations were interested in assessing the HIV crisis in Saskatoon for clients with HIV who struggle in accessing

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Research. 2018 Jun;28(7):1099-111.			timely and appropriate healthcare due to the subtle and overt social processes of stigma and racism.
Hennink M, Abbas Z, Choudhri Y, Diener T, Lloyd K, Archibald CP, Cule S. Risk behaviours for infection with HIV and hepatitis C virus among people who inject drugs in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2007 Mar;33(5):53-9.	Project	Cross-sectional study	The objective of the study was to assess the injection drug and sexual behaviours and the HIV and HCV testing patterns of PWID recruited in Regina in 2005.
Hoffman-Goetz LA, Friedman DB, Clarke JN. HIV/AIDS risk factors as portrayed in mass media targeting First Nations, Métis, and Inuit peoples of Canada. Journal of Health Communication. 2005 Mar 9;10(2):145-62.	Project	Mixed-methods	The purpose of this study was to describe the coverage and portrayal of HIV/AIDS risk factors as framed in newspapers targeting Indigenous (First Nations, Métis and Inuit) peoples in Canada.
Hull M, Klein M, Shafran S, Tseng A, Giguere P, Cote P, Poliquin M, Cooper C. CIHR Canadian HIV Trials Network Coinfection and Concurrent Diseases Core: Canadian guidelines for management and treatment of HIV/hepatitis C coinfection in adults. Canadian Journal of Infectious Diseases and Medical Microbiology. 2013 Dec 1;24.	Initiative	Development of national standards to manage HIV and HCV coinfection in a Canadian context	A panel with specific clinical expertise in HIV-HCV co-infection was convened by the CTN to review existing literature, guidelines and protocols. Also, the panel characterized the recommendations based on the class and level quality of the evidence scale.
Hunt K, Mondal P, Konrad S, Skinner S, Gartner K, Lim HJ. Identifying factors associated with changes in CD4+count in HIV-infected adults in Saskatoon, Saskatchewan. Can J Infect Dis	Project	Retrospective longitudinal cohort study in Saskatoon	This study collected data from 2003 to 2011 with a primary objective of estimating the rate of CD4+ depletion and assessing the impact of social and clinical factors that tend to influence CD4+ cell count

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Med Microbiol [Internet]. 2015 [cited 2017 Mar 7];26(4):207–11.			changes among people living with HIV.
Jayaraman GC, Gleeson T, Rekart ML, Cook D, Preiksaitis J, Sidaway F, Harmen S, Dawood M, Wood M, Ratnam S, Sandstrom P. Prevalence and determinants of HIV-1 subtypes in Canada: Enhancing routinely collected information through the Canadian HIV Strain and Drug Resistance Surveillance Program. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2003 Feb 15;29(4):29-36	Project	Lab-based and epidemiologi-cal study	The program's primary goal was to monitor circulating strains of HIV in order to guide vaccine strategies and to ensure that HIV diagnostics tests are adequate and appropriate to detect all circulating strains in Canada. Additionally, they wanted to assess HIV transmission patterns and enhance the current understanding of HIV pathogenesis and monitor genetic markers for drug resistance in order to guide treatment and prevention programs.
Jozaghi E, Jackson A. Examining the potential role of a supervised injection facility in Saskatoon, Saskatchewan, to avert HIV among people who inject drugs. International Journal of Health Policy and Management. 2015 Jun;4(6):373-9.	Project	Establishing safe consumption sites in Saskatoon	The study focused on two different mathematical models to estimate the number of preventable HIV cases if a safe injection facility (SIF) were established in Saskatoon, which has both high HIV prevalence in the city as well as injection drug use reported by >70% as the primary risk factor. Recommendations include that harm reduction services should include a SIF as part of healthcare delivery.
Khan I, Ndubuka N, Stewart K, McKinney V, Mendez I. Indigenous health: The use of technology to improve health care to Saskatchewan's First Nations communities. Canada Communicable Disease Report = Releve des maladies	Project	Literature review and community-based research	To address this challenge, Saskatchewan's health care providers have been incorporating the use of technology for various health services. This paper describes various ways technology has been used in First Nations communities in Saskatchewan.

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
transmissibles au Canada. 2017 Jun 1;43(6):120-4			
Klein MB, Rollet KC, Saeed S, Cox J, Potter M, Cohen J, Conway B, Cooper C, Cote P, Gill J, Haase D. HIV and hepatitis C virus coinfection in Canada: Challenges and opportunities for reducing preventable morbidity and mortality. HIV Medicine. 2013 Jan;14(1):10-20.	Initiative	Canadian Coinfection Cohort	The cohort was established in 2003 to determine the effect of ART and HCV treatment on the progression to endstage liver disease (ESLD) in people with HCV/HIV co-infection. Saskatchewan is a participating site in this cohort.
Konrad S, Skinner S, Kazadi GB, Gartner K, Lim HJ. HIV disease progression to CD4 count < 200 cells/mu L and death in Saskatoon, Saskatchewan. Canadian Journal of Infectious Diseases and Medical Microbiology. 2013;24(2):97–101.	Project	Retrospective study	The aim of the study was to characterize and identify determinants of HIV disease progression among PWID with a diagnosis of HIV from 2005 to 2010.
Konrad S, Skinner S, Kazadi GB, Gartner K, Lim HJ. HIV disease progression to CD4 count < 200 cells/mu L and death in Saskatoon, Saskatchewan. Canadian Journal of Infectious Diseases and Medical Microbiology. 2013;24(2):97–101.	Program	Positive Living Program	A program offered at the Royal University Hospital to provide care to adults and children diagnosed with HIV and HCV in northern and central Saskatchewan.
Konrad S, Skinner S, Kazadi GB, Gartner K, Lim HJ. HIV disease progression to CD4 count < 200 cells/mu L and death in Saskatoon, Saskatchewan. Canadian Journal of Infectious Diseases and Medical Microbiology. 2013;24(2):97–101.	Program	Unspecified	A program offered at the Westside Community Clinic that provides specialized HIV/AIDS care to people in Saskatoon dealing with multiple forms of oppression.

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Lam A, Woods S, Ndubuka N. Indigenous health: Evaluating the timeliness of reporting in a First Nations communicable diseases program. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2017 Jun 1;43(6):133-7.	Project	Assessing the timeliness of reporting for 12 notifiable communic-able diseases in the Northern Inter-Tribal Health Authority, Prince Albert	The data was collected from the integrated Public Health Information System (iPHIS) between 2008 and 2013 and was compared against the targets set for reporting in the Saskatchewan Communicable Disease Control Manual. The rationale for this study is to prevent or mitigate the impact of outbreaks by assessing the timeliness of reporting. HIV was one among the notifiable diseases.
Lam A, Woods S, Ndubuka N. Indigenous health: Evaluating the timeliness of reporting in a First Nations communicable diseases program. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2017 Jun 1;43(6):133-7.	Program	Communic-able disease (CD) program	The Northern Inter-Tribal Health Authority (NITHA) is a regional First Nations health organization that comprises four partners: Meadow Lake Tribal Council; Lac La Ronge Indian Band; Prince Albert Grand Council; and Peter Ballantyne Cree Nation. The CD program at NITHA reports data and conducts follow-up investigations in adherence to The Public Health Act, 1994, the Saskatchewan Disease Control Amendment Regulations, 2014 and the Saskatchewan Ministry of Health's Communicable Disease Control Manual.
Lang K, El-Aneed A, Berenbaum S, Dell CA, Wright J, McKay ZT. Qualitative assessment of crisis services among persons using injection drugs in the city of Saskatoon. Journal of Substance Use. 2013 Feb 1;18(1):3-11.	Project	Qualitative study	The purpose of this investigation is to examine barriers to accessing care for PWID in an urban centre of Saskatoon, Canada. Data was collected through BRIDGE Saskatoon, a community collective which facilitates cooperation among service providers, researchers, policymakers and community activists with an interest in IDU services.

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Laurie ML, Green KL. Health risks and opportunities for harm reduction among injection-drug-using clients of Saskatoon's needle exchange program. Canadian Journal of Public Health. 2000 Sep 1;91(5):350-2.	Program	Street outreach program	Two outreach workers and a nurse provide counselling and referrals, as well as resources such as condoms, needles, bleach and safety containers for needles.
Lemstra M, Rogers M, Thompson A, Moraros J, Buckingham R. Risk indicators associated with injection drug use in the Aboriginal population. AIDS Care. 2012 Nov 1;24(11):1416-24.	Project	Survey	A survey was conducted from Sep 2009 to Apr 2010 among Saskatoon residents who inject drugs, work in or make use of the sex trade, and men who have sex with men to determine the risk indicators independently associated with higher rates of people who inject drugs in the Indigenous population in comparison to general population.
Lemstra M, Rogers M, Thompson A, Moraros J, Buckingham R. Risk indicators associated with injection drug use in the Aboriginal population. AIDS Care. 2012 Nov 1;24(11):1416-24.	Program	Needle exchange van	Operated by the Saskatoon Health Region (now part of the Saskatchewan Health Authority).
Lemstra M, Rogers M, Thompson A, Moraros J, Buckingham R. Risk indicators associated with injection drug use in the Aboriginal population. AIDS Care. 2012 Nov 1;24(11):1416-24.	Program	Needle exchange and primary care facility	Operated by the Saskatoon Tribal Council.
Lemstra M, Rogers M, Thompson A, Moraros J, Buckingham R. Risk indicators of depressive symptomatology among injection drug users and increased HIV risk behaviour. The Canadian Journal of Psychiatry. 2011 Jun;56(6):358-66.	Project	Survey	A survey conducted between Sep 2009 and Apr 2010 among Saskatoon residents who are actively injecting drugs with an objective of assessing if depressive symptomology was associated with a risk of HIV.

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Loutfy M, de Pokomandy A, Kennedy VL, Carter A, O'Brien N, Proulx-Boucher K, ... Greene S. Cohort profile: The Canadian HIV women's sexual and reproductive health cohort study (CHIWOS). PLoS One. 2017;12(9):e0184708.	Initiative	Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS)	The cohort was created in collaboration with academic researchers, clinicians and community partners to assess the impact of women-centred care in HIV and its impact on overall mental, sexual and reproductive health of women living with HIV. Saskatchewan has been included in this study since 2018. This was confirmed by vising the study website (http://www.chiwos.ca).
Moraros J, Falconer J, Rogers M, Lemstra M. Risk factors associated with higher injection drug use and HIV rates: Findings from Saskatchewan, Canada. Journal of AIDS & Clinical Research. 2011(Suppl. 1).	Project	Logistic regression	This study sought to assess the prevalence, characteristics, and risk indicators of higher risk for PWID in comparison to lower risk of PWID within the Saskatoon Health Region, Saskatchewan, and Canada.
Mykhalovskiy E, Patten S, Sanders C, Bailey M, Taylor D. Conceptualizing the integration of HIV treatment and prevention: Findings from a process evaluation of a community-based, national capacity-building intervention. International Journal of Public Health. 2009 May 1;54(3):133-41.	Project	Integrating HIV/AIDS Treatment Information, Prevention and Support Services Capacity Building Project	The project was launched in 2004 by CATIE to enhance the treatment information services in Canadian community-based AIDS Organizations (CBAOs). The objective of the program was to provide tailored workshops to local staff and volunteers of participating CBAOs that followed an assessment of their treatment information literacy, capacity-building needs and available resources. AIDS Program South Saskatchewan (APSS) is among the many organizations in this project.
Nowgesic E, Meili R, Stack S, Myers T. The Indigenous Red Ribbon Storytelling Study: What does it mean for Indigenous peoples living with HIV and a	Project	Indigenous Red Ribbon Storytelling Study	This qualitative study was conducted in partnership with Indigenous PLWH and 11 community partners representing Indigenous people and providing

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
substance use disorder to access antiretroviral therapy in Saskatchewan? Canadian Journal of Aboriginal Community-based HIV/AIDS Research. 2015 Winter;7(1):27-40.			services to people living with HIV. The objective of the study was to examine and understand experiences of Indigenous PLWH accessing antiretroviral therapy.
Rogers MR, Lemstra ME, Moraros JS. Risk indicators of depressed mood among sex-trade workers and implications for HIV risk behaviour. The Canadian Journal of Psychiatry. 2015 Dec;60(12):548-55.	Project		This study is a part of the research work conducted by Lemstra and colleagues, and includes data collected by the previous research group. The research concluded that high rates of depression among people who are currently engaged in sex trade work are associated with IDU and low self-efficacy for safe sexual health practices.
Sami M, Maposa S, Exner-Pirot H, Anonson J. Front-line service providers' appraisal of Saskatchewan's HIV services and strategy: A qualitative study. Journal of HIV/AIDS & Social Services. 2018 Apr 3;17(2):146-62.	Initiative	Funding by Sask. Ministry of Health	In 2010, the ministry disbursed $7M to advance community engagement, HIV education and harm reduction strategies.
Sami M, Maposa S, Exner-Pirot H, Anonson J. Front-line service providers' appraisal of Saskatchewan's HIV services and strategy: A qualitative study. Journal of HIV/AIDS & Social Services. 2018 Apr 3;17(2):146-62.	Initiative /Project	Sask. HIV Strategy 2010-2014	The government implemented this strategy after a substantial increase in the prevalence of HIV cases in the province. Its aim was to address risk factors and improve the quality of life for PLWH.
Sami M, Maposa S, Exner-Pirot H, Anonson J. Front-line service providers' appraisal of Saskatchewan's HIV services and strategy: A qualitative study. Journal of HIV/AIDS & Social	Project	Qualitative study	This study was conducted from Jun to Aug 2014 to examine front-line healthcare providers' understandings of the Saskatchewan Ministry of Health's 2010–2014 HIV strategy, their capacity-building needs, and

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
Services. 2018 Apr 3;17(2):146-62.			perspectives on how well they were implementing HIV services.
Shercllife RJ, Hampton M, McKay-McNabb K, Jeffery B, Beattie P, McWatters B. Cognitive and demographic factors that predict self-efficacy to use condoms in vulnerable and marginalized Aboriginal youth. Canadian Journal of Human Sexuality. 2007 Mar 1;16(1-2):45-56.	Project	Community-based research study	This study employed a community action research strategy to examine the relationship between a set of cognitive and demographic variables and self-efficacy to use condoms in a sample of vulnerable and marginalized Indigenous youth (N = 68).
Tarasuk J, Ogunnaike-Cooke S, Archibald C, Poitras M, Hennink M, Lloyd K, Faye R, Abbas Z, Bourassa C, Masching R, Bennett R. A pilot behavioural and biological surveillance survey for HIV and other bloodborne infections among Aboriginal people in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2014 Nov;40(18):388-96.	Project	A-Track surveillance	Behavioural and biological surveillance system developed to monitor the prevalence of HIV and other related infections as well as associated risk behaviours and socio-demographics among Indigenous populations in Canada. The A-Track system was piloted in Regina, Saskatchewan from 2011 to 2012.
Tarasuk J, Ogunnaike-Cooke S, Archibald C, Poitras M, Hennink M, Lloyd K, Faye R, Abbas Z, Bourassa C, Masching R, Bennett R. A pilot behavioural and biological surveillance survey for HIV and other bloodborne infections among Aboriginal people in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies	Project	I-Track surveillance system	A behavioural and biological surveillance system that monitored the prevalence of HIV and HCV as well as the associated risks among PWID in Canada. The surveys were conducted between Apr 2010 and Aug 2012 across 11 participating sentinel sites, including Regina.

Reference	PPI	Name	Description
Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.	Project	Retrospective chart review	Numbers and demographics of HIV-positive patients in care (2003-2007) in Manitoba, Saskatchewan and Alberta. This was examined with an objective to investigate the existing challenges in the provision of care.
transmissibles au Canada. 2014 Nov;40(18):388-96.			
Tomas K, Dhami P, Houston C, Ogunnaike-Cooke S, Rank C. HIV in Canada: 2009 to 2014. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2015 Dec 3; 41(12):292–303.	Program	National HIV/AIDS Surveillance System (HASS)	This case-based passive surveillance system collects data submitted to the PHAC on an annual basis from all provincial and territorial public health authorities.
Tomas K, Dhami P, Houston C, Ogunnaike-Cooke S, Rank C. HIV in Canada: 2009 to 2014. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2015 Dec 3; 41(12):292–303.	Initiative	Mandatory reporting	Beginning in 2005, all provinces now include a mandatory reporting of HIV in Canada.
Tomas K, Dhami P, Houston C, Ogunnaike-Cooke S, Rank C. HIV in Canada: 2009 to 2014. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2015 Dec 3; 41(12):292–303.	Program	Canadian Perinatal HIV Surveillance Program (CPHSP)	National data on the HIV status of infants exposed prenatally to HIV infection are collected through this program.

Appendix 3: HCV: Published Academic Literature

(Articles in red text represents additional new articles obtained from the updated scan)

Brunet L, Moodie EE, Young J, Cox J, Hull M, Cooper C, Walmsley S, Martel-Laferrière V, Rachlis A, Klein MB, Canadian Co-infection Cohort Study: Progression of liver fibrosis and modern combination antiretroviral therapy regimens in HIV-Hepatitis C co-infected persons. Clinical Infectious Diseases. 2016 Jan 15;62(2):242-9.

Hennink M, Abbas Z, Choudhri Y, Diener T, Lloyd K, Archibald CP, Cule S. Risk behaviours for infection with HIV and hepatitis C virus among people who inject drugs in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2007 Mar;33(5):53-9.

Hull M, Shafran S, Tseng A, Giguère P, Klein MB, Cooper C. CIHR Canadian HIV Trials Network Co-Infection and Concurrent Diseases Core: Updated Canadian guidelines for the treatment of hepatitis C infection in HIV-hepatitis C coinfected adults. Canadian Journal of Infectious Diseases & Medical Microbiology. 2014 Nov 1;25(6):311-20.

Kronfli N, Nitulescu R, Cox J, Moodie EE, Wong A, Cooper C, Gill J, Walmsley S, Martel-Laferrière V, Hull MW, Klein MB. Previous incarceration impacts access to hepatitis C virus (HCV) treatment among HIV-HCV co-infected patients in Canada. Journal of the International AIDS Society. 2018 Nov;21(11):e25197.

Marshall AD, Saeed S, Barrett L, Cooper CL, Treloar C, Bruneau J, Feld JJ, Gallagher L, Klein MB, Krajden M, Shoukry NH. Restrictions for reimbursement of direct-acting antiviral treatment for hepatitis C virus infection in Canada: A descriptive study. Canadian Medical Association Journal Open. 2016 Oct;4(4):E605-14.

Minuk GY, Uhanova J. Viral hepatitis in the Canadian Inuit and First Nations populations. Canadian Journal of Gastroenterology. 2003 Dec 1;17(12):707-12.

Myers S, Khosa G, fan Kuo I, Janzen D, Alessi-Severini S. Moving towards universal coverage of direct-acting antiviral therapies for hepatitis C infection in Canada: An environmental scan

of Canadian provinces and international jurisdictions. Journal of Pharmacy & Pharmaceutical Sciences. 2018 Nov 6;21(1s):271s-308s.

Pearce ME, Jongbloed K, Demerais L, MacDonald H, Christian WM, Sharma R, Pick N, Yoshida EM, Spittal PM, Klein MB. “Another thing to live for”: Supporting HCV treatment and cure among Indigenous people impacted by substance use in Canadian cities. International Journal of Drug Policy. 2019 Dec 1;74:52-61.

Skinner S, Cote G, Khan I. Can we eliminate hepatitis C?: Hepatitis C virus infection in Saskatchewan First Nations communities: Challenges and innovations. Canada Communicable Disease Report. 2018 Jul 5;44(7-8):173-8.

Appendix 4: HCV PPIs from Published Academic Literature

(Articles in red text represents additional new PPIs obtained for the updated scan)

Reference	PPI	Name	Description
Brunet L, Moodie EE, Young J, Cox J, Hull M, Cooper C, Walmsley S, Martel-Laferrière V, Rachlis A, Klein MB, Canadian Co-infection Cohort Study: Progression of liver fibrosis and modern combination antiretroviral therapy regimens in HIV-Hepatitis C co-infected persons. Clinical Infectious Diseases. 2016 Jan 15;62(2):242-9.	Project	Opioid use and risk of liver fibrosis in people with HIV and HCV co-infections	This study used data from the Canadian co-infection cohort in which Saskatchewan was one of the participating sites. The objective of the study was to assess the role of prescribed and/or illicit opioid use in the development of liver fibrosis in people with HIV/HCV co-infection.
Hull M, Shafran S, Tseng A, Giguère P, Klein MB, Cooper C. CIHR Canadian HIV Trials Network Co-Infection and Concurrent Diseases Core: Updated Canadian guidelines for the treatment of hepatitis C infection in HIV-hepatitis C coinfected adults. Canadian Journal of Infectious Diseases & Medical Microbiology. 2014 Nov 1;25(6):311-20.	Project	Updated guidelines for manage-ment of HCV in Canada	A standing working group with specific clinical expertise in HIV-HCV co-infection was convened by CTN to review recently published data regarding HCV DAA treatments and to update the Canadian HIV-HCV co-infection guidelines.
Hennink M, Abbas Z, Choudhri Y, Diener T, Lloyd K, Archibald CP, Cule S. Risk behaviours for infection with HIV and hepatitis C virus among people who inject drugs in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2007 Mar;33(5):53-9.	Project	Cross-sectional study	The objective of the study was to assess the injection drug use and sexual behaviours and the HIV and HCV testing patterns of PWID (recruited in Regina in 2005).
Kronfli N, Nitulescu R, Cox J, Moodie EE, Wong A, Cooper C, Gill J, Walmsley S, Martel-Laferrière V, Hull MW, Klein MB. Previous incarceration impacts access to hepatitis C virus (HCV) treatment among HIV-HCV co-infected patients in Canada. Journal of the International AIDS Society. 2018 Nov;21(11):e25197.	Project	Canadian co-infection cohort study	The study aimed to examine incarceration patterns and determine whether incarceration impacts HCV treatment uptake among people with HIV/HCV co-infection in Canada in the direct-acting antiviral (DAA) era. It recruited participants with HIV and HCV. Saskatchewan was one of the participating sites. In Saskatchewan those with a history of previous incarceration were 11%, compared to 5% with no incarceration.

Kronfli N, Nitulescu R, Cox J, Moodie EE, Wong A, Cooper C, Gill J, Walmsley S, Martel-Laferrière V, Hull MW, Klein MB. Previous incarceration impacts access to hepatitis C virus (HCV) treatment among HIV-HCV co-infected patients in Canada. Journal of the International AIDS Society. 2018 Nov;21(11):e25197.	Project	Research study	The objective was to assess the impacts of previous incarceration on treatment of HCV and HIV in Canadian provinces. Those previously incarcerated were 30% less likely to access treatment in the direct-acting antiviral (DAA) era even after accounting for several patient-level characteristics.
Marshall AD, Saeed S, Barrett L, Cooper CL, Treloar C, Bruneau J, Feld JJ, Gallagher L, Klein MB, Krajden M, Shoukry NH. Restrictions for reimbursement of direct-acting antiviral treatment for hepatitis C virus infection in Canada: A descriptive study. Canadian Medical Association Journal Open. 2016 Oct;4(4):E605-14.	Project	Study	This study appraised reimbursement criteria for four DAAs used to treat HCV. Data from Apr 2015 to Jun 2016 was extracted across all 10 provinces and three territories. SK required the presence of stage two liver fibrosis for reimbursement eligibility.
Minuk GY, Uhanova J. Viral hepatitis in the Canadian Inuit and First Nations populations. Canadian Journal of Gastroenterology. 2003 Dec 1;17(12):707-12.	Project	Prince Albert Sero-prevalence study (PASS)	In the absence of coexisting HIV infection and alcohol abuse, the outcomes of HBV and HCV appear to be more benign than in non-Indigenous Canadians.
Pearce ME, Jongbloed K, Demerais L, MacDonald H, Christian WM, Sharma R, Pick N, Yoshida EM, Spittal PM, Klein MB. "Another thing to live for": Supporting HCV treatment and cure among Indigenous people impacted by substance use in Canadian cities. International Journal of Drug Policy. 2019 Dec 1;74:52-61.	Project	Qualitative study	The objective of the study was to put forward pragmatic recommendations based on the stories of Indigenous people living with or treated for HCV, with additional perspectives provided by HCV treatment providers, to inform the development of decolonizing HCV care.
Pearce ME, Jongbloed K, Demerais L, MacDonald H, Christian WM, Sharma R, Pick N, Yoshida EM, Spittal PM, Klein MB. "Another thing to live for": Supporting HCV treatment and cure among Indigenous people impacted by substance use in Canadian cities. International Journal of Drug Policy. 2019 Dec 1;74:52-61. Myers S, Khosa G, fan Kuo I, Janzen D, Alessi-Severini S. Moving	Initiative	Drug policy	HCV treatment providers have an opportunity to create greater equity and support long-term wellness of Indigenous patients. DAA coverage for all residents has been expanded incrementally. By 2018, this expanded drug coverage was also offered to Indigenous people entitled to government benefits.

towards universal coverage of direct-acting antiviral therapies for hepatitis C infection in Canada: An environmental scan of Canadian provinces and international jurisdictions. Journal of Pharmacy & Pharmaceutical Sciences. 2018 Nov 6;21(1s):271s-308s.			
Skinner S, Cote G, Khan I. Can we eliminate hepatitis C?: Hepatitis C virus infection in Saskatchewan First Nations communities: Challenges and innovations. Canada Communicable Disease Report. 2018 Jul 5;44(7-8):173-8.	Initiative	Extended drug benefit	NIBH provides coverage of directly acting antiviral (DAA) HCV treatment for First Nations and Inuit people.
Skinner S, Cote G, Khan I. Can we eliminate hepatitis C?: Hepatitis C virus infection in Saskatchewan First Nations communities: Challenges and innovations. Canada Communicable Disease Report. 2018 Jul 5;44(7-8):173-8.	Program	Know your status	The program involves community engagement, education, prevention, harm reduction, clinical management, surveillance and evaluation. This highly effective model of care for HIV is now being extended to HCV and other STBBI.
Skinner S, Cote G, Khan I. Can we eliminate hepatitis C?: Hepatitis C virus infection in Saskatchewan First Nations communities: Challenges and innovations. Canada Communicable Disease Report. 2018 Jul 5;44(7-8):173-8.	Program	Needle exchange	
Skinner S, Cote G, Khan I. Can we eliminate hepatitis C?: Hepatitis C virus infection in Saskatchewan First Nations communities: Challenges and innovations. Canada Communicable Disease Report. 2018 Jul 5;44(7-8):173-8.	Initiative	Mobile hepatitis C clinics (Liver Health days)	Mobile HCV clinics in partnership with various stakeholders bring testing and DAA directly to patients.

Appendix 5: HIV PPIs: Published Grey Literature

Reference	Source Document	PPI	Name	Description
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf	Program	SHARP	A harm reduction program that aims to increase community awareness and decrease stigma around HIV.
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf	Initiative	Formation of HIV steering committee	The objective of the steering committee is to provide oversight and direction in the development and implementation of a First Nation HIV Strategic Action Plan for sustaining and developing programs and services and to collaborate across First Nation, federal and provincial governments.
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf	Initiative	Formation of HIV technical working group	The purpose will be to present recommendations to the HIV Steering Committee regarding the development, resourcing and implementation of HIV, HCV and other STBBIs prevention, care, treatment and support strategies.
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf	Initiative	HIV Knowledge exchange forum event	A forum conducted in Feb 2017 in Saskatoon.

Fund #1718-HQ-000742

Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf	Initiative	Development of Know Your Status toolkit	The tool kit helps with community engagement, prevention, education, harm reduction and surveillance related to HIV and other STBBIs.
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017. Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Establishment of partnerships	Over 30 partnerships have been established with CBOs, educational organizations and other provincial and federal governments. Sample size N>30.
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in Saskatchewan First Nations. Saskatoon, SK: STC. 2017. Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Toolkit http://knowyourstatus.ca/wp-content/uploads/2017/11/Tool-Kit.pdf Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Sexual health and wellness teaching kits development and distribution	FNIHB distributed these kits to educators and healthcare providers in on-reserve First Nations communities from Jul 1 to Dec 31, 2012. These kits were developed in alignment with provincial school health curriculum.
Ahtahkakoop Cree Nation, Big River First Nation, & Saskatoon Tribal Council. "Know Your Status": A toolkit for HIV programs in	Toolkit http://knowyourstatus.ca/wp-content/uplo	Project/ Program	Know Your Status Project	This project employs various health promotion strategies related to testing, counselling and communication in which individuals and groups are engaged to take

Saskatchewan First Nations. Saskatoon, SK: STC. 2017. Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	ads/2017/11/Tool-Kit.pdf Government report https://publications.saskatchewan.ca/#/products/75279			action to protect their health by knowing their HIV status.
All Nations Hope Network. Workshops [website: accessed Dec 16, 2020]. Regina, SK: ANHN. 2014.	Website http://allnationshope.ca/pages/workshops	Program	Needle exchange and methadone maintenance	All these services are offered by All Nations Hope Network. Outreach workers placed in Yorkton, Prince Albert, North Battleford, Saskatoon and Regina by All Nations Hope Network. Each region chose its own initiative, such as needle exchange on the streets or work in correctional facilities.
All Nations Hope Network. Annual Report 2016. Regina, SK: ANHN. 2016.	Report http://allnationshope.ca/userdata/files/187/ANHN%20Documents/Annual%20Report%202016.pdf	Initiative	Conference	All Nations Hope Network, an Indigenous-centred HIV/AIDS organization in Saskatchewan and Canadian Aboriginal AIDS Network hosted a one-day event in Regina where the topic of discussion was barriers that stop adherence to addiction and HIV treatment among Indigenous people.
All Nations Hope Network. Annual Report 2016. Regina, SK: ANHN. 2016.	Report http://allnationshope.ca/userdata/files/187/ANHN%20Documents/Annual%20Report%202016.pdf	Program	Treatment centres	The services offered in outreach include programs established at alcohol and drug treatment centres.
Ehman AJ. Saskatchewan MDs oppose new mandatory testing law. Canadian Medical Association Journal. 2005;173(12): 1437–8.	Journal article https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1316152/	Initiative	The Mandatory Testing and Exposure (Bodily Substances) Act	This act came into effect on Oct 17, 2005 and it allows a judge to order a test at the request of a police officer, paramedic, Good Samaritan, victim or anyone else who believes they have been exposed to body fluids while providing emergency medical care or during a crime. Experts believe that this could force non-

				consensual blood tests for HIV/AIDS and other infectious diseases.
Kyle A. Forecast Furore; Projected 42,000 AIDS deaths 'taken out of context,' officials downplay Saskatchewan-Africa comparisons. Regina Leader Post. 2009 Aug 21:A1. Regina, SK: Postmedia Network Inc.	Newspaper article https://pressreader.com/article/281487862370380	Initiative	Standardizing the needle exchange programs	The Ministry of Health, in collaboration with the regional health authorities and the Métis and First Nations communities, are developing HIV prevention and treatment strategies across the province. The objective of this initiative is to increase testing and ensure people infected with HIV have access to care and good quality of life.
Opondo J, Hansen L, DeBruin P, Grauer K. Investigation of an HIV cluster among injection drug users (IDUs) in Saskatoon, Saskatchewan. Saskatoon, SK: Saskatoon Health Region, Public Health Services. 2006.	Public health services report https://www.saskatoonhealthregion.ca/locations_services/Services/Health-Observatory/Documents/Reports-Publications/HIVHCVClusterOutbreak2006.pdf	Project	Prince Albert Seroprevalence Study (PASS)	A study conducted in 1998 to investigate HIV cases.
Opondo J, Hansen L, DeBruin P, Grauer K. Investigation of an HIV cluster among injection drug users (IDUs) in Saskatoon, Saskatchewan. Saskatoon, SK: Saskatoon Health Region, Public Health Services. 2006.	Public health services report https://www.saskatoonhealthregion.ca/locations_services/Services/Health-Observatory/Documents/Reports-Publications/HIVHCVClusterOutbreak2006.pdf	Project	Regina Seroprevalence Study (RSS)	A study conducted in 2000 to investigate HIV cases.
Opondo J, Hansen L, DeBruin P, Grauer K. Investigation of an HIV	Public health services report	Project	HIV outbreak investigation	In May 2005, the Saskatchewan Health Authority called for an epidemiological investigation

cluster among injection drug users (IDUs) in Saskatoon, Saskatchewan. Saskatoon, SK: Saskatoon Health Region, Public Health Services. 2006.	https://www.saskatoonhealthregion.ca/locations_services/Services/Health-Observatory/Documents/Reports-Publications/HIVHCVClusterOutbreak2006.pdf			outbreak (EPIAID) in collaboration with the Canadian Field Epidemiology Program (CFEP), PHAC and RHAs to identify the distribution of new cases and develop a profile of the risk factors that may have affected the epidemiology of these new cases.
Opondo J, Hansen L, DeBruin P, Grauer K. Investigation of an HIV cluster among injection drug users (IDUs) in Saskatoon, Saskatchewan. Saskatoon, SK: Saskatoon Health Region, Public Health Services. 2006.	Public health services report https://www.saskatoonhealthregion.ca/locations_services/Services/Health-Observatory/Documents/Reports-Publications/HIVHCVClusterOutbreak2006.pdf	Project	HIV network investigation in Saskatoon Health Region (2005-2006)	Based on a network questionnaire, this survey aimed to enhance contract tracing and identify people believed to be at increased risk of contracting HIV through diagnosed cases. It was not necessarily important for individuals to have either shared needles or have had sexual contact with the case. People diagnosed with HIV were encouraged to consider people in their social networks whom they thought needed HIV testing, or people in their social circle whom they thought could benefit from being counselled and tested for HIV.
Plamondon K, de Bruin P. Bridging services with community voices around injection drug use: Results and recommendations from an assessment of harm reduction needs in the Saskatoon area. Saskatoon, SK: Saskatoon Health Region, Mount Royal College. 2009.	Report https://www.saskatoonhealthregion.ca/locations_services/Services/Population-Public/Documents/HarmReductionAssessmentforSaskatoonarea15may09.pdf	Project	Survey of harm reduction	The survey emerged due to an increasing prevalence of HIV among PWID in Saskatoon and was conducted to ensure that practice is driven by client needs.
Plamondon K, de Bruin P. Bridging services with community voices around injection drug use: Results and	Report https://www.saskatoonhealthregion.ca/locations_se	Program	Street health program	A team of outreach workers and public health nurses provide services to clients who use injection drugs or are affected by HIV or HCV.

recommendations from an assessment of harm reduction needs in the Saskatoon area. Saskatoon, SK: Saskatoon Health Region, Mount Royal College. 2009.	rvices/Services/Population-Public/Documents/HarmReductionAssessmentforSaskatoonarea15may09.pdf			
Saskatchewan Health Authority. OC 545/2019 - Saskatchewan Health Authority Grant for $300,000 – Operation of the Sanctum 1.5 HIV Prenatal Home. [website accessed Dec 16, 2020]. Regina, SK: Government of Saskatchewan. 2019.	Website https://publications.saskatchewan.ca/#/products/103735	Initiative	Funding	The provincial government granted $300,000 CAD to operate Sanctum 1.5 for the period of Apr 1, 2019 to Mar 31, 2020
Saskatchewan HIV Collaborative. Pregnancy. [website accessed Dec 16, 2020]. Saskatoon, SK: SK HIV Collaborative. No date.	Website https://skhiv.ca/pregnancy/#_sanctum-1.5	Program	Care program	Sanctum 1.5 is a 10-bed prenatal care home in Saskatoon which supports women who are HIV-positive or at high risk of contracting HIV and are at risk of having their babies apprehended at birth.
Saskatchewan HIV Collaborative. Provincial HIV Goals for Saskatchewan. [website accessed Dec 16, 2020]. Saskatoon, SK: SK HIV Collaborative. 2018.	Poster https://skhiv.ca/wp-content/uploads/2018/11/Provincial-HIV-Goals-for-Saskatchewan-Progress-2017-2018.pdf	Program	Take-home naloxone program	A program that provides naloxone kits and training to people who may witness overdoses. Sample size by 2018, N=36.
Saskatchewan HIV Provincial Leadership Team (HIV PLT). Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	Federal HIV surveillance project	The Ministry of Health and HIV PLT has collaborated with PHAC and the BC Centre for Excellence in HIV/AIDS on HIV sample analysis for circulating strain type and monitoring the emerging HIV anti-viral resistance in Saskatchewan.

Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	Survey	An HIV-specific needs assessment survey training was completed in 2011 by 600 healthcare professionals completed an HIV-specific needs assessment survey training in 2011. The objective of this survey was to improve healthcare worker capacity to deliver HIV care.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	HIV treatment in Saskatchewan	An E-learning training event conducted in 2012 by the Ministry of Health, College of Nursing (U of S) and CATIE.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Assessment training modules	In partnership with Nine Circles Community Health Centre in Manitoba, HIV PLT developed content for HIV and sexual health assessment training modules for Saskatchewan. The modules can be used as HIV core training modules for health care professionals.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Needs assessment survey with pharmacists	The survey was conducted with over 100 pharmacists in Saskatoon and Sunrise Health RHAs and most of them expressed interest in more education regarding HIV treatment and medication interactions.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	HIV grand rounds	Local and national experts from other provinces shared information about innovative programs, case studies and best practices for treatment of HIV for approximately one hour in these sessions in 2011 and 2012. Sample size N=23.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Community awareness and mobilization	HIV PLT members, FNIBH and NITHA provided epidemiological information and information about various HIV strategies to stakeholders, gave presentations. Sample size N>100.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and	Government report https://publications.saska	Initiative	Development of local strategies	Seven RHAs within the province have an HIV strategy group with wide representation of different stakeholders. Sample size N=7.

Progress Report. Regina, SK: Government of Saskatchewan. 2012.	tchewan.ca/#/products/75279			
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	An education awareness campaign	Sessions on HIV awareness were presented to to various key populations: • Youth = 128 • Immigrants = 1 • People who inject drugs = 70 • People who are incarcerated = 34 • First Nations and Métis = 148 • 34 sessions with other populations that included women, professionals, public, city council and street involved • 100 presentations in schools
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Addressing stigma and discrimination community toolkit	The HIV PLT, FNIHB and Ministry of Health developed this toolkit which included resources to address stigma and discrimination. Sample size N>102.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Testing events	From Jul 1 to Dec 31, 2012, over 102 testing events targeting high risk or hard-to-reach groups were conducted along with condom distribution and immunizations being offered.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	Community art partnership project	PLWH can feature their art representing HIV/AIDS, Indigenous culture, harm reduction at www.skhiv.ca.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Point of care testing	A risk-based HIV testing with the benefits of immediate knowledge of result, linkage to treatment and ease of administration. INSTI test kits are used as a part of this initiative. Sample size by 2018, N=84 sites.
Saskatchewan HIV PLT. Saskatchewan HIV Strategy Mid-Term	Government report	Program	Peer-to-peer programming	The objective of this project was to engage and retain people living with HIV in healthcare with the aid

Implementation and Progress Report. Regina, SK: Government of Saskatchewan. 2012.	https://publications.saskatchewan.ca/#/products/75279			of peer mentors in order to bridge and address the gaps between PLWH and the medical system. Four pilot projects launched in Regina Qu'Appelle, Saskatoon, Prince Albert Parkland and Prairie North.
College of Physicians and Surgeons of Saskatchewan. Saskatchewan Methadone Program: Annual Report 2015 and Business Plan 2016. Saskatoon, SK: CPSS. 2015.	Report https://www.cps.sk.ca/iMIS/Documents/Programs%20and%20Services/Methadone/Methadone%20Work%20Plan%20and%20Annual%20Report%202016.pdf	Program	Opioid Substitution Therapy (OST)	The Ministry of Health has been contracting the College of Physicians and Surgeons of Saskatchewan (CPSS) since 2001 to operate the Methadone Program on its behalf. OST is one of the harm reduction programs in which the clients are engaged with the methadone counsellor and physician to formulatea plan to reduce or eliminate their dependence on opioids.
Saskatchewan HIV PLT. A process review of the use of rapid point of care HIV testing in Saskatchewan: Recommendations for future expansion. Saskatoon, SK: HIV PLT. 2013.	Evaluation report https://skhiv.ca/wp-content/uploads/2017/11/Evaluation-of-the-use-of-HIV-Point-of-Care-Testing-in-Saskatchewan.pdf	Initiative	Partnership	The HIV PLT consists of multidisciplinary professionals with pertinent knowledge of HIV who are responsible for addressing barriers and gaps in current HIV care in the province.
Saskatchewan HIV PLT. A process review of the use of rapid point of care HIV testing in Saskatchewan: Recommendations for future expansion. Saskatoon, SK: HIV PLT. 2013.	Evaluation report https://skhiv.ca/wp-content/uploads/2017/11/Evaluation-of-the-use-of-HIV-Point-of-Care-Testing-in-Saskatchewan.pdf	Project	Saskatchewan HIV Point of Care (POC) Test Evaluation survey	This survey evaluated the effectiveness of POC program to help plan future expansions. The evaluation began in Dec2011, with no end date mentioned in the document. The report has seven recommendations which have been reported, including: (i) The requirement for formal referral to and linkage to care for all newly diagnosed cases; (ii) It has been advocated that provincial legislation be changed to allow non-lab personnel and non-Registered Nurses to perform HIV

				POC in select sites, with specific, specialized training, etc.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Public awareness campaigns	The development of a Saskatchewan HIV PLT website and Facebook page promoting events and ongoing campaigns, including: • Targeted social marketing campaigns related to World AIDS Day. • Organization of AIDS awareness week. • Aboriginal AIDS Awareness. • Targeted social marketing campaigns containing YouTube videos, posters, etc.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Improved funding	Twenty-six CBOs across nine regional health authorities in the province that provide services such as nutritional programs, educational/training resources, cooking programs, outreach support initiatives, social case management, testing and counselling were provided funding for HIV-related programs.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Enhanced education of service providers	This project was successful in training 328 healthcare professionals working in the LGBTQ2S community, which was used in the successful implementation of HIV point of care testing.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	Street graphics	A web-based HIV prevention project for youth aged 12 to 24 years in Saskatoon. In addition, digital stories illustrating common challenges in the day-to-day life of street youth was a part of this project.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Youth ambassador program	Prince Albert Métis Women's Association provides HIV awareness and education through a website.

Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Development of toolkits and facilitation of workshops	Developed for school division and health region staff to reduce the stigma and discrimination associated with HIV/AIDS.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Positively Parenting Education and Support Program	An ongoing sexual health program in Meadow Lake.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Harm reduction sites	Two new sites were introduced in Yorkton and La Ronge. All harm reduction sites are provincially funded and are located across eight health regions in the province. Sample size N=20.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Additional funding	Funding was provided for the recruitment of a methadone case manager.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Government policy	The Ministry of Corrections, Public Safety and Policing released planning for inmates that includes the provision of “release kits” consisting of condoms, dental dams, lubricant and a list of community resources with contact information.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Best practices for Canadian harm reduction Programs	The Ministry of Health developed and released a set of standards for the improvement of harm reduction programs.

Fund #1718-HQ-000742

Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Saskatchewan routine HIV testing policy	This policy states that individuals aged between 13 and 64 years should be offered HIV testing while people older and younger than this age group should be offered testing if risk factors are observed to be present.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Saskatchewan infant formula program	The Saskatchewan Preventive Institute provided infant formula to children of mothers living with HIV or expectant mothers with HIV at no cost to reduce the incidence of vertical transmission of HIV. Sample size in 2018, N=150 infants.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Provincial funding	Funding provided to Community Development Coordinators to address unstable housing in RQHR, SkHR and PAPHR.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Funding	Funding for client transportation was provided in RQHR, SkHR and PAPHR for medical and non-medical appointments.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	Project	RQHR created an environment where routinely offering HIV testing became part of the standard care to all patients admitted to ICU. This was pilot tested from Sep 2013 to Mar 2014.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Supportive living	Outreach, case management and community development coordinators could address the housing needs of PLWH and place them in suitable houses through this program.

Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Case management	This initiative involves a team-based approach to individualized assessment, planning, implementing, coordinating, monitoring and evaluating options for care provision and services for individual patients.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Enhanced adherence program	The objective of this program was to engage, educate and connect multiple providers and stakeholders involved in a patient's care to improve adherence to anti-retroviral treatments.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Drug policy	The NIBH of Health Canada reclassified two first line HIV medications to open benefit in Saskatchewan.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Multidisciplinary team clinics	Cross-disciplinary teams provide a combination of organized clinics and drop-in, patient-centred services in many areas of the province. Sample size N=42.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Scattered site outreach program	These programs and projects provide an integrated model of care that includes housing support, risk support, social support to PLWH and case management.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	OASIS (Opportunity, Acceptance, Support, Invitation, and Safety) project	OASIS is a safe haven for many women and men who are in need of a safe place to stay where they will receive support they may need. There are counsellors and facilitators who are always available to offer any help clients need. Childcare, snacks, beverages,

				healthy meals and bus tickets are provided.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	601 Outreach Program	The program provides advocacy, resources, emotional support, safety planning, housing assistance, support in family court, support with Child Protection Services and transportation for things like food security, housing, medical needs of children, prenatal support and for safety.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Community-based and culturally appropriate HIV /AIDS diagnosis and treatment in rural and Aboriginal communities.	This is an online course developed by CIHR which provided professionals knowledge and resources to enhance primary care of PLWH and to assist in understanding cultural contexts.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Train the trainer	Workshops were held to educate participants on how to present workshops on sexual health, HIV, sexually transmitted infections, testing, counselling and reporting.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Program	Partnership	Pacific to Prairies Partnership is an inter-provincial knowledge exchange program aimed at strengthening connections, networking and best practice in HIV care in both British Columbia and Saskatchewan.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Project	HIV Enhanced Surveillance Questionnaire	Increase understanding of risk factors for HIV: Implemented to collect information for individuals newly diagnosed between Jun 1, 2011 and Nov 30, 2012.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of	Government report https://publications.saskatchewan.ca/#	Initiative	Clinical database	The Infectious Diseases Clinic in RQHR created an EMR for PLWH using Med Access to assist clinicians in the clinical and case

Saskatchewan, Population Health Branch. 2014.	/products/75279			management of their patients and monitoring their clinical outcomes.
Saskatchewan Ministry of Health. Saskatchewan HIV Strategy, 2010-2014. Regina, SK: Government of Saskatchewan, Population Health Branch. 2014.	Government report https://publications.saskatchewan.ca/#/products/75279	Initiative	Café Scientifique: How can Saskatchewan get to zero new HIV infections?	This was an event organized by CIHR and HIV PLT in which discussions centred around how research can assist Saskatchewan communities in addressing HIV, with solutions taking into account colonization, poverty and intergenerational trauma.
Saskatchewan Ministry of Health. HIV Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2018.	Government report https://skhiv.ca/wp-content/uploads/2020/01/GovSK-HIV-Prevention-Control-Report-2018.pdf	Initiative	Work plan	The SK HIV Collaborative developed a three-year work plan (2017 to 2020). Key areas of focus include engaging communities to support HIV strategies, increasing public and provider education, strengthening linkages between clinical and community services, promoting collaboration between provincial and federal health systems and addressing barriers to accessing HIV testing and treatment.
Saskatchewan Ministry of Health. HIV Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2018.	Government report https://skhiv.ca/wp-content/uploads/2020/01/GovSK-HIV-Prevention-Control-Report-2018.pdf	Program	Leveraging Immediate Non-urgent Knowledge (LINK)	LINK is a telephone consultation service to give primary care providers and their patients rapid access to specialists to discuss less serious patient conditions. HIV and HCV specialists started taking calls in Jul 2018.
Saskatchewan Ministry of Health. HIV Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2018.	Government report https://skhiv.ca/wp-content/uploads/2020/01/GovSK-HIV-Prevention-Control-Report-2018.pdf	Initiative	Promoting U=U campaign *SK HIV Collaborative*	The SK HIV Collaborative is disseminating U=U, undetectable HIV is untransmutable and associated materials developed by CATIE to provide consistent, reliable information for people living with HIV and healthcare providers.

Saskatchewan Ministry of Health. HIV Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2018.	Government report https://skhiv.ca/wp-content/uploads/2020/01/GovSK-HIV-Prevention-Control-Report-2018.pdf	Initiative	Update of interactive map of harm reduction sites and services offered	Implemented in 2018 by Saskatchewan HIV Collaborative and can be accessed at: https://skhiv.ca/Saskatchewan-harm-reduction-services/.
Saskatchewan Ministry of Health. HIV Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2018.	Government report https://skhiv.ca/wp-content/uploads/2020/01/GovSK-HIV-Prevention-Control-Report-2018.pdf	Initiative	Identification of safer inhalation supplies	A jurisdictional scan was completed across Canada regarding the availability of safer inhalation supplies (crystal ethamphetamine pipes and crack pipes). Work began to make supplies available at provincially funded sites in 2019.
Tailon J. AIDS organization fighting fear and under funding. Windspeaker Publication. 2000;18(4):no pages.	Newspaper	Initiative	Harm reduction	All Nations Hope funnels funding to Indigenous AIDS projects around the province. They take a harm reduction approach to addressing HIV/AIDS among Indigenous people in Saskatchewan. They support needle exchange programs, methadone maintenance programs, and outreach to alcohol and drug treatment centres and prisons. They recently completed an outreach program in Yorkton, Prince Albert, North Battleford, Saskatoon and Regina. Each site chose its own initiative, from need exchanges to support within correctional facilities.
Tarasuk J, Ogunnaike-Cooke S, Archibald C, Poitras M, Hennink M, Lloyd K, Faye R, Abbas Z, Bourassa C, Masching R, Bennett R. A pilot behavioural and biological surveillance survey for HIV and other bloodborne infections	Journal article https://pubmed.ncbi.nlm.nih.gov/29769870/	Project	A-Track survey	A-Track is a national public health surveillance system designed to monitor HIV and related infections, behaviours and socio-demographic factors among Indigenous populations in Canada. The pilot survey for the A-Track surveillance system, the first of its kind in Canada, was conducted in Regina, Saskatchewan and implemented

among Aboriginal people in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2014 Nov;40(18):388-96.				via a community and public health partnership.

Appendix 6: HCV PPIs: Published Grey Literature

Reference	Source Document	PPI	Name	Description
Smyth D. Characteristics and sustained virologic response of persons reporting illicit substance use in the past 6 months: Results from the CANUHC Prospective Hepatitis C Patient Registry. Hepatology. 2019 Apr 1;3(3):153-61.	Poster	Project	Canadian Network Undertaking against Hepatitis C (CANUHC)	It is a prospective registry that collects demographic information and outcome data from people diagnosed with chronic HCV. Saskatchewan is one of the participating sites of this study.
Wong A, Craddock S, Gupta S, Fuchs D, Folk, M, Trammer BC, . . . Diener T. Demographics and clinical outcomes for HCV-positive individuals in Southern Saskatchewan—The Regina Qu'Appelle HCV Cohort. Canadian Liver Journal. 2018;1(1):78.	Abstract https://canlivj.utpjournals.press/doi/pdf/10.3138/canlivj_003	Initiative	Regina Qu'Appelle HCV Cohort (RQHC)	The Regina Qu'Appelle Health Region Infectious Diseases Clinic (RQHR IDC) developed a comprehensive database for its HCV-positive individuals.
Public Health Agency of Canada. Hepatitis C virus (HCV) among Aboriginal people surveyed by three national enhanced surveillance systems in Canada. Ottawa, ON: PHAC. No date.	Report	Program	Enhanced street youth surveillance program (E-SYS)	E-SYS is a multi-centre, enhanced surveillance program that describes the prevalence of STBBIs, risk behaviours, testing behaviours and socio-economic factors associated with STBBIs among Canadian street-involved youth. Saskatoon is one of the participating sites of this program.
Public Health Agency of Canada. Hepatitis C virus (HCV) among Aboriginal people surveyed by three national enhanced surveillance systems in Canada. Ottawa, ON: PHAC. No date.	Report	Project	I-Track	
Betteridge G, Dias G. Hard Time: HIV and Hepatitis C prevention programming for prisoners in Canada. Toronto, ON: Canadian	Report http://www.hivlegalnetwork.ca/site/hard-time-	Program	HIV and HCV prevention program for prisoners in Canada	A survey was conducted to identify the best and promising programs to prevent HIV and HCV among prison inmates.

Reference	Source Document	PPI	Name	Description
HIV/AIDS Legal Network, Prisoners' HIV/AIDS Support Action Network (PASAN). 2007.	hiv-and-hepatitis-c-prevention-programming-for-prisoners-in-canada/?lang=en			Two programs were identified in Saskatchewan: (1) the Sexual Health Clinic in Prince Albert, in partnership with Correctional Services of Canada (CSC), began a pilot site for anonymous HIV/AIDS testing for prisoners at Saskatchewan Penitentiary and Riverbend Institution; (2) All Nations Hope trained 28 Indigenous prisoners at three prisons or healing lodges (Sask Penitentiary, Okimaw Ohci Healing Lodge and Willow Cree Healing Lodge) to be Knowledge Keepers. At each prison or healing lodge, the training lasted 10 days.
Tarasuk J, Zhang J, Lemyre A, Cholette F, Bryson M, Paquette D. National findings from the Tracks survey of people who inject drugs in Canada, Phase 4, 2017–2019. Canada Communicable Disease Report. 2020 May 7;46(5):138-48.	Survey report	Project	Track survey	This was previously one track but the Tracks survey is the fourth phase of this survey with the survey period being 2017 to 2019. Regina was one of the sites included.
Saskatchewan Population Health and Evaluation Research Unit (SPHERU). Northern Saskatchewan HIV/AIDS and Hepatitis C Awareness Initiative. [website accessed Dec 16, 2020]. University of Regina and University of Saskatchewan. 2014.	Website https://spheru.ca/research-projects/projects/individual-project/northern-saskatchewan-hivaids-and-hepatitis-c-	Project	Northern Saskatchewan HIV/AIDS and Hepatitis C Awareness Initiative: Research Project	The major objective of this research project, conducted between Oct 2002 and Jun 2005, was to collect baseline information on northern peoples' perceptions and experiences of HIV/AIDS, and to identify local and regional capacities and gaps for preventing and managing HIV/AIDS and HCV.

Reference	Source Document	PPI	Name	Description
	awareness-initiative.php			
Gress CS, Calvez S, Meili R. Reducing the rates: A proposed plan of action for HIV/AIDS and HCV patient care and research in Saskatchewan: Report on Prairie HIV/HCV Benchmark Meeting, Regina, SK. Saskatchewan HIV/AIDS Research Endeavour (SHARE). 2015.	Report https://slidelegend.com/prairie-hiv-hcv-benchmark-report-wsimgcom_5a03ebf31723dd438526430b.html	Initiative	The Prairie HIV and HCV Benchmark	This meeting was held Mar 4-6, 2015 by SHARE. Stakeholders from Saskatchewan and western Canada were invited to develop a consensus about how best to manage the challenges associated with the HIV and HCV epidemics in Saskatchewan.
Gress CS, Calvez S, Meili R. Reducing the rates: A proposed plan of action for HIV/AIDS and HCV patient care and research in Saskatchewan: Report on Prairie HIV/HCV Benchmark Meeting, Regina, SK. Saskatchewan HIV/AIDS Research Endeavour (SHARE). 2015.	Report https://slidelegend.com/prairie-hiv-hcv-benchmark-report-wsimgcom_5a03ebf31723dd438526430b.html	Program	Positive Care program	The program offers case management, a social worker, an outreach support worker, and two full-time nurses for HIV and HCV at the Prince Albert Health Region.
Gress CS, Calvez S, Meili R. Reducing the rates: A proposed plan of action for HIV/AIDS and HCV patient care and research in Saskatchewan: Report on Prairie HIV/HCV Benchmark Meeting, Regina, SK. Saskatchewan HIV/AIDS Research Endeavour (SHARE). 2015.	Report https://slidelegend.com/prairie-hiv-hcv-benchmark-report-wsimgcom_5a03ebf31723dd438526430b.html	Program	Positive Living Program	This is a multidisciplinary team based at Royal University Hospital (RUH) that provides care to patients with HIV and HCV.
Saskatoon Health Region. Population and Public Health. Saskatoon, SK: Saskatoon Health Region. 2012.	Brochure https://www.saskatoonhealthregion.ca/locations_services/Services/Population-Public/Documents/PPH_	Program	Street Health	Public health nurses and outreach workers provide services to reduce HIV and hepatitis B and C and sexually transmitted infections through daytime outreach and a mobile evening service. Services include testing, counselling, immunization, group and

Reference	Source Document	PPI	Name	Description
	Brochure_April23.pdf			individual education, referrals, needle exchange and safe needle recovery.
Saskatchewan Infectious Disease Care Network (SIDCN). HCV Virtual Classroom. [website accessed Dec 16, 2020]. Saskatoon, SK: SIDCN. No date.	Website https://sidcn.ca/hepc-virtual-classroom/	Program	Treating and Curing Hepatitis C in SK	Virtual classroom sessions are offered several times a year by the Saskatchewan Infectious Disease Care Network (SIDCN) and consist of two two-hour presentations delivered over interactive webinars by local Infectious Disease Care Specialists and experienced HCV physicians.
Saskatchewan Infectious Disease Care Network (SIDCN). Hepatitis C Clinic. [website accessed Dec 16, 2020]. Saskatoon, SK: SIDCN. No date.	Website https://sidcn.ca/clinic/	Initiative	Hep C Clinic	Located in the Riversdale area of Saskatoon, the Ave F Clinic provides testing, treatment and support for People Living with Hepatitis C. The clinic operates under local HCV physicians and nurses.
Saskatchewan Ministry of Health. Hepatitis C Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2017.	Report https://publications.saskatchewan.ca/#/products/103024	Initiative	Funding	The Ministry of Health provided annual funding of 4.9 million CAD for HIV prevention and control. As HIV and HCV share similar risk factors, this funding would also be used towards HCV prevention and control.
Saskatchewan Ministry of Health. Hepatitis C Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2017.	Report https://publications.saskatchewan.ca/#/products/103024	Initiative	Testing	SHA had held testing and targeted events on World Hepatitis Day.
Saskatchewan Ministry of Health. Hepatitis C Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2017.	Report https://publications.saskatchewan.ca/#/products/103024	Initiative	Release of clinical practice guidelines for testing	The release of clinical practice guidelines for HCV screening by the Canadian Task Force on Preventive Health Care in 2017.

Reference	Source Document	PPI	Name	Description
Saskatchewan Ministry of Health. Hepatitis C Prevention and Control Report. Regina, SK: Government of Saskatchewan, Population Health Branch. 2017.	Report https://publications.saskatchewan.ca/#/products/103024	Initiative	DBS	DBS is seen as a patient-centred approach to increase access to HCV testing.

Appendix 7: Annotated Bibliography: HIV and HCV Academic Literature

HIV Academic Literature

Becker ML, Kasper K, Pindera C, Cheang M, Rodger D, Sanche S, Skinner S, Gill MJ. Characterizing the HIV epidemic in the prairie provinces. Canadian Journal of Infectious Diseases & Medical Microbiology. 2012 Jan 1;23(1):19-22.

The study completed by Becker and colleagues published in 2012 characterizes the estimated number of HIV-positive patients who connected to care between 2003 and 2007; it was facilitated through data collection from four clinic registries in the Prairie Provinces of Manitoba, Saskatchewan and Alberta. For this period, 2263 HIV-positive persons connected to care, of which 74% were males and 26% were females. Overall, heterosexual contact was the most common HIV risk factor with a 12% yearly increase in the number of infected patients, and with infection among males being higher (60%) than females. In Saskatchewan, IDU was a significant risk factor for an increase in the incidence of HIV, while Indigenous people, who are most over-represented, were the majority of cases. Becker's paper advises the need for community- and cultural-based interventions which facilitate harm reduction through the use of safe injection sites and reduction of stigma with healthcare accountability to be included for processes of treatment and healing.

Belle-Isle L, Hathaway A. Barriers to access to medical cannabis for Canadians living with HIV/AIDS. AIDS Care. 2007 Apr 1;19(4):500-6.

This article by Belle-Isle & Hathaway, published in 2007, draws on findings from a consultation with 197 persons with HIV/AIDS conducted by the Canadian AIDS Society (CAS). The project's aim was to obtain a more in-depth understanding of barriers to access to a legal source of cannabis under the existing regulations. Even though cannabis is now a legal substance in Canada, it was a banned substance during this research study. The majority of support in this study came from physicians who provide healthcare for patients, who had common acceptance of the therapeutic value of cannabis as medicine for HIV/AIDS. Most respondents (86%) who reported using cannabis as medicine continued to rely on illegal sources for their supply. The reasons stated included: (i) lack of information; (ii) product quality concerns; and (iii) an onerous, confusing application process among other problems mentioned with the Marihuana Medical Access Regulations (MMAR) process. The findings articulate a discussion of policy suggestions for facilitating access to a legal source of cannabis for medical users, which is now allowed in Canada.

Bird Y, Lemstra M, Rogers M, Moraros J. Third-world realities in a first-world setting: A study of the HIV/AIDS-related conditions and risk behaviors of sex trade workers in Saskatoon, Saskatchewan, Canada. SAHARA-J: Journal of Social Aspects of HIV/AIDS. 2016 Sep 14;13(1):152-61.

In this study, Bird and colleagues examined self-reported responses from 340 sex trade workers (STW) who were at-risk of contracting HIV, from participants recruited by selective targeting (the majority of the study participants were females, who were never married, of Indigenous descent) between 2009 and 2010 from within the Saskatoon Health Region (SHR) (now part of a a single governance model known as the Saskatchewan Health Authority). The need for this research was mainly due to transmission and prevalence of HIV among those employed as STW being a major public health concern. The purpose of this study was to: (a) describe the demographic and socio-economic characteristics of the STW in the SHR; (b) identify their significant life events, self-reported problems, knowledge, attitudes, behaviours, self-efficacy, and barriers regarding HIV; and (c) determine the significant independent risk indicators for STW self-reporting a chance greater than 50% of becoming infected with HIV/AIDS. Multivariate regression analysis was used and four significant independent risk indicators were associated with STW reporting a greater that 50% chance of acquiring HIV/AIDS. These included experiencing sexual assault as a child, injecting drugs in the past four weeks, being homeless, and a previous Chlamydia diagnosis. The findings articulate a discussion in terms of using specifically tailored, community-based outreach to identify high risk STW who use drugs and link them with appropriate drug treatment and HIV/AIDS prevention and treatment services entwined with culturally-sensitive public health intervention and prevention programs.

Brumme ZL, Kinloch NN, Sanche S, Wong A, Martin E, Cobarrubias KD, Sandstrom P, Levett PN, Harrigan PR, Joy JB. Extensive host immune adaptation in a concentrated North American HIV epidemic. AIDS. 2018 Sep 10;32(14):1927-38.

A study design of comparative analysis of population-level HIV sequence datasets from Saskatchewan and elsewhere in Canada/USA was used by Brumme and colleagues for this publication in 2018. The authors hypothesized that circulating HIV adaptation to HLA could explain, at least in part, why Saskatchewan HIV strains may possess properties that enhance their pathogenicity in an HLA-dependent manner. The authors further reasoned that HIV adaptation to B51 in Saskatchewan may be due to the link between population-level spread of the B51-associated RT-I135X escape mutation and erosion of HIV control by this allele in other global regions. Analyzing population-based HIV Pol sequence datasets collected between 2000 and 2016 from Saskatchewan and other locations in Canada and the USA was used for this investigation. Analyses confirmed HLA-adapted HIV strains were significantly enriched among phylogenetic clusters in Saskatchewan. The results highlight the need for

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routine drug resistance monitoring for surveillance of HIV-host adaptation and the urgent need to expand HIV prevention and treatment programs in Saskatchewan. In another vein, the need for community consultations and subsequent ownership of data for Indigenous people was not mentioned in this publication; this is a concern for stigmatization which is based on cultural sensitivity for people of Indigenous ancestry, who are over-represented in the HIV epidemic in Saskatchewan.

Clarke JN, Friedman DB, Hoffman-Goetz L. Canadian Aboriginal people's experiences with HIV/AIDS as portrayed in selected English language Aboriginal media (1996–2000). Social Science & Medicine. 2005 May 1;60(10):2169-80.

Clarke and colleagues describe the ways in which HIV/AIDS and PLWH are described in select English language in 14 mass print newspapers directed specifically toward Indigenous peoples in Canadian and published during the years 1996–2000. Through the use of inductive research, the study questions were developed from the data as the researchers developed a familiarity with it. A 10% sample of six of the 66 articles (four anecdotal, two scientific) was selected randomly and read independently by the three researchers. These readings were inductive and both manifests and latent content were included in consequent discussions of prevailing frames and themes. Categories from preliminary codes were considered in the analysis as well as new categories that emerged inductively during discussions between articles. The results section first describes content analysis of the socio-demographics of the Indigenous people featured in the stories. The study indicates that women and youth are underrepresented as persons with HIV/AIDS while unlike in mainstream media where the medical frame is dominant, HIV/AIDS are here contextualized by culture, identity, spirituality and political economic issues. The article may polarize toward limitations on content analysis as knowledge is based solely on a selection of English language Indigenous newspapers published in Canada.

Forbes JC, Alimenti AM, Singer J, Brophy JC, Bitnun A, Samson LM, Money DM, Lee TC, Lapointe ND, Read SE, Canadian Pediatric AIDS Research Group. A national review of vertical HIV transmission. AIDS. 2012 Mar 27;26(6):757-63.

The overall risk of vertical HIV transmission in the absence of any intervention ranges from approximately 15% to 40%. The objective of this research published by Forbes and colleagues in 2012 was to describe how HIV-positive pregnancies are affected through implementation of measures to reduce vertical transmission using surveillance programs, rate of vertical HIV transmission and changing epidemiology in Canada. The study population for vertical transmission was restricted to infants born in Canada to women with documented HIV infection who were referred to one of the participating sites, either before or during pregnancy or within three months after delivery. From 2692 mother-infant pairs,

the overall rate of vertical HIV transmission was 5.2%, declining to 2.9% since 1997. The rate of transmission for mothers who received HAART [known as antiretroviral therapy (ART) defined as three drugs, typically including two nucleoside reverse transcriptase inhibitors (RTIs) with either a protease inhibitor or a nonnucleoside RTI] was 1%, and 0.4% if more than four weeks of HAART was given. For women who delivered by caesarean section (40%), no difference in transmission rate was observed when compared with vaginal delivery for women treated with HAART (1.4 vs. 0.6%, P ¼ 0.129), but there was a significant risk reduction for those who did not receive HAART (3.8 vs. 10.3%, P ¼ 0.016). Black women were the largest group; proportions of Black and Indigenous women increased significantly over time (P < 0.001 for both). Heterosexual contact was the most common risk category for maternal infection (65%), followed by PWID (25%). Forbes et al. conclude that vertical HIV transmission in Canada has decreased dramatically for women treated with HAART therapy but the need to continue screening for vulnerable populations including Indigenous, immigrant and women who use injection drugs, is of utmost importance.

Hall HI, Geduld J, Boulos D, Rhodes P, An Q, Mastro TD, Janssen RS, Archibald CP. Epidemiology of HIV in the United States and Canada: Current status and ongoing challenges. JAIDS Journal of Acquired Immune Deficiency Syndromes. 2009 May 1;51:S13-20.

The study completed by Hall and colleagues published in 2009 determines the status of the HIV epidemic in the United States (US) and Canada between 1996 and 2005. The need for such a study was based on the evidence considering the association of racial ethnic disparities and the burden of HIV for both the US and Canada. For example, compared to the Caucasian population (white people) in the US, HIV rates are higher among Black and Hispanic people, while in Canada, rates are higher among Indigenous people and Black people, respectively. The authors of this article used data reported between 1996 and 2005, from AIDS and HIV diagnosis for the US (data only from 33 states), and the Canadian national surveillance system for Canada. In Canada, the incidence for HIV was calculated using a back-calculation method (the statistical model will back-calculate estimates of HIV incidence by relating the timing of HIV-positive testing with timing of HIV infection and testing behaviour*). In 2005, the rate of AIDS diagnosis was higher among Blacks (54.1 per 100,000) and Hispanics (18.0), compared with whites (5.9) in the US. In the same year in Canada, these rates were higher among Indigenous peoples (4.9) and Blacks (4.7), compared with whites (0.7). On the other hand, since 2001, HIV diagnoses increased among men who have sex with men in both countries. Hall's paper advises the need for renewed prevention efforts to facilitate the reduction in the high HIV diagnosis rates among racial/ethnic minorities and further decrease HIV transmission among men who have sex with men.

**This phrase was taken from: Yan P, Remis RS, Archibald CP, et al. Modeling HIV infection in Ontario: a comparison of two methods. Presented at: XVI International AID conference; Aug 14, 2006; Toronto, Canada.*

Fund #1718-HQ-000742

Harvey CD, Migliardi P, Mignone J. The nature of family life among marginalized people living with HIV/AIDS in the Canadian prairies. Families in Society. 2014 Jul;95(3):195-203.

In this study, Harvey and colleagues reported on the nature of family life for a group of individuals living with HIV/AIDS from Winnipeg, Manitoba, and Regina, Saskatchewan, Canada. The research was developed in partnership with community organizations which encompassed two multiservice medical facilities in Manitoba and both multiservice organizations (similar to Winnipeg) and residential facilities (for PLWH), within the province of Saskatchewan. Inclusion for recruitment was PLWH and their caregivers. Participants took photos of people and things that provided support to deal with their disease; they then described the photos, and their narratives were used as data points for this analysis. Family life was considered one theme among the eight main themes accounted using qualitative data analysis. The study facilitated an overview on family life as experienced by marginalized participants living with HIV/AIDS. The theme 'family life' was categorized to three sub-themes: (a) family separation, shown across the life cycle, from adoption of respondents or of their children; from illness or death of parents, siblings, or offspring; and from physical separation; (b) family support (or lack thereof); and (c) family violence, either physical or psychological, that was frequent and formed the context for interaction. One helpful feature from this article is that reliance on medical practitioners and social service agencies was strong. Thus, sensitivity to these issues on the part of professionals is necessary, as is sufficient funding to provide appropriate services for marginalized people living with HIV/AIDS.

Hatala AR, Bird-Naytowhow K, Pearl T, Peterson J, del Canto S, Rooke E, Calvez S, Meili R, Schwandt M, Mercredi J, Tait P. Being and Becoming a Helper: Illness Disclosure and Identity Transformations among Indigenous People Living With HIV or AIDS in Saskatoon, Saskatchewan. Qualitative Health Research. 2018 Jun;28(7):1099-111.

This study completed by Hatala and colleagues utilized key themes that emerged from interviews relating to experiences of HIV disclosure, including experiences of and barriers to the disclosure process. Using an intersectionality framework, this research explored limitations such as the effects of colonization, historical traumas, poverty, addictions, gender, stigma and social support, and questioned how multiple intersecting forms of identity constructions and transformations shaped the processes of HIV illness disclosure among Indigenous people living in a Canadian inner-city context. Twenty-one HIV+ individuals who received healthcare in Saskatoon participated in two rounds of semi-structured interviews. Of the 21 participants, 55% were male and 45% were female, and all self-identified as Indigenous. Techniques of grounded theory were utilized in several stages of data analysis. Identity transformations have further potential to reinforce a positive or "virtuous cycle" of illness disclosure. Thus a model of a virtuous cycle of HIV illness included:

Increased social support-> Knowledge of people living with HIV or AIDs-> Lower HIV stigma-> Increased HIV testing-> HIV disclosure. Finally, the article highlights important identity transformation and the role of being and becoming a "helper" in the community and how this can be seen as a potential support for effective community health interventions.

Hennink M, Abbas Z, Choudhri Y, Diener T, Lloyd K, Archibald CP, Cule S. Risk behaviours for infection with HIV and hepatitis C virus among people who inject drugs in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2007 Mar;33(5):53-9.

This study utilized I-Track [enhanced surveillance system to monitor risk behaviours among people who use injection drugs] to monitor trends over time in high-risk behaviour associated with HIV and HCV infection among PWID, as well as their HIV and HCV testing patterns. Hennick and colleagues' publication presents information on a cross-sectional study undertaken in the city of Regina during Mar and Apr 2005 on the injecting and sexual behaviours of participants recruited, as well as their HIV and HCV testing patterns. For this study, 250 individuals (136 men and 114 women) participated with a majority of participants (87.2%) self-identifying as Indigenous. The results of this survey showed that the use of cocaine has gone up: the proportion for whom cocaine was the most commonly injected drug was higher than that found in a similar survey done in 2003 (35.6% versus 18.9%). The borrowing of needles by PWID has decreased as compared with the 2003 survey (9.2% versus 16.5%). Similarly, borrowing of other injecting equipment has gone down, from 53.5% in 2003 to 40.8% in 2005. In another vein, a high level of sharing and lending of used injection equipment in the previous six months was still a concern, and the likelihood of transmission of HIV and other blood-borne infections cannot be ruled out. Sexual activity was high, with the majority of participants who used injection drugs having been sexually active in the preceding six months. Condom use was low with regular partners as compared with casual or client sexual partners. The trend of many PWID who become infected with HIV having already been infected with HCV was also found in this study population. The application of these findings are being incorporated by the Health Region in its harm reduction programs.

Hoffman-Goetz LA, Friedman DB, Clarke JN. HIV/AIDS risk factors as portrayed in mass media targeting First Nations, Métis, and Inuit peoples of Canada. Journal of Health Communication. 2005 Mar 9;10(2):145-62.

Hoffman-Goetz and colleagues published this article in 2005 to describe the coverage and portrayal of HIV/AIDS risk factors as framed in newspapers targeting Indigenous (First Nations, Métis, and Inuit) peoples in Canada. The results from this publication are similar to **Clarke et al.** (2005), listed previously in this annotated bibliography. Clark *et al*., have produced a qualitative approach to results, whereas Hoffman-Goetz *et al*., have both

quantitative (coding reliability and frequencies) and qualitative (in-depth content analysis) analyses. For this article, 167 articles published on HIV/AIDS during 1996 to 2000, all anecdotal (*n* = 34) and an approximate 25% random sample of scientific (*n* = 32) articles were analyzed. Individual risk factors for HIV/AIDS were described in 74% (49/66) of the articles and included unprotected sexual intercourse (20/49 or 41%), sharing of needles for injection drug use (16/49 or 33%), infected blood transfusions (3/49 or 6%), and vertical transmission from mother to baby (10/49 or 20%). Additional risk factors such as the use of alcohol and poverty were mentioned in 29% and 25% of the articles, respectively. In addition to the well-recognized HIV/AIDS risk groups of STW and homosexual men, victims of sexual abuse, prisoners, and women were identified in Indigenous newspapers as being at risk. This article would set the base for implementation of educational programs to serve high-risk groups as well as individualistic risk factors for HIV/AIDS. Thus, the use of cultural-based community programs and safe injection sites would reduce the gap in service for high-risk individuals.

Hull M, Klein M, Shafran S, Tseng A, Giguere P, Cote P, Poliquin M, Cooper C. CIHR Canadian HIV Trials Network Coinfection and Concurrent Diseases Core: Canadian guidelines for management and treatment of HIV/hepatitis C coinfection in adults. Canadian Journal of Infectious Diseases and Medical Microbiology. 2013 Dec 1;24:no pages.

The article by Hull M. et al, published in 2013, draws on findings from consultations with a panel of physicians and pharmacists with specific expertise in HIV-HCV coinfection, who were tasked with reviewing current literature, existing guidelines and protocols, and adapting them to a Canadian context. Furthermore, the project's aim was to develop national standards for the management of HCV-HIV coinfected adults in the Canadian context. The majority of support in this study reflects the consensus recommendations of this panel, which were approved by the committee at large. To characterize the quality of evidence supporting these recommendations, an evidence scale of Class (reflecting benefit versus harm) and Level (assessing strength of certainty) was used for judgement. The findings articulate these recommendations, which facilitate aiding clinicians in the management of the coinfected patient but will not overrule individual clinical judgement. Please read a summary of these recommendations on page 231 of this article.

Hunt K, Mondal P, Konrad S, Skinner S, Gartner K, Lim HJ. Identifying factors associated with changes in CD4+count in HIV-infected adults in Saskatoon, Saskatchewan. Canadian Journal of Infectious Diseases and Medical Microbiology. 2015 Mar 7;26(4):207–11.

Hunt and colleagues assessed the impact of clinical and social factors unique to HIV-infected adults in Saskatoon for rates of CD4+ count change, and to further identify factors associated with a risk of CD4+ count decline. Data was collected for a retrospective

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longitudinal cohort study using patient charts for a new HIV diagnosis for individual's ≥ 18 years of age and between Jan 1, 2003 and Nov 30, 2011. Baseline measurements were considered for the first CD4+ count and viral load within six months of HIV diagnosis. Univariate and multivariate linear mixed effects models were used to assess the impact of selected factors on CD4+count change. The results for 411 HIV-infected patients were identified, including 218 (53%) males, mean (± SD) for age was 35.6 ±10.1 years, 257 (70.8%) were First Nations or Métis, 312 (80.2%) had HCV co-infection, and 300 (73.3%) had a history of IDU. In univariate models, age, ethnicity, HCV, IDU, antiretroviral therapy and social assistance were significant. Using ethnicity, HCV and IDU, three multivariate models (models 1, 2, 3) were built due to high correlation. First Nations or Métis ethnicity, HCV coinfection and a history of IDU were associated with significantly lower CD4+ counts in multivariate models. Older age and social assistance were associated with significantly lower CD4+ counts in models 1 and 3. The article advocates for early identification by clinicians of patients with these above mentioned risk factors and the implementations of targeted interventions to mitigate the negative health effects of these cofactors which may ultimately contribute towards improved health and quality of life.

Jayaraman GC, Gleeson T, Rekart ML, Cook D, Preiksaitis J, Sidaway F, Harmen S, Dawood M, Wood M, Ratnam S, Sandstrom P. Prevalence and determinants of HIV-1 subtypes in Canada: Enhancing routinely collected information through the Canadian HIV Strain and Drug Resistance Surveillance Program. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2003 Feb 15;29(4):29-36.

In 2003, Jayaraman and colleagues published a population-based, enhanced surveillance initiative, the Canadian HIV Strain and Drug Resistance Surveillance Program (CHSDRSP), aimed at characterizing and monitoring the genetic diversity of the HIV epidemic in Canada, initiated in 1998. The CHSDRSP is a collaborative effort between the provinces and territories in Canada and the Centre for Infectious Disease Prevention and Control (CIDPC), Health Canada which forms a key component within the national system for the enhanced surveillance of HIV/AIDS, emerging retroviruses, and other STBBIs. The program's primary goals are to monitor circulating strains of HIV in order to guide vaccine strategies and to ensure that HIV diagnostics tests are adequate and appropriate to detect all circulating strains in Canada; to assess HIV transmission patterns; to enhance current understanding of HIV pathogenesis; and to monitor genetic markers for drug resistance in order to guide treatment and prevention programs. Data collection was facilitated through participating provincial public health authorities which sent archived sera or plasma samples collected for diagnostic purposes from treatment-naïve individuals to CIDPC for HIV subtype analysis that also included non-nominal epidemiologic information. The data included information routinely collected on the national or provincial HIV case reporting forms and additional information that helps interpret the laboratory results, including treatment history, CD4

count and viral load at diagnosis, and previous HIV testing history. For data analysis, the process of linking of laboratory and epidemiologic data using unique identifiers for independent variables such as age at diagnosis, sex, exposure category, ethnicity, and year of first diagnosis with HIV infection, were included. The data in this report suggest that at least 8.9% of newly diagnosed and reported HIV-1 infections in Canada consist of non-B subtypes (subtype C 5.3%, A 2.4%, E 0.6%, D 0.5%, and the recombinant A/B 0.1%). From this sample population, it suggest that infection with a non-B subtype of HIV-1 was significantly higher among individuals of African or Asian origin and among those who identified heterosexual contact as their primary exposure category. The overall outcome further advocates for increased knowledge about HIV genetic diversity that may be useful to monitor the spread of the HIV epidemic and assess transmission patterns. However, the authors state that the data needs to be interpreted with some caution due to samples of newly diagnosed and reported cases during this period not being representative of all newly diagnosed and reported cases, and the samples from 1996 disproportionately represent cases from British Columbia.

Jozaghi E, Jackson A. Examining the potential role of a supervised injection facility in Saskatoon, Saskatchewan, to avert HIV among people who inject drugs. International Journal of Health Policy and Management. 2015 Jun;4(6):373-9.

The purpose of this review by Jozaghi and Jackson in 2015 was to address the public health and fiscal impact of Supervised Injection Facilities (SIFs), which have reported positive benefits on the reduction of HIV cases among PWID, through the assessment of the cost-effectiveness of opening a SIF in Saskatoon, Saskatchewan. The current study used two different mathematical models to estimate the number of HIV cases prevented as a result of establishing a SIF in Saskatoon. Previously, this model had been employed to assess the economic viability of a supervised smoking facility in the Downtown Eastside (DTES) of Vancouver. Based on cumulative cost-effectiveness results, SIF establishment is cost-effective for up to four facilities in Saskatoon. The benefit to cost ratio was conservatively estimated to be 1.35 for the first two potential facilities. Cost-saving does not disappear for SIF in Saskatoon when the cumulative data is taken into consideration and thus ranges from $1,529,940 for the second SIF to a low value of $533,220 for the fourth potential SIF. The cumulative benefit-cost ratio is also above unity for the first four facilities. For instance, the cumulative benefit-cost ratios for HIV range from 1.44 to 1.06. Through the use of two mathematical models this study has shown that SIF in Saskatoon are indeed cost-saving. This paper demonstrates that the associated cost-saving related to the number of new HIV infections averted is large enough to cover the cost of operating more than one SIF in Saskatoon. The implications of these policies may have initiated the opening of the first SIF (at AIDS Saskatoon) which opened in May 2020.

Khan I, Ndubuka N, Stewart K, McKinney V, Mendez I. Indigenous health: The use of technology to improve health care to Saskatchewan's First Nations communities. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2017 Jun 1;43(6):120-4.

The article by Khan and colleagues published in 2017 addresses the challenges accessing healthcare by Indigenous people, especially those living in northern communities in Saskatchewan. Thus, to address this challenge, Saskatchewan's healthcare providers have been incorporating the use of technology for various health services. This article provides information on various ways technology has been used in First Nations communities in Saskatchewan. Over the past 10 years, several successful pilot projects partnering with the First Nations leaders and healthcare providers in northern communities in Saskatchewan have set the stage for the transformation of the provision of health services. These pilots also included urban settings to make linkages between on- and off-reserve services possible. The use of Remote Presence Robotic Technology that consists of maneuverable robots ("Rosie") and portable devices ("Doc-in-the-box") that enable face-to-face encounters between patients and healthcare providers increased patient access to care. Furthermore, the provision of cell phones to patients with HIV has improved compliance with anti-retroviral therapy and has resulted in better clinical outcomes. Additionally, the automated device Xpert MTB/RIF (Mycobacerium tuberculosis complex / resistance to rifampicin), which uses analysis of raw sputum samples, can identify the presence of M. tuberculosis with greater speed, sensitivity and specificity than the conventional acid-fast bacilli (AFB) smear. The use of telemedicine remote communications equipment provides patient care across communities. This article provides solutions to the prevailing gaps in access to care while providing a platform for the need of more research. The use of these technologies appears to be a safe, effective and cost-effective way to improve access to healthcare in remote First Nations and other communities.

Klein MB, Rollet KC, Saeed S, Cox J, Potter M, Cohen J, Conway B, Cooper C, Cote P, Gill J, Haase D. HIV and hepatitis C virus coinfection in Canada: Challenges and opportunities for reducing preventable morbidity and mortality. HIV Medicine. 2013 Jan;14(1):10-20.

This article represents the Canadian Co-infection Cohort Study (CCC) study, authored by Klein and colleagues, which examined the effect of antiretroviral therapies (ART) and HCV treatment on the progression to end-stage liver disease (ESLD) in HCV/HIV-coinfected individuals. The study involved a prospective multicentre recruitment (between 2003-2010) of coinfected patients from existing HIV clinic populations at 16 centres across five Canadian provinces (Quebec, British Columbia, Alberta, Ontario and Nova Scotia). Eligible patients were people aged over 16 years with documented HIV infection and, as of Oct 2010, 955 patients were enrolled. The majority of patients were male (73%) with a median age of 44.5

years; 13% self-identified as Indigenous. The findings highlight high levels of current injecting drug and alcohol use and poverty. This article may tend towards interventions aimed at improving social circumstances, reducing harm from drug and alcohol use and increasing the delivery of HCV treatment to reduce adverse health outcomes among HIV/HCV-coinfected persons.

Konrad S, Skinner S, Kazadi GB, Gartner K, Lim HJ. HIV disease progression to CD4 count < 200 cells/mu L and death in Saskatoon, Saskatchewan. Canadian Journal of Infectious Diseases and Medical Microbiology. 2013;24(2):97–101.

This article by Konrad and colleagues published in 2013 has similarities to a previous publication in this annotated bibliography published by **Hunt et al**. (2015). The purpose of this project was to characterize and identify determinants of disease progression among PLWH who use injection drugs in the highly active antiretroviral therapy era. Data were extracted from medical charts of patient's ≥18 years of age, diagnosed between Jan 1, 2005 and Dec 31, 2010, who made ≥1 clinic visits at either one of two sites specializing in HIV/AIDS care in Saskatoon. The data for this retrospective study was based on 343 HIV patients diagnosed from two clinics in Saskatoon, Saskatchewan. Of the 343 patients, 79% had a history of IDU, 77% were HCV co-infected and 67% were of Indigenous descent. Multicollinearity among IDU, HCV and ethnicity was observed and, thus, separate models were built. HCV coinfection was a significant predictor of progression to immunological AIDS when controlling for baseline CD4 counts, treatment, age at diagnosis and year of diagnosis. For survival, only treatment use was a significant predictor. The present study highlights the need for targeted interventions for vulnerable populations to slow disease progression and maximize the benefits of highly active antiretroviral therapy (HAART).

Lam A, Woods S, Ndubuka N. Indigenous health: Evaluating the timeliness of reporting in a First Nations communicable diseases program. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2017 Jun 1;43(6):133-7.

The article by Lam and colleagues published in 2017 showcases the need for surveillance of communicable disease (CD) and the further evaluation of the surveillance method. Thus, the objectives were to facilitate timelines of CD reporting by the Northern Inter-Tribal Health Authority (NITHA) to Saskatchewan's Population Health Branch to compare differences in reporting times due to the remoteness of a community, the season or the year. Data from 2008-2013 for four sexually transmitted infections (STIs) including Chlamydia trachomatis, gonococcal infections, HIV and syphilis, and eight CDs including HCV, influenza, methicillin-resistant Staphylococcus aureus (MRSA), pertussis, pneumococcal-invasive disease, salmonellosis, shigellosis, and streptococcal A–invasive disease were collected from the integrated Public Health Information System (iPHIS). All CDs had a 14-day recommended

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reporting timeline except for shigellosis which had a three-day reporting timeline. Results concluded that 94% of the CDs were reported within the recommended reporting timeline. All four STIs had over 90% of cases reported within the recommended time period (eg: HIV for 97.5% of cases). Overall, the program has been successful but for CDs such as shigellosis, syphilis, HCV and pneumococcal-invasive disease, reporting time could be improved.

Lang K, El-Aneed A, Berenbaum S, Dell CA, Wright J, McKay ZT. Qualitative assessment of crisis services among persons using injection drugs in the city of Saskatoon. Journal of Substance Use. 2013 Feb 1;18(1):3-11.

The risk of acquiring blood-borne infections including HIV and HCV is higher among PWID and their immediate families who live in close proximity within a single household. The need for health services to provide appropriate, equitable and compassionate care, especially to limit disease transmission and improve health and social outcomes for PWID and their families, is of utmost importance. The objective of this exploratory study published by Lang and colleagues was to assess the experiences of PWID while seeking help during a crisis in the small urban centre of Saskatoon, Canada. For this study, 13 adults participated in two group discussions, each approximately an hour in duration. For youth participants, personal, semi-structured interviews were conducted, and 12 youths were successfully recruited and interviewed. The results highlight the need to identify barriers to care. Participants found many services helpful during times of crisis. However, participants identified five barriers to care: 1) poor communication with health services; 2) lack of system resources and restrictive policies; 3) insufficient financial resources; 4) discrimination and stigmatization; and 5) social support. Lang et al, conclude that in order to achieve a more complete understanding of access to services in Saskatoon, views of health service providers need to be examined in the future.

Laurie ML, Green KL. Health risks and opportunities for harm reduction among injection-drug-using clients of Saskatoon's needle exchange program. Canadian Journal of Public Health. 2000 Sep 1;91(5):350-2.

The article published by Laurie and colleagues in 2009 articulates the need for gathering information about the lifestyles of PWID to evaluate the increased risk of acquiring blood borne infections when individuals share needles. One hundred clients registered with the Street Outreach program in Saskatoon were interviewed in 1998. The collection of sociodemographic variables including age, level of education, housing, ethnic group, relationship status, employment status, and history of incarceration were reported for 41 men and 59 women. Over half of the participants (53%) reported that at some time they had previously used needles used by someone else. The most common injected drugs included morphine (48%), Ritalin (46%), and cocaine (32%). Another important observation

was that half of the participants stated they knew other PWID who did not use the needle exchange service provided by Street Outreach program in Saskatoon. Another positive outcome of the program was that 73% reported getting needles from Street Outreach not only for themselves, but also for their friends, acquaintances, relatives and partners. Similarly, 31% sometimes obtained clean needles from friends, rather than directly from Street Outreach. Multiple sexual partners was a risk factor, especially in women, of whom half were sex trade workers. The use of condoms was higher with casual partners, compared to regular partners. The need for programs to create awareness of HIV transmission is needed as most participants considered their risk of infection to be below average. The information gathered from these interviews is extremely important to facilitate intervention programs such as needle exchange programs which lower the risk of blood borne pathogens.

Lemstra M, Rogers M, Thompson A, Moraros J, Buckingham R. Risk indicators associated with injection drug use in the Aboriginal population. AIDS Care. 2012 Nov 1;24(11):1416-24.

The main purpose of Lemstra and colleagues' 2012 publication in AIDS Care was to determine the risk factors that are independently associated with higher rates of using injection drugs among Indigenous populations compared to other ethnic groups. One thousand participants at risk of testing positive for HIV were interviewed in Saskatoon between the years 2009 and 2010 and the survey data measured demographics, socioeconomic status, knowledge, attitudes, behaviours, barriers to services, depression and significant life events. Among this cohort, 603 (77%) participants answered "yes" to the question: ''Have you injected a drug in the last 4 weeks?'' and 88% of respondents were of Indigenous status, even though Indigenous people comprised only 9.2% of the general population at the time. Multivariate logistic regression analysis was used to establish associated risk factors for Indigenous PWID versus non-Indigenous PWID, which revealed participants were more likely to be female and younger, less likely to receive paid income, and were more likely to have attended an Indian Residential School (IRS) or had a parent or grandparent who attended an IRS. Furthermore, sexual abuse in childhood remained an important overall risk indicator but was not specific to any cultural groups. The study type is cross-sectional and therefore unable to determine causation. The need for culturally-relevant components within an Indigenous-led, holistic environment for health and wellness would be interventions that need to be considered in the future.

Lemstra M, Rogers M, Thompson A, Moraros J, Buckingham R. Risk indicators of depressive symptomatology among injection drug users and increased HIV risk behaviour. The Canadian Journal of Psychiatry. 2011 Jun;56(6):358-66.

Depression among PWID is associated with increased risk behaviours such as the increased frequency in the use of injection drugs and the sharing of syringes and injection equipment.

Authors Lemstra and colleagues have stated four objectives in this 2011 publication: 1) to determine the prevalence of depressive symptomatology within PWID in the Saskatoon Health Region (SHR), which is now under a single governance model known the Saskatchewan Health Region; 2) to determine the unadjusted and adjusted risk indicators associated with depressive symptomatology within PWID in the SHR; 3) to determine if depressive symptomatology was associated with HIV risk behaviours; and 4) to determine barriers to care among PWID. The methods, data collection and participant cohort are the same as stated in **Lemstra et al.** (2012), listed previously in this bibliography. As stated in Lemstra M. *et al*., 2012, the sample represents 77% of known PWID in the SHR. Among these individuals, 81% reported depressive symptomatology, whereas 58% reported more severe depressive symptomatology. The study concluded through multivariate analysis that depressive symptomatology was associated more frequently with sharing injecting equipment, giving sex to get money and giving drugs to get sex. Finally, participants self-report that barriers to accessing care were significantly associated with depressive symptomatology. Some of the important self-reported barriers to care included long distances to medical facilities, lack of transportation to these far away facilities, medical personnel who decline to provide direct care, shortages of mental health personnel to address mental health problems, and being unable to access drug treatment programs owing mainly to long waiting lists. Interventions and accessible programs are highly recommended as future initiatives.

Loutfy M, de Pokomandy A, Kennedy VL, Carter A, O'Brien N, Proulx-Boucher K, ... Greene S. Cohort profile: The Canadian HIV women's sexual and reproductive health cohort study (CHIWOS). PLoS One. 2017;12(9):e0184708.

This article advocates for an increase in research to focus on the lives and care of women with HIV. It describes essential needs for the Canadian HIV Women's Sexual and Reproductive Health Cohort Study (CHIWOS), created by, with and for women with HIV in collaboration with academic researchers, clinicians and community partners. In response, Loutfy and colleagues describe the CHIWOS used to investigate the concept of women-centred HIV care (WCHC) and its impact on outcomes for: 1) HIV; 2) women's health; 3) mental health; 4) sexual health; and 5) reproductive health. The study geographically enrolled 1422 women with HIV (356 from BC [25%], 713 from ON [50%], 353 from QC [25%]) based on the distribution in each provincial region as per provincial public health reports. Results stated in this study are as follows: 1) Age: median age of participants at baseline was 43 years (range, 16–74); 2) Ethnicity: 22% identified as Indigenous, 30% as African, Caribbean or Black, 41% as Caucasian/white, and 7% as other ethnicities; 3) Antiretroviral therapy (ART): overall, 83% of women were taking ART at the time of the baseline interview; 4) Viral Load: 87% reported an undetectable viral load; and 5) HIV Care: Of the 1326 women who received HIV medical care in the previous year and who responded to corresponding

questions, 57% (95% CI: 54%-60%) stated women-centred care. The article concludes that CHIWOS aims to be a community-based research leader in demonstrating the concept of WCHC among diverse women with HIV living in Canada. Please see information on the cohort, found on the study website (http://www.chiwos.ca).

Moraros J, Falconer J, Rogers M, Lemstra M. Risk factors associated with higher injection drug use and HIV rates: Findings from Saskatchewan, Canada. Journal of AIDS & Clinical Research. 2011(Suppl. 1).

This article published in 2011 by Moraros and colleagues is similar in content, methods, data collection and participant cohort to an article by **Lemstra et al.** (2012), listed previously in this bibliography. The only difference between these articles is that the Moraros *et al.* publication analyses data stratified categories such as higher risk (HR) of PWID (n=182) in comparison to lower risk (LR) of PWID (n=421) depending on their drug use behaviours and needle sharing practices. The study found that people with HR of IDU were more often engaged in giving sex to get drugs, giving drugs to get sex, having more sexual partners and having a higher frequency of injection than people with LR of IDU. Logistic regression predicted risk factors such homelessness, having experienced sexual assault as a child, and a lack of knowledge related to HIV/AIDS to associate with HR of IDU. Again, the use of interventions as well as programs which educate on HIV/AIDs are highly recommended as future initiatives.

Mykhalovskiy E, Patten S, Sanders C, Bailey M, Taylor D. Conceptualizing the integration of HIV treatment and prevention: Findings from a process evaluation of a community-based, national capacity-building intervention. International Journal of Public Health. 2009 May 1;54(3):133-41.

The Canadian AIDS Treatment Information Exchange (CATIE) was established in 1990 in Toronto to empower PLHIV through enhanced treatment education and information. At that time, most community-based AIDS organizations (CBAOs) in Canada were focused on prevention education, counselling and practical assistance, and only few were actively providing HIV-related treatment information. Mykhalovskiy and colleagues' article from 2009 responds to a gap in knowledge about the conceptualization of integration in CBAOs to provide health education to individual clients, to encourage integration and to link participants with CATIE in ongoing networks of treatment information sharing and support. The methodology was approached using a community-based process evaluation strategy which did not report on the evaluation of outcomes. This process included interviews with 13 intervention participants located among six CBOAs across Canada, staff from CATIE, funders, and a 25-person verification exercise. Interview transcripts were transcribed and hand coded to identify sections of text dealing with participants' conceptualizations of

integration, challenges in delivering intervention and recommendations for improvement. This study helped CBAOs with concepts for implementation which need to specify and verify priorities by identifying dimensions of an emerging community-based perspective on integration. Finally, the tension associated with efforts to integrate HIV prevention and treatment in a community-based context is also discussed in this article. CATIE now works with service providers and agencies, providing them the best and most current information on HIV and hepatitis C virus information (https://www.catie.ca/en/home).

Nowgesic E, Meili R, Stack S, Myers T. The Indigenous Red Ribbon Storytelling Study: What does it mean for Indigenous peoples living with HIV and a substance use disorder to access antiretroviral therapy in Saskatchewan? Canadian Journal of Aboriginal Community-based HIV/AIDS Research. 2015 Winter;7(1):27-40.

In this study, Nowgesic and colleagues reported on the Indigenous Red Ribbon Storytelling Study, which was conducted in part to explore how Indigenous peoples living with HIV (IPLWH) construct and understand their experiences accessing ARV therapy. The research design was centred on Indigenous knowledge and inclusive of Indigenous qualitative research with various sensitizing concepts (i.e., social structure, vulnerability and resilience, and access). The project was a collaborative achievement among an investigator, 10 Indigenous people living with IPLWH and 11 community partners, all of whom comprised the planning team of the study. An overarching theme for this study was '*accessing ARV therapy within the context of living with a substance use disorder*.' Another aspect of these study results was that individuals had to choose between living with their active substance use disorder and using ARV therapy. Refusal of ARV therapy because of either 1) their stage of addiction recovery was not considered optimal, or 2) they were not at a point sufficient for IPLWH to be expected to maintain an adequate level of adherence to their ARV therapy for it to be effective, was also stated in this study. Finally, the study argued that IPLWH who are living with a substance use disorder have unique circumstances surrounding their access to ARV therapy compared to non-Indigenous PLWH.

Rogers MR, Lemstra ME, Moraros JS. Risk indicators of depressed mood among sex-trade workers and implications for HIV risk behaviour. The Canadian Journal of Psychiatry. 2015 Dec;60(12):548-55.

In this study, Rogers and colleagues wanted to determine the prevalence of depression among people who make use of the sex trade in the Saskatoon Health Region (SHR), as well as the adjusted risk factors for depression among the same sample, and if depression was associated with decreased self-efficacy for safe sexual practices and IDU. Adults (aged 18 and older) were eligible to participate and 299 people who make use of the sex trade were surveyed with validated instruments for measuring risk behaviours, depression, and self-

efficacy for safe sexual practices. When a 16-point cut-off score for the Center for Epidemiologic Studies Depression Scale was applied, 84.6% of participants had depression and when the cut-off score was 23 points or higher, only 65.9% had depression. When multivariate analysis was applied, covariates that had an independent association with depression included: (i) injecting a drug in the past four weeks (OR 1.59; 95% CI 1.2 to 1.8); (ii) suffering the death or permanent separation from a parent before the age of 18 (OR 2.09; 95% CI 1.05 to 4.15); (iii) and physical assault or abuse by a partner in adult life (OR 2.79; 95% CI 1.38 to 5.64). It was concluded that depression was associated with lower self-efficacy scores for safe sexual behaviours.

Sami M, Maposa S, Exner-Pirot H, Anonson J. Front-line service providers' appraisal of Saskatchewan's HIV services and strategy: A qualitative study. Journal of HIV/AIDS & Social Services. 2018 Apr 3;17(2):146-62.

The need to achieve 90-90-90 HIV care goals (by 2020, 90% of all PLWH will know their HIV status; by 2020, 90% of all people with diagnosed HIV infection will receive sustained ART; by 2020, 90% of all people receiving ART will have viral suppression) requires partnerships with multiple-organizations, active engagement of participants living with HIV and the essential work of front-line healthcare providers who deliver effective HIV/AIDS services. The purpose of this study was to examine front-line healthcare providers' understandings of the 2010–2014 HIV strategy, their capacity building needs, and perspectives on how well they were implementing HIV services. Nine front-line healthcare providers in Saskatchewan were interviewed using a semi structured and open-ended mix of exploratory and focused questions followed by thematic content analysis. The findings of this article suggest an integrated, multidisciplinary interprofessional collaborative environment by front-line healthcare providers inclusive of a holistic approach that responds to the multifaceted needs of PLWH will facilitate and strengthen the HIV response within the province of Saskatchewan.

Shercllife RJ, Hampton M, McKay-McNabb K, Jeffery B, Beattie P, McWatters B. Cognitive and demographic factors that predict self-efficacy to use condoms in vulnerable and marginalized aboriginal youth. Canadian Journal of Human Sexuality. 2007 Mar 1;16(1-2):45-56.

The practice of safe sex behaviours in Indigenous populations includes activities such as the consistent use of condoms that reduce the risk of transmission of STIs. As stated in Shercllife and colleagues' article published in 2007, the authors examined cognitive and demographic factors related to self-efficacy to use condoms in a sample comprised of 68 Indigenous youth aged 11-20 (average age = 16), inclusive of 31 females and 37 males. A forced entry multiple regression was conducted and found that two variables, first the age of first sexual contact was negatively related to self-efficacy to use condoms, and second, a positive

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relationship between assertive communication (ACS scale) and self-efficacy to use condoms, were statistically significant with respect to scores on the Self-Efficacy to Use Condoms Scale (SEUCS). Even though there is the limitation of a small sample size, the results also suggest that females were less likely than males to have used a condom the last time they had sex, which elaborates the need to entwine educational programs to deliver risk and approaches to interventions which will benefit Indigenous youth.

Tarasuk J, Ogunnaike-Cooke S, Archibald C, Poitras M, Hennink M, Lloyd K, Faye R, Abbas Z, Bourassa C, Masching R, Bennett R. A pilot behavioural and biological surveillance survey for HIV and other bloodborne infections among Aboriginal people in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2014 Nov;40(18):388-96.

Tarasuk and colleagues provide a more in-depth and comprehensive report on selected findings from the A-Track pilot survey entitled 'Summary of key finding from the A-Track pilot survey, 2011 – 2012' (https://www.canada.ca/en/public-health/services/diseases/hiv-aids.html). A-Track is a behavioural and biological pilot surveillance system launched in Regina, Saskatchewan, from Dec 5, 2011 to Jun 15, 2012, that monitors the prevalence of HIV and other related infections and the associated risk behaviours and socio-demographics among Indigenous populations in Canada. A total of 1,064 individuals participated in the A-Track pilot survey, of which 1,062 (90.1%) self-identified as First Nations, inclusive of 50.7% of males and 44.8% being between the ages of 30 and 49 years, with a slightly lower proportion (42.2%) under the age of 29 years. The majority of participants (95.5%) self-reported their sexual orientation as heterosexual or straight, while a significantly higher proportion of females than males self-identified as gay, lesbian, bisexual or other (6.9% versus 2.2%). These findings suggest numerous risk behaviours may contribute to the transmission of HIV and other blood-borne infections among Indigenous populations. The need to facilitate an analysis of the Indigenous Social Determinants of Health would further enhance transfer of important information pertaining to service development and delivery by contextualizing the environments of risk and resilience that influence these behaviours.

Tarasuk J, Ogunnaike-Cooke S, Archibald C, MacLean R, Bennett R, Kim J, Malloch L, I-Track Principal Investigators. Blood, cell and tissue transplant surveillance: Key findings from a national enhanced HIV surveillance system: 2010-2012. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2014 Nov 20;40(18):397-407.

Tarasuk and colleagues published this article in 2014 to describe the coverage on the prevalence of HIV, lifetime exposure to HCV and associated risk behaviours among PWID in Canada to guide and help evaluate HIV and HCV prevention, treatment and control activities. This article is a follow-up to **Tarasuk et al**. (2014), which provided a more

in-depth and comprehensive report on selected findings from the A-Track pilot survey entitled 'Summary of key finding from the A-Track pilot survey, 2011 – 2012' (https://www.canada.ca/en/public-health/services/diseases/hiv-aids.html). The I-Track study is a behavioural and biological surveillance system that monitors the prevalence of HIV and HCV and associated risk behaviours among PWID in Canada. The methods incorporate cross-sectional surveys conducted periodically at 11 sites across Canada. For this research, I-Track Phase 3 surveys were conducted between Apr 26, 2010 and Aug 7, 2012 across 11 participating sites. As stated in this study, the overall HIV seroprevalence and lifetime exposure to HCV infection were high among I-Track Phase 3 participants. The need for continued treatment and prevention services, as well as routine and integrated testing among PWID is essential and may reduce the risk of disease transmission and increase health and wellness among this group.

Tomas K, Dhami P, Houston C, Ogunnaike-Cooke S, Rank C. HIV in Canada: 2009 to 2014. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2015 Dec 3; 41(12):292–303.

The study completed by Tomas and colleagues describes recent trends in new diagnoses of HIV in Canada between 2009 and 2014 by age group, sex, exposure category, race/ethnicity and region, as well as the number of perinatally HIV-exposed infants. Data for this study was gathered from the National HIV/AIDS Surveillance System and the Canadian Perinatal HIV Surveillance Program. The distribution of race and ethnicity between 2009 to 2014 reported nearly one-half of HIV cases that identified as white (46.8%), followed by Indigenous (19.2%) and Black (18.1%). The breakdown of the Indigenous group is as follows: First Nations (14.3%), Métis (1.5%) and Aboriginal-unspecified (3.3%). In a similar manner, the race/ethnicity distribution by sex is as follows: among males, the majority of cases were white (54.8%), followed by Indigenous (14.0%) and Black (12.6%). When comparisons among females were analyzed, there were equal proportions of Black (35.3%) and Indigenous (35.3%), followed by white (21.8%). This report expresses the need for population-specific interventions.

HCV Academic Literature

Brunet L, Moodie EE, Young J, Cox J, Hull M, Cooper C, Walmsley S, Martel-Laferrière V, Rachlis A, Klein MB, Canadian Co-infection Cohort Study: Progression of liver fibrosis and modern combination antiretroviral therapy regimens in HIV-Hepatitis C co-infected persons. Clinical Infectious Diseases. 2016 Jan 15;62(2):242-9.

The Canadian co-infection cohort study described by Brunet and colleagues is a multicentre longitudinal study of HIV/HCV-coinfected persons: 1) who are ≥16 years old; 2) have

documented HIV infection; and 3) show evidence of HCV infection from 18 HIV clinics across Canada. The purpose of this project was to describe opioid use in an HIV/HCV-coinfected population in Canada and to estimate the association between opioid use and liver fibrosis. The average change in aspartate aminotransferase-to-platelet ratio index (APRI) score was considered for association with opioid use using a generalized estimating equation with linear regression. The progression to significant liver fibrosis (APRI ≥ 1.5) was associated with opioid use using a pooled logistic regression analysis method. Results included 43% of the participants in the prevalence cohort used prescribed and/or illicit opioids. Additionally, 28% of the participants used illicit opioids, among whom 29% injected only, 45% used other routes of administration only and 26% used opioids by both injection and alternate routes. Even though opioids were commonly used both legally and illegally within this cohort, opioid users were not at increased risk of developing liver fibrosis, compared with nonusers. The authors were unable to demonstrate a negative impact on liver fibrosis progression.

Hennink M, Abbas Z, Choudhri Y, Diener T, Lloyd K, Archibald CP, Cule S. Risk behaviours for infection with HIV and hepatitis C virus among people who inject drugs in Regina, Saskatchewan. Canada Communicable Disease Report = Releve des maladies transmissibles au Canada. 2007 Mar;33(5):53-9.

This article was previously described within the quota for HIV academic literature.

Hull M, Shafran S, Tseng A, Giguère P, Klein MB, Cooper C. CIHR Canadian HIV Trials Network Co-Infection and Concurrent Diseases Core: Updated Canadian guidelines for the treatment of hepatitis C infection in HIV-hepatitis C coinfected adults. Canadian Journal of Infectious Diseases & Medical Microbiology. 2014 Nov 1;25(6):311-20.

This article is a follow-up used to update the national standards for the management of HCV-HIV coinfection adults in the Canadian context by the same author (**Hull et al**., 2013). CIHR Canadian HIV Trials Network Coinfection and Concurrent Diseases Core: Canadian guidelines for management and treatment of HIV/HCV coinfection in adults. Canadian Journal of Infectious Diseases and Medical Microbiology, 24), discussed previously under the HIV section of this report. To update these guidelines, a working group with specific clinical expertise in the area of HIV-HCV coinfection was convened by the Canadian Institute of Health Research HIV Trials Network to review recently published data on HCV antiviral treatments. The study recommended that all HIV-HCV coinfected individuals should be assessed for HCV therapy. Four remedies for first-line treatment were recommended: 1) for genotypes 1 through 6, it will include pegylated interferon and weight-based ribavirin dosing plus the nucleotide sofosbuvir for 12 weeks; 2) for genotype 1 infection, Sofosbuvir in combination with the protease inhibitor simeprevir is in consideration; 3) for genotype 2, Sofosbuvir with ribavirin for 12 weeks; 4) for genotype 3, Sofosbuvir with ribavirin for 24

weeks. Finally, the authors state that recommendations may not supersede individual clinical judgement.

Kronfli N, Nitulescu R, Cox J, Moodie EE, Wong A, Cooper C, Gill J, Walmsley S, Martel-Laferrière V, Hull MW, Klein MB. Previous incarceration impacts access to hepatitis C virus (HCV) treatment among HIV-HCV co-infected patients in Canada. Journal of the International AIDS Society. 2018 Nov;21(11):e25197.

Due to the prevalence of IDU, incarcerated populations are disproportionately burdened by chronic HCV. In Kronfli and colleagues' article published in 2018, the authors examine incarceration patterns among HIV-HCV co-infected persons in Canada and determine whether a history of incarceration impacts HCV treatment uptake in treatment initiation within the direct-acting antiviral (DAA) era. This study used the Canadian co-infection cohort study described previously by **Brunet et al.** (2016) from Apr 2003 to Jun 30, 2017. As stated by the authors, a total of 1433 participants (72% of them male) were included in this study, where 67% had a history of incarceration and 39% were re-incarcerated at least once. Compared to those never incarcerated, previously incarcerated participants were more likely to be Indigenous, earn <$1500 CAD/month, report current or past IDU and have poorly controlled HIV. The study concluded that a majority of HIV-HCV co-infected persons had a history of incarceration and identified previous incarceration as an important patient-level barrier to HCV treatment initiation in the DAA era among HIV-HCV co-infected persons in Canada. The recommendations suggest people in and recently released from prison must be part of the global elimination agenda to eliminate HCV by 2030.

Marshall AD, Saeed S, Barrett L, Cooper CL, Treloar C, Bruneau J, Feld JJ, Gallagher L, Klein MB, Krajden M, Shoukry NH. Restrictions for reimbursement of direct-acting antiviral treatment for hepatitis C virus infection in Canada: A descriptive study. Canadian Medical Association Journal Open. 2016 Oct;4(4):E605-14.

The aim of this Canadian study completed between Apr 2015 to Jun 2016 by Marshall and colleagues was to describe the appraise reimbursement criteria for simeprevir, sofosbuvir, ledipasvir–sofosbuvir and paritaprevir–ritonavir–ombitasvir plus dasabuvir. The authors also reviewed criteria for Indigenous people and federal prisoners (as these populations are disproportionately affected by HCV infection) who receive drug coverage from national plans. Data was gathered using the primary outcomes extracted from health ministerial websites. The outcomes included: 1) minimum fibrosis stage required, 2) drug and alcohol use restrictions, 3) HIV coinfection restrictions and 4) prescriber type restrictions. The overall results depicted interjurisdictional heterogeneity with 85%–92% of provinces/territories limited access to patients with moderate fibrosis (Meta-Analysis of

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Histologic Data in Viral Hepatitis stage F2 or greater, or equivalent). These results could inform health policy and support the need to develop a national HCV strategy.

Minuk GY, Uhanova J. Viral hepatitis in the Canadian Inuit and First Nations populations. Canadian Journal of Gastroenterology. 2003 Dec 1;17(12):707-12.

The purpose of this study was to review what is presently known about viral hepatitis in the Inuit and First Nations populations in Canada using published data from the medical literature and unpublished data generated by the authors. An environmental scan was performed without using any language restrictions as limiting factors through an electronic search using PubMed/MEDLINE databases from Apr and Nov 2002 to identify and review all published prevalence/seroepidemiologic studies of HAV, HBV and HCV in Indigenous populations in Canada. Compared to non-Indigenous Canadians, a higher prevalence of anti-HAV positivity (a range of 75% to 95%, approximately three times higher) in Inuit and First Nations populations in Canada was reported. Finally, the authors conclude that even though viral hepatitis is common in the Inuit and First Nations populations in Canada, in the absence of coexisting conditions such as HIV infection and alcohol use disorder, the outcomes of HBV and HCV appear to be more benign than in non-Indigenous Canadians.

Myers S, Khosa G, fan Kuo I, Janzen D, Alessi-Severini S. Moving towards universal coverage of direct-acting antiviral therapies for hepatitis C infection in Canada: An environmental scan of Canadian provinces and international jurisdictions. Journal of Pharmacy & Pharmaceutical Sciences. 2018 Nov 6;21(1s):271s-308s.

The purpose of this study published in 2018 by Myers and colleagues was to describe coverage criteria and cost differences for chronic HCV infections across provinces and territories in Canada, and to explore how direct-acting antivirals (DAAs) are covered in international jurisdictions. Methodology for data gathering was twofold and included the following: 1) a systematic search of existing literature and Canadian provincial drug formularies conducted between May and Aug 2018 to determine coverage criteria and prices of DAAs in various jurisdictions and 2) an anlysis of recommendations of the Canadian Drug Expert Committee (CDEC) for reimbursement of each DAA. Results stated that criteria for coverage vary across Canada. By Apr 2018, most Canadian jurisdictions had removed the stage 2 liver fibrosis requirement for patients to be eligible for coverage. Internationally, patients' access to DAAs differs significantly. In conclusion, the authors state a positive finding that DAAs appear to be generally accessible through public drug plans in Canada compared to other countries.

Pearce ME, Jongbloed K, Demerais L, MacDonald H, Christian WM, Sharma R, Pick N, Yoshida EM, Spittal PM, Klein MB. "Another thing to live for": Supporting HCV treatment

and cure among Indigenous people impacted by substance use in Canadian cities. International Journal of Drug Policy. 2019 Dec 1;74:52-61.

The research informing the development of decolonizing HCV care, conducted by Pearce and colleagues, is a qualitative study which aims to put forward realistic recommendations based on the stories of Indigenous people living with or treated for HCV, with additional perspectives provided by HCV treatment providers. Semi-structured interviews were carried out with Indigenous participants affected by HCV and HCV treatment providers. When qualitative data analysis was performed, themes and related recommendations were validated by Indigenous health experts and Indigenous participants prior to coding and re-contextualization. Three overarching themes provided recommendations: 1) through treatment providers: they must understand and accept colonization as a determinant of health and wellness among HCV-affected Indigenous people. Furthermore, ongoing cycles of child apprehension and discrimination within the healthcare system are also determining factors toward a pathway of healing; 2) actions create trust within HCV treatment provider-patient relationships and open opportunities for engagement into care; and 3) treatment providers who identify, build and strengthen circles of care will have greater success engaging HCV-affected Indigenous people who have used drugs in care.

Skinner S, Cote G, Khan I. Can we eliminate hepatitis C?: Hepatitis C virus infection in Saskatchewan First Nations communities: Challenges and innovations. Canada Communicable Disease Report. 2018 Jul 5;44(7-8):173-8.

HCV infection has become a major concern in Saskatchewan's First Nations (FNs) communities. Skinner and colleagues have focused on the burden of HCV in Saskatchewan and identified challenges and barriers to care. Additionally, this article outlines ways in which Saskatchewan has moved towards improving access to prevention and treatment services which ultimately provide care and promote liver health among FNs living on reserves. There are multiple factors which attribute and are associated with the high rates of HCV in FNs communities, including barriers to accessing preventive services, early diagnosis and treatment. These issues are largely attributable to: 1) geographical remoteness; 2) transportation; 3) education and awareness; and 4) a healthcare system designed around urban health. New and innovative ways of delivering information and services in remote FNs communities include: 1) mobile HCV clinic (Liver Health Days); and 2) the community-driven STBBIs Know Your Status program. These community-driven programs initiate patient participation and further reduce the burden of HCV among FN communities in Saskatchewan.

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