

Evidence Brief

Enhancing the Delivery of Comprehensive Care for People Living with HIV in Canada

14 May 2019



HEALTH FORUM

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Evidence Brief:
Enhancing the Delivery of Comprehensive Care for
People Living with HIV in Canada

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McMaster Health Forum

The McMaster Health Forum's goal is to generate action on the pressing health-system issues of our time, based on the best available research evidence and systematically elicited citizen values and stakeholder insights. We aim to strengthen health systems – locally, nationally, and internationally – and get the right programs, services and drugs to the people who need them.

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Conflict of interest

John Lavis is currently Chair of the Board of Directors of the Ontario HIV Treatment Network, which is one of the funders of this evidence brief. The rest of the authors declare that they have no professional or commercial interests relevant to the evidence brief. The funders played no role in the identification, selection, assessment, synthesis, or presentation of the research evidence profiled in the evidence brief.

Merit review

The evidence brief was reviewed by a small number of policymakers, stakeholders and researchers in order to ensure its scientific rigour and system relevance.

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KEY MESSAGES

What's the problem?

Challenges to enhancing the delivery of comprehensive care for people living with HIV in Canada include:

- the burden of HIV remains an important public-health issue and continues to affect those who are often stigmatized and marginalized in society;
- people living with HIV who are on medications are living longer with HIV and with more chronic conditions;
- progress still needs to be made towards meeting targets for reducing the burden of HIV, which will require addressing complex and inter-related challenges that are often faced by people living with HIV; and
- many system-level factors can make it complicated to ensure that people living with HIV are supported through transitions in care and across health and social systems.

What do we know (from systematic reviews) about three elements of a potentially comprehensive approach to addressing the problem?

- Element 1 – Strengthening comprehensive HIV care within the health system
 - This element focuses on identifying, tailoring, implementing and incrementally strengthening (through element 3) the use of relevant components of different models of care designed to address the unique needs of people living with HIV, which could involve improving point-of-care testing and adopting patient-centred and ‘whole body’ approaches to care.
 - Of the 18 systematic reviews identified, none focused on the means by which point-of-care testing can be improved, and those that focused on ‘whole body’ approaches to care examined a variety of models used for HIV (chronic-care model, primary-care models, HIV-specific care models, and integrated HIV and mental health models) and provided insights about key features needed to optimize their effects (e.g., assisting with care navigation, coordination and practical supports; involving peers in care teams; fostering strong relationships with care providers; and providing supports to enable effective self-care).
- Element 2 – Providing supports across social systems to address all of the challenges faced by people living with HIV
 - This element could include activities focused on integrated delivery arrangements (e.g., enhanced navigation supports, interdisciplinary teams that are connected to social systems, and peer-support networks), more flexible financial arrangements (e.g., flexible budgeting that allows for easier flow and re-deployment of funds within and between health and social systems), and more nimble governance arrangements (e.g., shared governance models that enable collaborative decision-making) in health and social systems.
 - We identified 15 systematic reviews that found benefits of approaches to strengthening and integrating delivery arrangements (e.g., integrated housing supports, enhancing access points through the criminal-justice system, and enhancing collaboration and communication among patients, providers and communities), financial arrangements (e.g., providing dedicated earmarked funding, delegating financing to independent bodies, and joint budgeting between different sectors), and governance arrangements (e.g., inter-sectoral government action).
- Element 3 – Adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems
 - This element focuses on a rapid-learning approach through the combination of health/social and research systems that at all levels (self-management, clinical encounter, program, organization, regional, and government levels) is: 1) anchored on the needs, perspectives and aspirations of people living with HIV; 2) driven by timely data and evidence; 3) supported by appropriate decision supports and aligned governance, financial and delivery arrangements; and 4) enabled with a culture of and competencies for rapid learning and improvement.
 - While we did not identify any systematic reviews that included evaluations of benefits of rapid-learning approaches, a recent rapid synthesis about creating rapid-learning health systems in Canada noted that the available assets for such an approach are remarkably rich for the health system as a whole and for the primary-care sector and elderly population specifically, but with key gaps such as data about patient experiences often not being linked and shared in a timely way to inform rapid learning and improvement.

What implementation considerations need to be kept in mind?

- The main barrier to implementation is likely that funds are traditionally siloed within and between health and social systems, which makes flexibility in the flow-of-funds required for the elements difficult to achieve.
- The main policy window for implementing the elements is the Pan-Canadian Sexually Transmitted and Blood-Infections Framework for Action, which provides guidance for achieving global targets and an opportunity for collaboration across provincial/territorial and federal governments, as well as among organizations and stakeholders.

REPORT

The Canadian and some provincial governments have supported the 90-90-90 targets set by The Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO). These targets include that by 2020:

- 90% of all people living with HIV will be diagnosed;
- 90% of all people diagnosed with HIV will be on antiretroviral therapy (ART); and
- 90% of all people receiving ART will not have detectable HIV.(1-4)

The Pan-Canadian Sexually Transmitted and Blood-borne Infections (STBBI) Framework for Action provides a strategy for Canada to meet these targets. The framework has extended the target date to 2030 and focuses on four pillars: 1) prevention; 2) testing; 3) initiation of care and treatment; and 4) ongoing care and support.(5)

However, provincial and territorial health systems need to be strengthened to continue progress towards achieving the Pan-Canadian STBBI targets, while also ensuring a focus on improving health outcomes (e.g., quality of life), particularly among the hard-to-reach undiagnosed population, which represents approximately one of every five people living with HIV in Canada.(6) To this end, integrated approaches to care for people living with HIV increasingly focus on the care cascade,(7) which is comprised of the steps needed to achieve an undetectable viral load to improve health and also prevent the spread of HIV. The steps included in the care cascade include diagnosing HIV, linking and retaining the individual in care, and supporting early and sustained access to ART.(7) In addition, HIV care has changed over time and is now managed like many complex chronic conditions, with primary-care providers often being responsible for providing comprehensive care.(8; 9)

While many provinces and territories in Canada have prioritized, and continue to prioritize, health-system reforms including integrated care for people living with complex conditions (i.e., providing access to coordinated, comprehensive and continuous care) across sectors (i.e., home and community care, primary care, specialty care, rehabilitation care, long-term care and public health), care for people living with HIV poses unique challenges (e.g., stigma and discrimination, poverty, food security, homelessness,

Box 1: Background to the evidence brief

This evidence brief mobilizes both global and local research evidence about a problem, three elements of a potentially comprehensive approach for addressing the problem, and key implementation considerations. Whenever possible, the evidence brief summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies and to synthesize data from the included studies. The evidence brief does not contain recommendations, which would have required the authors of the brief to make judgments based on their personal values and preferences, and which could preempt important deliberations about whose values and preferences matter in making such judgments.

The preparation of the evidence brief involved five steps:

- 1) convening a Steering Committee comprised of representatives from the partner organizations (and/or key stakeholder groups) and the McMaster Health Forum;
- 2) developing and refining the terms of reference for an evidence brief, particularly the framing of the problem and three elements of a potentially comprehensive approach to addressing it, in consultation with the Steering Committee and a number of key informants and with the aid of several conceptual frameworks that organize thinking about ways to approach the issue;
- 3) identifying, selecting, appraising and synthesizing relevant research evidence about the problem, approach elements and implementation considerations;
- 4) drafting the evidence brief in such a way as to present concisely and in accessible language the global and local research evidence; and
- 5) finalizing the evidence brief based on the input of several merit reviewers.

The three elements of a potentially comprehensive approach to addressing the problem could be pursued simultaneously or in a sequenced way, and each element could be given greater or lesser attention relative to the others.

The evidence brief was prepared to inform a stakeholder dialogue at which research evidence is one of many considerations. Participants' views and experiences and the tacit knowledge they bring to the issues at hand are also important inputs to the dialogue. One goal of the stakeholder dialogue is to spark insights – insights that can only come about when all of those who will be involved in or affected by future decisions about the issue can work through it together. A second goal of the stakeholder dialogue is to generate action by those who participate in the dialogue and by those who review the dialogue summary and the video interviews with dialogue participants.

cognitive impairments and mental health and addictions) that require tailored responses.(10-13) As such, there is need for provincial and territorial health systems to ensure that their efforts to strengthen care for people living with complex conditions account for the unique challenges and care needs of people living with HIV. In addition, there is a need to complement and coordinate these efforts with enhanced supports provided through social systems, along with approaches to help provincial health and social systems to move incrementally towards optimal care given different starting points across the country.

The purpose of the evidence brief is to review the best available data and research evidence on enhancing the delivery of comprehensive care for people living with HIV in Canada, three elements of a potentially comprehensive approach to addressing this problem and its causes, and key implementation considerations related to each of the elements. In addition, as noted in Box 2, while this brief strives to address all people, where possible it also gives particular attention to equity-related considerations for Indigenous peoples.

THE PROBLEM

Key challenges associated with enhancing the delivery of comprehensive care for people living with HIV in Canada include that:

- the burden of HIV remains an important public-health issue and continues to affect those who are often stigmatized and marginalized in society;
- people living with HIV who are on medications are living longer with HIV and with more chronic conditions;
- progress still needs to be made towards meeting targets for reducing the burden of HIV, which will require addressing complex and inter-related challenges that are often faced by people living with HIV; and
- many system-level factors can make it complicated to ensure that people living with HIV are supported through transitions in care and across health and social systems.

We describe each of these factors in turn below based on data and evidence we identified from our searches, as well as from insights we identified through the key informant interviews we conducted during the preparation of this evidence brief.

Box 2: Equity considerations

A problem may disproportionately affect some groups in society. The benefits, harms and costs of elements to address the problem may vary across groups. Implementation considerations may also vary across groups.

One way to identify groups warranting particular attention is to use “PROGRESS,” which is an acronym formed by the first letters of the following eight ways that can be used to describe groups†:

- place of residence (e.g., rural and remote populations);
- race/ethnicity/culture (e.g., First Nations and Inuit populations, immigrant populations and linguistic minority populations);
- occupation or labour-market experiences more generally (e.g., those in “precarious work” arrangements);
- gender;
- religion;
- educational level (e.g., health literacy);
- socio-economic status (e.g., economically disadvantaged populations); and
- social capital/social exclusion.

The evidence brief strives to address all Canadians, but (where possible) it also gives particular attention to one group:

- Indigenous peoples.

Many other groups warrant serious consideration as well, and a similar approach could be adopted for any of them.

† The PROGRESS framework was developed by Tim Evans and Hilary Brown (Evans T, Brown H. Road traffic crashes: operationalizing equity in the context of health sector reform. *Injury Control and Safety Promotion* 2003;10(1-2): 11–12). It is being tested by the Cochrane Collaboration Health Equity Field as a means of evaluating the impact of interventions on health equity.

The burden of HIV remains an important public-health issue and continues to affect those who are often stigmatized and marginalized in society

In 2016 there were an estimated 63,100 people living with HIV in Canada, six Canadians are infected with HIV every day, and one in seven of those infected with HIV in Canada are not aware of their infection.(14; 15) In 2017, there were 2,402 new HIV cases reported and the national diagnosis rate was 6.5 per 100,000 population.(16) Ontario accounted for the highest number and proportion of reported HIV cases (n=935, 39%), followed by Quebec (n=670, 28%), Alberta (n=282, 12%) and British Columbia (n=187, 8%).(16) The most recent statistics from the Public Health Agency of Canada (from 2016) indicate that the transmission of HIV occurs through male-to-male sexual contact (53%), heterosexual sexual contact (33%), injection drug use (11%) and male-to-male sexual contact combined with injection drug use (3%).(15)

HIV primarily affects groups that are often stigmatized and/or marginalized in society. Specifically, 49% of people living with HIV are gay, bisexual and other men who have sex with men, 15% are people who inject drugs, and just under 10% are Indigenous (even though Indigenous peoples comprise only 4.9% of the population – we return to the disproportionate burden of HIV among Indigenous peoples in the equity section below).(17)

People living with HIV who are on medications are living longer with HIV and with more chronic conditions

While the incidence rates and the groups that HIV affects have remained relatively stable in recent years, the age profile of the HIV epidemic in Canada has changed, with more older adults now living with HIV. Key reasons for people living longer with HIV are the enhanced treatment options that are available and that individuals are increasingly receiving an HIV diagnosis later in life (e.g., the 30-39 age group represents 31% of new infections, which is the highest as compared to other age groups).(16) Although the number of people living longer with HIV is increasing, it is important to note that life expectancy for people living with HIV still lags behind that of the HIV-negative general population.(9; 18; 19)

The shift in the age profile means that more people living with HIV are also living with multiple chronic conditions, such as cardiovascular disease, diabetes and cancer.(9; 20-22) While the association between aging and chronic disease is well documented, it is more pronounced among people living with HIV.(23) This is driven by the effects of long-term ART, as well as the negative impact of broader structural factors related to the social determinants of health that affect health outcomes, and the political, social and economic contexts that shape efforts to address these structural factors.(24) Another aspect is HIV-associated neurocognitive disorders (HAND) which is also common in people living with HIV.(25)

Ultimately, this means that the number of people living with HIV who require complex care and are living with different forms of disability is increasing. Disability may include physical, cognitive, mental and emotional symptoms and impairments, as well as challenges in daily activities.(26) As a result, HIV is increasingly viewed as a complex condition, which requires models of care delivery that are able to address this complexity.

Box 3: Mobilizing research evidence about the problem

The available research evidence about the problem was sought from a range of published and 'grey' research literature sources. Published literature that provided a comparative dimension to an understanding of the problem was sought using three health-services research 'hedges' in MedLine, namely those for appropriateness, processes and outcomes of care (which increase the chances of us identifying administrative database studies and community surveys). Published literature that provided insights into alternative ways of framing the problem was sought using a fourth hedge in MedLine, namely the one for qualitative research. Grey literature was sought by reviewing the websites of a number of domestic and international organizations, such as the Ontario HIV Treatment Network, B.C. Centre for Excellence in HIV/AIDS, CATIE, Public Health Agency of Canada, the Organisation for Economic Cooperation and Development and UNAIDS.

Priority was given to research evidence that was published more recently, that was locally applicable (in the sense of having been conducted in Canada), and that took equity considerations into account.

Progress still needs to be made towards meeting targets for reducing the burden of HIV, which will require addressing complex and inter-related challenges that are often faced by people living with HIV

As noted earlier, Canada and some provinces have supported achieving (and surpassing) the 90-90-90 targets.(1-4) Planned efforts to achieve these targets have been included in the Pan-Canadian STBBI Framework (but with an extended target date of 2030 instead of 2020 set by UNAIDS and WHO), which is focused on four pillars: 1) prevention; 2) testing; 3) initiation of care and treatment; and 4) ongoing care and support.(5)

The most recent indicators for the 90-90-90 targets indicate that in 2016:

- 86% of Canadians living with HIV were diagnosed;
- 81% of Canadians diagnosed with HIV were on treatment; and
- 91% of HIV-positive Canadians on treatment had achieved viral suppression.

The comparatively good news is that the majority of people living with HIV have been diagnosed and engaged in care. Also, the overall incidence rates remain stable.

However, these facts do not tell the full story. In particular, it is important to note that progress towards the 90-90-90 targets is calculated with only those included in the previous category. Including all people living with HIV in the calculation shows that in 2016:

- 86% of Canadians living with HIV were diagnosed;
- 69% of those with HIV (not just diagnosed) were on treatment; and
- 63% of those with HIV (not just on treatment) had achieved viral suppression.

It is also important to consider the following:

- the targets do not focus on populations that are hardest to reach (e.g., for a variety of social/structural reasons such as, lack of stable housing) and not engaged in the care cascade to improve their health outcomes and prevent further transmission;
- the targets focus on those living with HIV and not on prevention and/or addressing the wide array of different types of care that may be required (e.g., enhanced cancer screening and improved prevention and management of comorbidities) or structural issues that put people at risk for HIV and make it difficult for them to subsequently be engaged in care (although the recent federal framework does include prevention as one of the four pillars of the strategy);(27; 28)
- there are priority populations with increasing rates of HIV incidence (e.g., people who inject drugs), as well as groups that are disproportionately affected by HIV that require focused attention (e.g., Indigenous peoples, gay, bisexual and other men who have sex with men, and African, Caribbean and Black communities – including men and women from parts of Africa and the Caribbean where HIV is endemic);
- differences in what is considered virally suppressed (e.g., some provinces use the definition of only one detectable viral load in a year and others use a more conservative definition of two undetectable viral loads in a year); and
- the time lag in publishing pan-Canadian data is long (e.g., the Public Health Agency of Canada's most recent estimates are from 2016), which makes it difficult to respond to emerging challenges in a timely manner.

Efforts towards achieving these targets, as well as engaging the most hard-to-reach populations and strengthening prevention efforts, will need to focus on addressing many complex and inter-related challenges, such as HIV-related stigma and discrimination, implications related to criminalization of HIV non-disclosure, poverty, food security, homelessness, cognitive impairments, and mental health and substance-use problems.(29-32) Each of these challenges can pose difficulties in the steps in the care cascade and therefore

in progress towards achieving an undetectable viral load. For example, as compared to other chronic diseases, the stigma associated with living with HIV is a unique consideration given that levels of stigma are higher in HIV compared to other chronic conditions. In addition, the criminalization of HIV non-disclosure can have a number of negative consequences related to HIV diagnosis and care, including contributing to additional stigma and discrimination and dissuading people from getting tested. As a result, HIV-related stigma and discrimination has been identified as one of the biggest challenges facing people living with HIV,(33) and it has been found to be associated with increased rates of depression, lower social support, anxiety, quality of life, physical health, emotional and mental distress, and sexual risk.(34)

Many system-level factors can make it complicated to ensure that people living with HIV are supported through transitions in care and across health and social systems

A number of system-level challenges further complicate efforts to enhance the delivery of comprehensive care for people living with HIV in Canada. We describe several notable challenges related to health-system governance, financial and delivery arrangements.

Governance arrangements

There are two main factors related to governance arrangements that create challenges to enhancing the delivery of comprehensive care for people living with HIV. First, there is jurisdictional complexity because decision-making authority for addressing the many social determinants of health that are an important part of providing comprehensive HIV care and support spans a wide variety of government departments and bridges health and social systems. Moreover, as noted in the equity section below, there is a ‘patchwork’ of care in the federal and provincial/territorial governmental roles in the delivery of healthcare for Indigenous peoples.(35; 36)

Second, there are challenges in national HIV-related surveillance data. The national HIV/AIDS Surveillance System is maintained by the Public Health Agency of Canada; immigration medical screening for HIV is provided by Immigration, Refugees and Citizenship Canada; and the Canadian Perinatal HIV Surveillance Program is managed by the Canadian Pediatric AIDS Research Group (and funded by the Public Health Agency of Canada).(16) These national surveillance systems and those managed by provincial agencies are important data assets, but coordination and integration of them has proven difficult. As a result, the time lag in providing access to data is often years, which constrains the ability to enable rapid data- and evidence-informed transformations at all levels of provincial and territorial health systems. Another constraint with respect to the lack of recent national HIV-related surveillance data is that it hinders country comparisons. For example, the UNAIDS country factsheets for Canada are empty and the 2018 edition of the UNAIDS data does not include any country-specific data on Canada.(37; 38)

Financial arrangements

The main challenges related to financial arrangements relate to the cost barriers that many people living with HIV encounter. Key challenges are described in turn below and include: 1) the cost of ART and the variation across provinces and territories in the nature and extent of public coverage for HIV-related treatment and other needed treatments; 2) many require care from allied health professionals for which the nature and extent of public coverage also varies across the country; and 3) those living in rural and remote areas experience cost barriers to seeking specialty care in urban centres.

First, the cost of ART and other needed treatments can be substantial and the nature and extent of public coverage from provincial and territorial drug plans varies across the country, which can pose financial barriers to many (especially those without employer-based insurance who need to pay out-of-pocket). This in turn affects the ability for some to access and sustain treatment. International guidelines recommend the commencement of combination ART after diagnosis, as using ART earlier is associated with better clinical outcomes (e.g., decreased morbidity, mortality and risk of transmission).(39; 40) In Canada, the list price for

single-tablet regimens is roughly \$15,000 per year and all jurisdictions listed most ARTs under public drug programs, with the exception of Newfoundland and Labrador.(40) However, only some of the publicly funded provincial/territorial drug plans (the federal programs and plans in British Columbia, Alberta, New Brunswick, Prince Edward Island, Northwest Territories and Nunavut) provide universal coverage, and all other jurisdictions have either a co-payment or a deductible (or both) for ARTs.(40) Moreover, there is jurisdictional variability in terms of the criteria for the amount of individual subsidies (e.g., HIV diagnosis being the only requirement for eligibility for the subsidy, compared to including income and age to determine eligibility).(40) In addition, while the majority of jurisdictions list most ARTs in publicly funded provincial/territorial drug plans, coverage for other needed medications (e.g., to treat opportunistic infections) are often not included. This means that depending on where people live, they may pay different amounts for prescribed medications.

Second, many people living with HIV require care from allied health professionals for which the nature and extent of public coverage also varies across the country. Many allied health professionals (e.g., mental health professionals, occupational therapists and physiotherapists) are often not paid for by provincial/territorial health systems, unless their care is provided in a hospital or long-term care setting.

Lastly, those living in rural and remote areas often encounter unique challenges in accessing needed care (as covered in the following section about delivery arrangements). People living with HIV in rural and remote areas face financial challenges related to travelling longer distances to healthcare providers, including increased transportation costs, and taking time off from paid work.(41) In addition, a study on the rural/urban gap for HIV care in British Columbia found that people living with HIV in rural settings were more likely to be older, female, identify as having Indigenous ancestry, and a medical history of hepatitis C co-infection.(41)

Delivery arrangements

There are three main challenges associated with delivery arrangements for enhancing comprehensive care for people living with HIV: 1) the lack of timely access to diagnostic services (e.g., point-of-care testing); 2) primary-care providers often lack supports to provide truly comprehensive HIV care (i.e., that address both health and social challenges); and 3) those living in rural and remote areas may have limited access to care.

First, the ability to proactively diagnose HIV is limited in many provinces/territories given the lack of availability of point-of-care testing, which means that many are diagnosed late. Point-of-care testing for HIV was approved in Canada in 2005 and is a key public-health tool because it provides rapid access to test results within one clinical encounter through a finger-prick to obtain a small amount of blood.(42; 43) The literature suggests that those who are aware of their HIV status are more likely to adopt behaviours that lower the risk of transmission compared to those that do not know their status.(42; 44; 45)

A recent scoping review on point-of-care testing for HIV in Canadian settings found that:

- it had been implemented in five provinces (British Columbia, Alberta, Manitoba, Ontario and Quebec), with no such testing available in the Atlantic provinces or the territories;
- it had been implemented across a range of settings (e.g., correctional facilities, primary-care clinics, hospitals, outreach settings, and community-based organizations such as community health centres and sexual health clinics);
- it was unavailable in many rural and remote communities, including many First Nations, Inuit and Métis communities;
- priority populations have been a focus for testing, including Indigenous peoples, people who are incarcerated, LGBTQ individuals, men who have sex with men, people who inject drugs, and pregnant women; and
- overall the programs had high acceptance and satisfaction rates.(42)

In addition, even in jurisdictions where significant HIV point-of-care testing programs are available, delivering these programs to meet local need with sometimes constrained local capacity is an important challenge. There may also be challenges related to stigma, such as discomfort among physicians and patients in discussing HIV and testing. Moreover, point-of-care tests continue to represent a small percentage of HIV tests administered in Canada. Specifically, based on data from the only company with market approval for a point-of-care test in Canada (bioLytical), approximately 57,000 point-of-care tests were purchased in Canada in 2017, which represents approximately only 3-4% of the approximately 1.5 million blood-based tests done in Canada that year.(46) In contrast, point-of-care tests represent approximately 50-60% of HIV tests done in the United States, which has market approval for several point-of-care tests.(46)

The Action Plan 2015-2020 for point-of-care testing in Canada outlines areas to improve access, which broadly related to ways to:

- enhance primary prevention (e.g., providing education about prevention and transmission of HIV);
- increase awareness of (e.g., by using testing reminders for high-risk populations) and access to point-of-care testing (particularly where it is not currently available and populations who could benefit most) in order to increase testing rates (particularly among high-risk groups);
- make it easier for clinicians to provide point-of-care testing across Canada (e.g., by offering a billing code, providing training to health professionals, those providing support in social systems and lay providers); and
- strengthen health and social systems in ways that enable the use of point-of-care testing (e.g., strengthening collaboration among point-of-care testing sites for high-risk groups in rural, suburban and urban areas, supporting the development and approval of testing innovations such as multiplex testing and self-testing options, and developing and promoting standardized national and provincial standards).(43)

While the action plan sets Canadian goals for implementation of point-of-care testing, the variability in access both within and between provinces and territories means that jurisdictions have different starting points, which will need to be taken into consideration in moving forward.

Second, approaches to care for people living with HIV has shifted from specialist-provided care to primary care, with a focus on the prevention and management of comorbidities.(9) For example, Ontario-based research found that family physicians with low or medium HIV caseloads were the most common care provider for people living with HIV.(9) This can have benefits, such as having one ‘most responsible’ primary-care provider for care related to HIV and other needs (e.g., cancer screening for prevention and for chronic diseases and/or disabilities that often emerge as people age).(9) However, other Ontario-based research found that receipt of ART was significantly lower in those receiving care from a family physician who had five or fewer patients with HIV.(47) It can also create other challenges such as primary-care providers requiring support (including sensitivity training for how to work with marginalized populations in a culturally sensitive/appropriate way) to provide care in an area that they may have had little exposure to or training in, and for ensuring access to comprehensive, continuous and coordinated care across a range of specialists when needed. An additional consideration is that what is included in comprehensive packages of care and support, as well as how that care is made available, can vary widely. This variability can depend on the recency of exposure, whether someone is living with one or more additional infections (e.g., hepatitis C) or chronic conditions, age, ethnocultural background (e.g., to ensure culturally appropriate care), and the nature and extent of other social challenges faced (e.g., poverty, employment, housing, etc.).

Lastly, getting reliable and consistent access to a primary-care provider and to needed speciality care can be challenging for people in rural and remote areas and/or other areas with limited access to care. A study conducted on physician speciality availability in Ontario for HIV care found that family physicians were the only speciality available in rural settings.(9) People living in rural or remote areas often experience difficulties accessing healthcare services, which affects many people given that:

- approximately one in five (19%) Canadians live in rural areas (defined by Statistics Canada as those with a population less than 1,000 and with less than 400 persons per square kilometre);(48) and

- there are 292 remote communities in Canada with a total population of approximately 194,281 (remote communities do not have year-round access to roads or they rely on a third party for transportation such as ferry or airplane).(49; 50)

Given that health professionals, programs and services are not distributed equitably across geographic areas in Canada, people living with HIV in rural and remote areas often face barriers to accessing needed healthcare services.(51) These barriers include isolation from medical and psychosocial supports, and significant travel required for primary- and community-care supports and specialist care, that may have a negative impact on HIV care outcomes.(41)

Additional equity-related observations about the problem

As indicated in Box 2, for the purpose of this evidence brief, a focus has been placed on Indigenous peoples for additional equity-related considerations. We recognize that there are a number of groups that bear a disproportionate burden of HIV in Canada (e.g., gay, bisexual and other men who have sex with men, people who inject drugs, and African, Caribbean and Black communities – including men and women from parts of Africa and the Caribbean where HIV is endemic).(16) In considering equity-related observations about the problem, we emphasize a positive, strengths-based approach through Indigenous partnership to enhancing the delivery of comprehensive care for people living with HIV in Canada.

Access to care is influenced by a number of factors both within and external to the health system. How healthcare is handled for Indigenous peoples is particularly complex as care is delivered in unique ways at both the provincial/territorial and federal levels, in what is often referred to as a ‘patchwork’ of care.(35; 36) The federal government has policy authority for providing healthcare services for registered First Nations and recognized Inuit, where services are not provided by provincial/territorial health systems, through the First Nations and Inuit Health Branch of Health Canada.(52; 53) Supplementary health benefits are offered through the First Nations and Inuit Health Branch’s Non-Insured Health Benefits program, which acts as a supplement to the coverage provided by provincial/territorial health programs.

As the government moves to renew the nation-to-nation, Inuit-Crown, government-to-government relationship between Canada and First Nations, Inuit and Métis, it is important to consider historical legacies of colonization, cultural dispossession, and racism.(52; 54) There are different ways in which racism works, from the individual level to the structural.(55) Individual-level racism can introduce barriers to care, such as being denied treatment in a hospital based on assumptions about the person.(55) Structural racism refers to the ways in which systems and institutional arrangements create and reinforce inequities between groups.(56) Policy legacies have reinforced structural racism (e.g., social segregation through the residential school system), resulting in intergenerational trauma that continues to affect the physical and mental health of Indigenous peoples.(57; 58)

Indigenous peoples suffer significant health disparities when compared to the non-Indigenous population (e.g., life expectancy is shorter and avoidable mortality rates are higher among Indigenous peoples)(59; 60), including significant overrepresentation in the HIV epidemic. These continued inequities experienced by Indigenous peoples (in general and specifically in relation to HIV) emphasize the need for a sustained response that is attuned to the specific needs of Indigenous communities across Canada.

With respect to HIV, Indigenous peoples are disproportionately represented, and accounted for 20% of newly reported HIV cases in 2017, of which 17% were First Nations, 2% Métis and 0.2% Inuit.(16) In addition, the Canadian Aboriginal AIDS Network and the Public Health Agency of Canada note that:

- Indigenous women, youth and people who inject drugs are overrepresented in the HIV epidemic as compared to the general Canadian population;
- there is overrepresentation of Indigenous peoples in the Canadian prison system, which is linked to a higher risk of contracting HIV; and

- Indigenous peoples face increased vulnerability (as noted above) to HIV due to factors such as historical legacies of colonization, cultural dispossession and racism, as well as the social determinants of health (e.g., income and social status, childhood experiences and physical environments).(61; 62)

In addition, stigma and discrimination have been identified as key barriers to Indigenous peoples accessing needed health and social services.(63)

Citizens' views about key challenges related to enhancing the delivery of comprehensive care for people living with HIV in Canada

Three citizen panels – which engaged a total of 31 ethnoculturally and socio-economically diverse citizens who were living with HIV, had a family member living with HIV or had no experience with HIV– were convened in Winnipeg (Manitoba) on 22 March 2019, Hamilton (Ontario) on 5 April 2019 and St. John's (Newfoundland) on 12 April 2019. The Winnipeg panel consisted of panellists from western provinces (British Columbia, Alberta and Manitoba), the Hamilton panel consisted of panellists from Ontario, and the St. John's panel consisted of panellists from eastern provinces (Quebec, Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland and Labrador). For the Winnipeg panel, we tried to recruit panellists from Saskatchewan, but unfortunately were unsuccessful. Panellists were provided with an abridged version of the evidence brief prior to the citizen panel, which was written in plain language, and served as an input into citizens' deliberations.

During the deliberation about the problem, citizens were asked to share what they perceived to be the main challenges related to enhancing the delivery of comprehensive care for people living with HIV. They were also asked to identify any challenges that either they encountered personally, or that a member of their family had encountered with respect to: accessing care (in general and as a hard-to-reach and/or a stigmatized or marginalized group), managing multiple chronic conditions, addressing needs as people living with HIV age and/or in older adults with HIV, and accessing needed social supports. Panellists identified eight important challenges, which are summarized in detail in Table 1.

Table 1. Summary of citizens' views about challenges

Challenge	Description
Lack of comprehensive supports for HIV prevention	<ul style="list-style-type: none"> • Panellists raised three challenges related to comprehensive HIV prevention: <ul style="list-style-type: none"> ○ limited investments in inexpensive but highly effective forms of prevention (e.g., harm reduction); ○ lack of access, coverage for and health professional knowledge about pre-exposure prophylaxis (e.g., Truvada); and ○ existing models present barriers to effective testing and prevention (e.g., limited number of anonymous testing services). • Panellists emphasized that these prevention challenges are magnified for marginalized and stigmatized populations (e.g., Indigenous peoples, and particularly those living in remote communities; people who inject drugs; and people who are incarcerated).
Limited access to point-of-care testing	<ul style="list-style-type: none"> • Many panellists expressed frustration with challenges in accessing point-of-care testing, but there was variability in the concerns raised by panellists across the citizen panels. • Several panellists also questioned why access to home-based self-testing cannot be made available, while others expressed concern with this approach to testing given the lack of direct linkage to needed care and supports following a positive diagnosis. • In the Winnipeg citizen panel, panellists noted that while there are sexually transmitted infection clinics, many have long wait lists and are only open during business hours, which creates barriers to timely access to point-of-care testing. • In the Hamilton citizen panel, panellists shared some positive experiences with accessing point-of-care testing (e.g., in settings such as the Hassle Free Clinic), but they had concerns regarding the anonymity of the process. <ul style="list-style-type: none"> ○ Specifically, while accessing point-of-care testing is anonymous, panellists were concerned that positive HIV test results are reported to the local public-health authorities and about their perceived lack of control over whether and how their health information is shared. • In the St. John's citizen panel, panellists were most concerned with the overall lack of point-of-care testing in Atlantic provinces.
Stigma is pervasive and layered	<ul style="list-style-type: none"> • Most of the panellists felt that stigma is pervasive and can lead to overt forms of discrimination. • Panellists indicated that stigma is a key reason why HIV is different than other chronic conditions. <ul style="list-style-type: none"> ○ For example, one participant in the Hamilton panel shared that other chronic conditions would not have led them to not be able to live in their home in a rural community where the fear of being stigmatized and discriminated against is significant. • Stigma was described as layered and that individuals may live with multiple forms of stigma (e.g., people living with HIV who are gay), which can create significant barriers to care, including testing and engaging in care. • A few panellists experienced stigma by health professionals after requesting HIV testing and thought that this type of stigma can also lead to avoiding testing. • The criminalization of HIV non-disclosure was raised by a number of participants as contributing to the increased stigmatization of living with HIV. • In terms of marginalized groups, panellists felt that Indigenous peoples were the most marginalized and stigmatized of all the groups discussed.

Challenge	Description
	<ul style="list-style-type: none"> • One panellist described challenges with social inclusion and provided an example of experiencing stigma when trying to find faith-based support in the community after diagnosis.
Lack of public awareness and education to address stigma	<ul style="list-style-type: none"> • Many panellists described an overall lack of ‘social education’ as perpetuating stigma, which is closely linked with the previous challenge. • High-school health education was felt to be fear-based and perpetuated the stigma associated with sexually transmitted infections. • Panellists also thought that sex education was happening too late in high school and that education was needed in middle school. • A few panellists also had concerns that HIV is no longer viewed by the public as a problem (e.g., young people not being aware of it as an issue) and that the awareness generated in the 1980s and 1990s has been lost. • Similarly, some panellists felt that pre-exposure prophylaxis may give a false sense of security and that education in this area was lacking.
Privacy and confidentiality in testing and care are not respected	<ul style="list-style-type: none"> • A number of panellists had concerns with privacy and confidentiality related to seeking HIV testing or care in rural and remote communities. • For example, some panellists did not trust that their results would remain confidential and feared that health professionals or administrators within primary-care practices would disclose HIV status to the patient’s family or members of the community. • One panellist cited this as the reason for leaving the small community and seeking care in a large city.
Limited access to social-system supports	<ul style="list-style-type: none"> • Panellists expressed that limited access to social-system supports was one of the biggest barriers to enhancing comprehensive care for people living with HIV. • Social-system supports were described as a core component, above health considerations, and one panellist summarized the point as “you need the basics, it’s survival.” • Panellists described limitations with community capacity, primarily lack of opportunities for meaningful engagement in policy/governance as well as ability for self-determination to derive culturally appropriate policy and programs across health and social systems.
Problem is magnified for the most vulnerable	<ul style="list-style-type: none"> • Several participants highlighted that all of the challenges discussed are magnified for the most vulnerable, including those whose basic needs are not being met, Indigenous peoples, people who are or have been incarcerated, and/or people who use drugs. • Panellists also noted that the social and structural challenges faced by vulnerable populations make it hard to be tested and/or engaged and retained in care.
Lack of timely data and use of evidence in policy decisions	<ul style="list-style-type: none"> • A few panellists were frustrated with the lack of timely data in Canada and lack of consistency and standards in data collection across provinces and territories. • The lack of timely Canadian data was also found to hinder cross-country comparisons regarding the 90-90-90 targets (e.g., the UNAIDS country factsheet for Canada is empty). • Panellists also thought that research evidence was not used in many policy decisions and gave the example of point-of-care testing, noting that if decisions were based on evidence then the testing would be available more broadly.

THREE ELEMENTS OF A POTENTIALLY COMPREHENSIVE APPROACH FOR ADDRESSING THE PROBLEM

Many approaches could be selected as a starting point for deliberations about an approach for enhancing the delivery of comprehensive care for people living with HIV in Canada. To promote discussion about the pros and cons of potentially viable approaches, we have selected three elements of a potentially comprehensive approach to addressing the problem. The three elements were developed and refined through consultation with the steering committee and key informants who we interviewed during the development of this evidence brief. The elements are:

- 1) strengthening comprehensive HIV care within the health system;
- 2) providing supports across social systems to address all of the challenges faced by people living with HIV; and
- 3) adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems.

The elements could be pursued separately or simultaneously, or components could be drawn from each element to create a new (fourth) element. They are presented separately to foster deliberations about their respective components, the relative importance or priority of each, their interconnectedness and potential of or need for sequencing, and their feasibility.

The principal focus in this section is on what is known about these elements based on findings from systematic reviews. We present the findings from systematic reviews along with an appraisal of whether their methodological quality (using the AMSTAR tool) (9) is high (scores of 8 or higher out of a possible 11), medium (scores of 4-7) or low (scores less than 4) (see the appendix for more details about the quality-appraisal process). We also highlight whether they were conducted recently, which we define as the search being conducted within the last five years. In the next section, the focus turns to the barriers to adopting and implementing these elements, and to possible implementation strategies to address the barriers.

Box 4: Mobilizing research evidence about the elements of a potentially comprehensive approach to addressing the problem

The available research evidence about elements of a potentially comprehensive approach for addressing the problem was sought primarily from Health Systems Evidence (www.healthsystemsevidence.org), which is a continuously updated database containing more than 8,000 systematic reviews and more than 2,600 economic evaluations and costing studies of delivery, financial and governance arrangements within health systems. The reviews and economic evaluations were identified by searching the database for reviews addressing features of each of the elements.

The authors' conclusions were extracted from the reviews whenever possible. Some reviews contained no studies despite an exhaustive search (i.e., they were 'empty' reviews), while others concluded that there was substantial uncertainty about the element based on the identified studies. Where relevant, caveats were introduced about these authors' conclusions based on assessments of the reviews' quality, the local applicability of the reviews' findings, equity considerations, and relevance to the issue. (See the appendices for a complete description of these assessments.)

Being aware of what is not known can be as important as being aware of what is known. When faced with an empty review, substantial uncertainty, or concerns about quality and local applicability or lack of attention to equity considerations, primary research could be commissioned, or an element could be pursued and a monitoring and evaluation plan designed as part of its implementation. When faced with a review that was published many years ago, an updating of the review could be commissioned if time allows.

No additional research evidence was sought beyond what was included in the systematic review. Those interested in pursuing a particular element may want to search for a more detailed description of the approach elements or for additional research evidence about the elements.

Citizens' values and preferences related to the three elements

To inform the citizen panels, we included in the citizen brief the same three elements of a potentially comprehensive approach to addressing the problem as are included in this evidence brief. These elements were used as a jumping-off point for the panel deliberations. During the deliberations we identified 10 core values: 1) fairness/equity in access to health and social services; 2) empowerment (e.g., for self-advocacy); 3) privacy (e.g., for HIV test results); 4) trusting relationships between patients/clients, providers and organizations within health and social systems; 5) collaboration among patients/clients, providers and organizations within health and social systems; 6) basing decisions on data and evidence; 7) basing decisions on citizens' values and preferences; 8) ensuring excellent health outcomes; 9) continuously improving (e.g., quality of HIV-related data); and 10) accountability. The values expressed by panellists and their preferences for implementation are summarized within each element in Tables 2, 4 and 6.

Element 1 – Strengthening comprehensive HIV care within the health system

This element includes efforts to improve the availability and accessibility of services within the health system to comprehensively address the complex needs of individuals living with HIV. It recognizes that integrated approaches to care for people living with HIV are becoming increasingly focused on the care cascade, which represents the steps needed to achieve undetectable viral load, from HIV diagnosis to sustained access to ART.(7) Many provinces and territories have introduced, and are continuing to prioritize, system-level reforms towards integrated care for people living with complex conditions. However, providing comprehensive care for people living with HIV presents unique, complex and inter-related challenges (e.g., stigma and discrimination, poverty, housing insecurity and mental-health and substance-use problems) that warrant the development and implementation of programs and services tailored to each individual's particular needs, including the primary/specialty care interface.(64-66) Furthermore, there are priority populations with increasing rates of HIV incidence (e.g., people who inject drugs), as well as groups that are disproportionately affected by HIV (e.g., Indigenous peoples, gay, bisexual and other men who have sex with men, and African, Caribbean and Black communities) that require additional attention and culturally tailored services.(67) As such, this element focuses on identifying, tailoring, implementing and incrementally strengthening (through element 3) the use of relevant components of different models of care designed to address the unique needs of people living with HIV.

This element could therefore include a number of sub-elements, including:

- improving point-of-care testing (e.g., increasing access to testing and broadening who can provide the tests); and
- adopting patient-centred and 'whole body' approaches to care such as:
 - the chronic-care model (which focuses on providing self-management support as part of community resources, and delivery system design, decision support and clinical information systems as part of the organization of care in health systems) to ensure informed and activated patients and prepared and proactive practice teams;
 - patient-centred primary-care teams (e.g., such as the patient-centred medical home model) providing the full range of supports that are tailored to the needs of specific populations (e.g., chiefs, elders, knowledge keepers and translators involved in providing cultural and linguistic supports for Indigenous peoples); and/or
 - geriatric models of care that are sensitive to the unique needs of the increasing number of older adults living with HIV (including integration with long-term care settings).

Key findings from the citizen panels

A core theme across panels was the need to provide equitable access to “one-stop” comprehensive care, so that people can achieve optimal outcomes regardless of where they live and the challenges they face. In emphasizing the importance of a model such as the patient-centred medical home model, one panellist stated

that “the idea of being under a common roof is so appealing for people who are just beginning to access services and need to figure out how to live with their health issue.” The specific values and preferences that emerged from panels are summarized in Table 2.

Table 2. Summary of citizens’ values and preferences related to element 1

Values expressed	Preferences for how to implement the element
<ul style="list-style-type: none"> • Fairness/equity in access to health services • Empowerment (e.g., for self-advocacy) • Privacy (e.g., for HIV test results) • Trusting relationships between patients, health professionals and organizations within the health system • Collaboration among patients, health professionals and organizations within the health system 	<ul style="list-style-type: none"> • Enhance access to comprehensive care through interprofessional team-based care and improve access to nursing stations as a site of service delivery for point-of-care testing, follow up and counselling on treatment options. • Ensure privacy of testing and increase the availability and equal access to point-of-care testing across Canada. • Provide access to self-testing options (as noted in Table 1, views on this were mixed with some having concerns about lack of linkage to needed care supports following a positive diagnosis). • Reduce stigma to build trusting relationships between patients and health professionals (e.g., through renewed public education efforts). • Empowering self-advocacy through education. • Improve electronic health records to allow for seamless transitions in care (e.g., a universally accessible electronic health record system that is easy-to-use, secure and that all parties involved in care can see). • Bring care to the individual, especially for marginalized and hard-to-reach populations through mobile units or virtual care.

Key findings from systematic reviews

In total, we identified 18 systematic reviews that related to strengthening comprehensive HIV care within the health system.

For the first sub-element – improving point-of-care testing – we found two systematic reviews that examined point-of-care testing in the context of HIV. The first was a recent low-quality review that assessed the acceptability of, and preference for, rapid point-of-care HIV testing in youth.(68) The review found that rapid methods were selected the majority of the time when youth were given an option between rapid and traditional testing methods, suggesting that young people accept and prefer point-of-care HIV tests when offered, rather than having to proactively ask for the test.(68) The second recent high-quality review evaluated the impact of the point-of-care CD4 testing program, with an emphasis on retention in pre-ART care and time to assessment for ART eligibility.(69) This review suggests that point-of-care CD4 testing can improve care retention prior to initiating ART and can also reduce time to eligibility assessment.(69) We did not identify any reviews focused on the means by which point-of-care testing can be improved. However, the reviews we found clearly outline the importance of offering rapid testing to young people, and of the benefits of point-of-care testing on retention rates and time to eligibility assessment for ART.(68; 69)

With respect to the second sub-element – adopting patient-centred and ‘whole body’ approaches to care – we found 16 systematic reviews that ranged in quality. Of these, two recent high-quality systematic reviews focused on adherence in medication management. One review highlighted the rates of medication adherence among Indigenous peoples in Australia with chronic conditions and identified patient- and provider-reported barriers to and facilitators of adherence. This review found that adherence rates were lower among Indigenous peoples as compared to non-Indigenous populations, and highlighted the following barriers to adherence:

- having other priorities, including sociocultural obligations;
- cost;
- sharing or swapping medicines;
- stopping medicines once feeling better;
- issues obtaining medicines while away from home;
- forgetting to take medications;
- religious values; and
- inadequate safe storage for medicines at home.(70)

In terms of facilitators, dose administration aids, Indigenous community engagement and involvement in medication dispensing, and medication-cost reductions were shown to improve adherence.(70) The other review explored the effects of providing physicians with feedback about their patients' medication adherence, which was not found to improve prescribed medication adherence, patient outcomes, or health resource use.(71)

Four reviews focused on issues and strategies related to linkage, retention and/or re-engagement in HIV care. One recent high-quality meta-analysis suggested that although the overall linkage to HIV care was high in the included studies, the factors that were associated with negative linkage outcomes (e.g., delayed entry into HIV care or never having accessed care), included:

- acquiring HIV through heterosexual contact or injecting drug use;
- being of younger age at diagnosis;
- having lower education levels;
- feeling well at diagnosis; and
- being diagnosed in a setting other than a sexually transmitted infection clinic.(72)

Another recent low-quality review found that an individual's psychological state upon HIV diagnosis was an important determinant of HIV care engagement, with negative emotions contributing to disengagement, and patient education and counselling facilitating engagement.(73) The same review suggested that collaborative patient-provider partnerships and supportive social networks were important facilitators of care linkage and retention, while life demands and geographical distance posed barriers to engagement.(73) Furthermore, one recent low-quality review found that strengths-based case-management counselling sessions yielded positive effects for both linkage and retention in HIV care outcomes among patients.(74) The same review found that strategies such as co-locating services, implementing an interactive provider-reminder system, and encouraging patients to adhere to their medical visits via in-person and telephone contacts improved HIV care retention rates.(74) In terms of linkage to HIV care, the same review found that implementing a policy of scheduling an orientation visit when new clinic patients book an appointment improved care linkage.(74) Finally, one older medium-quality review identified several strategies that increase retention in HIV primary care, including:

- building on patient strengths and assisting with care navigation;
- reducing barriers through appointment accompaniment;
- providing transportation support, outreach, and culturally competent care;
- sending appointment reminders; and
- involving peers as workers on the care team.(75)

Two reviews focused on the perspectives of people living with HIV and various aspects of their care. One high-quality review found people living with HIV commonly cited the following in relation to their access to needed care:

- impersonal, rushed, discriminatory and/or judgmental staff treatment of patients;
- long wait times;
- limited financial resources or difficulty paying service fees; and
- fear of disclosure.(76)

To address these challenges, the second review identified seven aspects of care that are valued by people living with HIV: 1) strong relationships with care providers; 2) provider expertise in HIV; 3) consideration of practical considerations to care provision; 4) availability of support and information to enable self-care; 5) coordination of services; 6) confidentiality of all aspects of care; and 7) patient engagement in decisions about treatment.(77)

Two reviews evaluated interventions that sought to integrate HIV services and mental-health supports for adults living with HIV. One recent high-quality review outlined several promising models integrating HIV and mental-health services, including: 1) single-site integration, which enhanced interdisciplinary collaboration and decreased access barriers for patients; 2) multi-facility integration, which supported those with multiple co-morbid conditions through collaborative networks of specialized centres; and 3) integrated care coordinated by an individual case manager, which supported continuity of care.(78) Another recent high-quality review found that group psychosocial interventions that were based on cognitive behavioural therapy approaches improved depression scores among adults living with HIV/AIDS.(79)

Finally, we identified five reviews that examined different delivery models for chronic-disease management. Of these five reviews, three were focused on the chronic-care model, one addressed primary-care models, and one explored HIV-specific care models. One older medium-quality review examining the effectiveness of the chronic-care model for individuals with HIV found that decision support and clinical information systems interventions contributed positively to a number of outcomes, including immunological or virological outcomes, medical outcomes, psychosocial outcomes, and economic outcomes.(80) Two recent reviews, one of low quality and the other of medium quality, identified key patient- and/or provider-reported facilitators to implementing a chronic-care model in primary care, including:

- ensuring acceptability of chronic-care models to both providers and patients;
- preparing providers for change;
- providing support for patients;
- providing appropriate resources to support the model;
- engaging stakeholders (e.g., in the development, implementation and monitoring and evaluation of the model);
- building strong networks and increased communication among providers and organizations engaged in the model;
- fostering an organizational culture that supports the implementation of multidisciplinary or patient-centred care;
- ensuring operationalization of all the chronic-care model components;
- building strong, committed and engaging leadership, including supportive administration and supervisors; and
- building provider knowledge about the chronic-care model and their role in it.(81; 82)

In addition to these facilitators, several barriers were also identified in the lower-quality review examining the implementation of the chronic-care model in primary-care settings, including:

- lack of staff execution of intervention processes;
- staff/leadership turnover and loss;
- lack of dedication and interest from leadership and limited implementation resources;
- lack of accountability and support from senior leadership; and
- providers who had misconceptions, were unconvinced of the model's effectiveness, or lacked information.(81; 82)

The fourth review pertaining to delivery models evaluated four different types of care models for adults living with HIV: speciality-based care, advanced practitioner-based care, team-based care and shared care.(83) This review found that speciality-based care was conducive to improved patient health outcomes, with increased clinician experience leading to better outcomes.(83) However, limited data were available to describe the

effectiveness of other care models.(83) The fifth review sought to isolate the effects of key aspects of Canadian primary-care reforms on health-system performance. This review found that while the team-based aspects of these reforms were associated with statistically significant decreases in emergency-department visits, evidence on hospital admissions produced variable findings.(84)

A summary of the key findings from the synthesized research evidence is provided in Table 3. For those who want to know more about the systematic reviews contained in Table 3 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 1.

Table 3: Summary of key findings from systematic reviews relevant to Element 1 – Strengthening comprehensive HIV care within the health system

Category of finding	Summary of key findings
Benefits	<p>Improving point-of-care testing (e.g., access to testing and who can provide the tests):</p> <ul style="list-style-type: none"> • One recent high-quality review suggested that point-of-care CD4 testing can improve care retention prior to initiating ART and can also reduce time to eligibility assessment.(69) • One recent low-quality review found that young people accept and prefer rapid point-of-care HIV tests when offered, and that patients who selected a rapid point-of-care method were more likely to receive their test results within the follow-up period in comparison to those who chose a traditional test.(68) <p>Adopting patient-centred and ‘whole body’ approaches to care:</p> <ul style="list-style-type: none"> • One recent high-quality review evaluating programs or services that seek to integrate HIV and mental health services in adult populations identified several promising integration models involving HIV and mental health services, including: 1) single-site integration; 2) multi-facility integration; and 3) integrated care coordinated by an individual case manager.(78) • One older medium-quality review examining the effectiveness of the chronic-care model for individuals with HIV found that decision support and clinical information systems interventions contributed positively to a number of outcomes, including immunological or virological outcomes, medical outcomes, psychosocial outcomes and economic outcomes.(80) • One recent high-quality review found that group psychosocial interventions that were based on cognitive behavioural therapy have a positive impact on depression scores among adults living with HIV/AIDS.(79) • One recent low-quality review assessing patient and primary-care health outcomes for adults living with HIV across several different types of delivery models suggested that specialty-based care supported improved clinical outcomes.(83) • One older medium-quality review identified several strategies that improve retention in HIV primary care, including: 1) building on patient strengths and assisting with care navigation; 2) reducing barriers through appointment accompaniment, transportation support, outreach, and culturally competent care; 3) sending appointment reminders; and 4) involving peers as workers on the care team.(75) • One recent low-quality review found that strengths-based case management counselling sessions generated positive effects for both linkage and retention in HIV care outcomes among patients.(74) • One recent high-quality review found that the team-based aspects of Canadian primary-care reforms were associated with statistically significant decreases in emergency-department visits.(84) <ul style="list-style-type: none"> ○ The same review found that team-based models, blended capitation models and pay-for-performance incentives were associated with modest improvements in care processes.(84) • One recent low-quality review suggested that assessing organizational capacity and needs before and during the implementation of the chronic-care model in primary-care settings are key facilitators.(82)
Potential harms	<p>Adopting patient-centred and ‘whole body’ approaches to care:</p> <ul style="list-style-type: none"> • One recent high-quality review found several factors associated with delayed or absence of HIV care linkage: 1) acquiring HIV through heterosexual contact or injecting drug use; 2) being of younger age at diagnosis; 3) having lower education levels; 4) feeling well at diagnosis; and 5)

	<p>being diagnosed outside a sexually transmitted infection clinic.(72)</p> <ul style="list-style-type: none"> • One recent low-quality review found that poor patient-provider relationships had a negative impact on HIV treatment linkage and retention; however, this may be addressed through provider education.(73)
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> • No economic evaluations or costing studies were identified that provided information about costs or cost-effectiveness
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	<ul style="list-style-type: none"> • Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> ○ Not applicable • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> ○ Not applicable – no ‘empty reviews’ were identified • No clear message from studies included in a systematic review <ul style="list-style-type: none"> ○ Adopting patient-centred and ‘whole body’ approaches to care: <ul style="list-style-type: none"> ▪ No clear message was derived from one recent high-quality review that assessed the effects of providing physicians with feedback about their patients’ medication adherence, finding that feedback provision to physicians did not improve prescribed medication adherence, patient outcomes, or health resource use.(71) ▪ No clear evidence emerged from one recent high-quality review on the effects of psychosocial group interventions on anxiety, stress and coping among adults living with HIV/AIDS.(79) ▪ One recent high-quality review suggested that while the sharing of health information facilitated inter-service communication and was viewed as important by some patients, there were also concerns regarding security and confidentiality.(77) ▪ One recent low-quality review found that while speciality-based care was conducive to improved patient health outcomes, limited data were available for the other care models examined (i.e., advanced practitioner-based care, team-based care, and shared care).(83) • One recent high-quality review found that the effects of the team-based aspects of Canadian primary-care reforms on hospital admissions were inconclusive.(84)
Key elements of the policy option if it was tried elsewhere	<ul style="list-style-type: none"> • No systematic reviews were identified that provided information on the sub-element if it was tried elsewhere
Stakeholders’ views and experience	<p>Adopting patient-centred and ‘whole body’ approaches to care:</p> <ul style="list-style-type: none"> • One scoping review found that the most frequently reported perspectives of people living with HIV on healthcare access included: 1) staff treatment of patients, which revealed that patients often described staff as impersonal, rushed, discriminatory and/or judgmental; 2) long wait time; 3) limited financial resources or difficulty paying service fees; and 4) fear of disclosure.(76) • One recent high-quality review explored health professionals’ attitudes towards adherence to medicines by Indigenous peoples in Australia with chronic conditions, and found that across the included studies, health professionals expressed the view that Indigenous peoples in Australia have inadequate adherence to medications, which has a negative impact on their health outcomes.(70) • One recent medium-quality review identified several patient- and/or provider-reported facilitators to implementing a chronic-care model in primary care, including: 1) the acceptability of chronic-care models to both providers and patient; 2) preparing providers for change; 3) providing support for patients; 4) providing appropriate resources; and 5) engaging stakeholders.(81) • One recent high-quality review identified seven aspects of care that are valued by people living with HIV: 1) relationships with care providers; 2) provider expertise; 3) practical considerations; 4) support and information; 5) coordination of services; 6) confidentiality; and 7) patient engagement in decisions about treatment.(77) • One recent narrative review found that the declining HIV testing rates among older adults may be attributed to older patients not viewing themselves as being at risk of HIV infection.(85)

Element 2 – Providing supports across social systems to address all of the challenges faced by people living with HIV

This focus of this element is on ensuring that efforts to diagnose people living HIV and engaging them in care are comprehensive. This will require integrating care that people living with HIV receive from health systems (e.g., through the types of activities included in element 1) with those from social systems to address the many unique challenges they face that can make it difficult to get diagnosed and/or seek and remain engaged in needed care (e.g., mental health and addictions, stigma, poverty, housing and homelessness, employment, food security, criminalization).

This element could therefore include activities focused on integrated delivery, financial and governance arrangements in health and social systems, and possible activities in each of these areas are listed below.

- Delivery arrangements
 - Enhanced navigation supports for people living with HIV to ensure seamless care between health and social systems (e.g., support access to needed social supports through primary-care settings)
 - Interdisciplinary teams that include those who can provide access to needed supports from social systems
 - Peer-support networks to provide support with system navigation from those who have extensive experiential knowledge, as well as psychosocial supports from others with lived experience
- Financial arrangements
 - Flexible budgeting that allows for easier flow of funds between systems and re-deployment of funds within systems to address emerging needs and/or to integrate promising new approaches
- Governance arrangements
 - A shared governance model that enables collaborative decision-making across health and social systems (e.g., inter-ministerial policy development teams) and levels within them (e.g., through enhanced collaboration and coordination among provincial, regional and local decision-makers) to better support a ‘whole person’ approach to providing care and supports

Key findings from the citizen panels

Panelists viewed this element as being the most fundamental, yet potentially most difficult to achieve. There was consensus among participants at the panel in Winnipeg that actions towards strengthening social systems should be prioritized first given that doing so would address the underlying challenges (e.g., housing, poverty and stigma) that put people at risk for HIV and make getting diagnosed and engaged in care challenging. Deliberations about this element also emphasized that strengthening social systems is particularly important for hard-to-reach and marginalized groups, and that engaging peers with lived experience in providing supports and assistance with system navigation is crucial.

Table 4. Summary of citizens’ values and preferences related to element 2

Values expressed	Preferences for how to implement the element
<ul style="list-style-type: none"> • Fairness/equity in access to social services • Trusting relationships between clients, providers and organizations within social systems • Collaboration among clients, providers and organizations within social systems 	<ul style="list-style-type: none"> • Combine health and social systems supports under one roof to enhance coordinated care <ul style="list-style-type: none"> ○ One specific suggestion was to develop and implement community health teams for coordinating needed supports, especially following diagnosis when people are often vulnerable and need support ○ For example, it was emphasized that when people leave a physician’s office, they need to be connected with someone from the social system to ensure they can help with getting access to needed medications, healthy food and stable housing, as well as answer questions or get access to resources that are needed • Support system(s) navigation through community workers or peers with lived experience (e.g., a buddy system approach was identified as being important in each of the panels, especially for smaller areas where there may not be trained people to help) • Increase access to affordable supportive housing as well as investments in food banks • Combining and mobilizing existing supports (e.g., offering food when running a health clinic or needle exchange vans offering point-of-care testing)

Key findings from systematic reviews

We identified 15 systematic reviews that potentially relevant to these sub-elements, which related to providing supports across social systems that are needed to address the full range of challenges faced by people living with HIV.

Delivery arrangements

For delivery arrangements, we found nine systematic reviews that addressed efforts to integrate health- and social-system arrangements for people living with HIV. One recent medium-quality review found that the provision of housing support for people living with HIV was associated with the routine use of primary-care services.(86) Stable housing also increased the use of anti-retroviral medications among HIV-positive individuals, with lower adherence to medication associated with unstable housing.(86)

Five recent reviews, one high quality and four medium quality, found a number of benefits to enhanced navigation supports (e.g., case managers, patient navigators and nurse navigators) including:

- identification of barriers such as health insurance, employment, emotional and social support, transportation, and continuity of care;(87-90)
- improved attendance at appointments;(87; 91)
- improved linkage to and retention in care;(88)
- improved uptake of medication and suppression of viral load;(88) and
- decreased emergency-department visits.(91)

One recent scoping review examined ways in which the criminal justice system in the United States could be leveraged to increase HIV interventions among women.(92) The review found positive impacts on health knowledge and behaviour, such as increased condom use, decreased needle sharing, and increased HIV

knowledge and treatment adherence.(92) Different interventions were best suited for different criminal justice access points, including closed settings (e.g., prisons or jails), community settings (e.g., parole court, probation officers, or police departments) or other settings (e.g., transitional housing programs).(92) Further, in considering the implementation of HIV interventions in closed criminal justice settings in the United States, challenges were posed due to variability in local and state funding.(92)

Two recent medium-quality reviews found that effective linkage and delivery of care was facilitated by collaboration and communication among patients, providers (e.g., trained healthcare workers, support workers and case managers) and communities (e.g., patients, families and peers).(90; 93) The mechanisms necessary for improving communication across providers, such as an increased number of meetings, may impose costs.(90) In addition, the integration of care for chronic disease and HIV relies on institutional support and changes in organizational culture, such as the co-location of services and effective information sharing.(90) While integrated approaches to delivery were found to result in a range of benefits, reviews also found potential harms related to supporting people living with HIV. For instance, the integration of HIV and chronic-disease management was found to place an increased workload on staff, which may increase stress for health professionals.(90) Moreover, stigma, misinformation about HIV, anxiety, and fear may contribute to fear among patients and have a negative impact on linkage to care.(90; 93)

One recent scoping review assessed the integration of the social determinants of health into comprehensive shared-care plans.(94) The review identified several themes related to efforts for achieving such integration, which included the need for: 1) integrating health and social sectors; 2) enhancing interoperability (e.g., for decision supports between providing and receiving care and support, and for information systems that can be used to facilitate interactions, reduce errors, avoid redundant care and provide targeted information to those who need it); 3) standardizing concepts and interventions; 4) supporting process implementation; 5) addressing professional tribalism (i.e., where the values of other professions are not respected); and 6) ensuring patient centredness.(94)

Financial arrangements

We identified two low-quality reviews, one recent and one older, that focused on financial arrangements to support the integration of health and social systems. The first review found that three types of financial mechanisms can support inter-sectoral collaborative health-promotion activities: 1) dedicated earmarked funding by a ministry or agency; 2) delegated financing (e.g., funds allocated to an independent body such as a health-promotion foundation) and 3) joint budgeting between different sectors.(95) This review found that local government plays a crucial role in these financing mechanisms.(95)

The second review found that integrated funding for health and social care and supports resulted in some unintended consequences, such as premature hospital discharge and increased risk of readmission.(96) The review noted that the views of staff, patients and carers on their experiences with integrated funding were mixed and reported both positive outcomes (e.g., improved service access and knowledge) and negative outcomes (e.g., feeling less involved in care).(96) The review examined the potential for the integration of funding in coordinated care, but found no studies that focused exclusively on funding.(96) The studies included in this review focused instead on the collective efforts of integrated funding and integrated care.(96)

Governance arrangements

We identified three reviews that addressed governance arrangements to enable cross-sectoral collaboration. Two of the reviews addressed bridging inequities in health through inter-sectoral action. One of the reviews (a scoping review) explored concepts and frameworks to describe inter-sectoral processes and proposed definitions for four key terms:

- inter-sectoral action - working with more than one sector to address an issue of shared interest to achieve better results than those obtained working independently;

- inter-sectoral action for health - an established relationship between components of the health sector and components of another sector that has been formed to address a health issue, in a way which is more advantageous than single-sector action;
- inter-sectoral collaboration - working with more than one sector of society to take action on an area of mutual interest to achieve better results than those realized working independently; and
- inter-sectoral policy - policies concerning health that affect sectors external to health services, but typically developed in collaboration with the health sector.(97)

However, the authors of this review found an absence of a comprehensive conceptual framework on the topic, and noted that the development of a framework will contribute to robust future analyses of inter-sectoral action.(97)

The other reviews focused more on how governance approaches are being used. One of these reviews (also a scoping review) examined global cases of inter-sectoral government action for health equity, such as interventions targeting midstream or downstream determinants of health.(98) While this review found that implementation relied on cooperation and coordination between government sectors, the authors noted that greater knowledge is needed from a wider variety of stakeholders in order to understand the workings of government-centred inter-sectoral action.(98) Lastly, a recent low-quality review explored issues of equity in the Australian National Disability Insurance Scheme, with a focus on the key disparities that currently exist between health and health-related outcomes.(99) While the scheme is currently being implemented, the potential to improve population health was identified in the review.(99) Specifically, three interrelated equity-related themes were identified as being important to consider: 1) acknowledging differences between disability types and supporting an individual’s ability to exercise choice and control in their care; 2) using a market-based approach and to support an individual’s right to select the needed services and supports; and 3) being aware that local markets based on geographic diversity require significant time to develop and may be less achievable in ‘thin’ markets (i.e., rural and remote areas with limited numbers of health professionals).(99)

A summary of the key findings from the synthesized research evidence is provided in Table 5. For those who want to know more about the systematic reviews contained in Table 5 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 2.

Table 5: Summary of key findings from systematic reviews relevant to Element 2 – Providing supports across social systems to address all of the challenges faced by people living with HIV

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> • Delivery arrangements <ul style="list-style-type: none"> ○ Five recent reviews, one high quality and four medium quality, found the following benefits to enhanced navigation supports (e.g., case managers, patient navigators and nurse navigators) including: <ul style="list-style-type: none"> ▪ identification of barriers such as health insurance, employment, emotional and social support, transportation, and continuity of care;(87-90) ▪ improved attendance at appointments;(87; 91) ▪ improved linkage to and retention in care;(88) ▪ improved uptake of medication and suppression of viral load;(88) and ▪ decreased emergency-department visits.(91) ○ One recent medium-quality review found that cross-cutting collaborations and relationships among patients, providers, families, and communities contributed to improved communication.(90) ○ One recent medium-quality review found that the provision of housing support for people living with HIV was associated with the routine use of primary-care services.(86) ○ One recent scoping review found that the criminal justice system can be leveraged to increase HIV interventions in closed, community or other settings.(92) ○ One recent medium-quality review found that effective linkage to care interventions emphasized task-shifting, community-based outreach, integration of HIV care into primary health services and provider-initiated care.(93) <ul style="list-style-type: none"> ▪ The review also noted cross-cutting themes of successful interventions, including diverse provider

	<p>feedback, active referral systems, case management and support, family and peer support, and positive interactions with providers.(93)</p> <ul style="list-style-type: none"> • Financial arrangements <ul style="list-style-type: none"> ○ One recent low-quality review found that three types of financial mechanisms can support inter-sectoral collaborative health-promotion activities: 1) dedicated earmarked funding; 2) delegated financing; and 3) joint budgeting.(95) • Governance arrangements <ul style="list-style-type: none"> ○ One recent medium-quality review found that high-level support for the integration of HIV and chronic-disease services is necessary for success, which may require changes to organizational culture so that the competing cultures of those involved in care can be navigated and supported.(90)
Potential harms	<ul style="list-style-type: none"> • Delivery arrangements <ul style="list-style-type: none"> ○ One recent medium-quality review found that the integration of HIV and chronic-disease management places an increased workload on staff, possibly increasing the burden of stress.(90) <ul style="list-style-type: none"> ▪ The review also found that the stigma expressed by providers can limit the accessibility of services and contribute to fear among clients.(90) ○ One recent medium-quality review found that issues such as misinformation about HIV, anxiety, fear and stigma had a negative impact on linkage to care initiatives.(93) • Financial arrangements <ul style="list-style-type: none"> ○ One older low-quality review examining integrated funding schemes in healthcare found unintended consequences, such as premature hospital discharge and increased risk of readmission.(96)
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> • Delivery arrangements <ul style="list-style-type: none"> ○ One recent medium-quality review found that the mechanisms necessary for improving communication among service providers (e.g., increased number of meetings) may impose transaction costs.(90) • Governance arrangements <ul style="list-style-type: none"> ○ One recent scoping review examining HIV interventions in the U.S. criminal justice system found that while programs in a closed setting are promising, there are challenges due to variability in local and state funding.(92)
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	<ul style="list-style-type: none"> • No clear message from studies included in a systematic review <ul style="list-style-type: none"> ○ One recent low-quality review assessing the inclusion of the social determinants of health in peer-reviewed literature found that most articles had a minimal focus on this topic.(100) ○ One older low-quality review examining the potential of integrated funding in coordinated care found no studies that focused exclusively on funding, rather, studies assessed the collective efforts of integrated funding and integrated care.(96) ○ One older low-quality review explored concepts and frameworks to describe inter-sectoral processes and found a lack of comprehensive conceptual frameworks in the area.(97)
Key elements of the policy option if it was tried elsewhere	<ul style="list-style-type: none"> • Governance arrangements <ul style="list-style-type: none"> ○ One recent low-quality review explored equity issues with the Australian National Disability Insurance Scheme and found three main themes related to inequities in care and outcomes: 1) differences between disability type; 2) differences emerging from disability services and support markets; and 3) widening inequities between groups on the basis of locality.(99) ○ One older medium-quality review identified global cases of inter-sectoral action for health equity involving governments, finding that many inter-sectoral actions were implemented with cooperation and coordination between government sectors.(98)
Stakeholders' views and experience	<ul style="list-style-type: none"> • Delivery arrangements <ul style="list-style-type: none"> ○ One recent medium-quality review evaluated the state of knowledge for integrating the social determinants of health into comprehensive shared-care plans by reviewing consensus-seeking workshops of multidisciplinary leaders.(94) <ul style="list-style-type: none"> ▪ The review found that stakeholders involved in these workshops were involved in informatics, social and health systems, and concluded that the collaboration of these fields relies on the identification of needs for information, clear standards, access to information, automated information discovery in databases, and the empowerment of citizens.(94) • Financial arrangements <ul style="list-style-type: none"> ○ One older low-quality review examined the views of staff, patients and carers on their experience with an integrated funding/care scheme. reporting both positive outcomes (e.g., improved service access and knowledge) and negative outcomes (e.g., feeling less involved in care).(96)

Element 3 – Adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems

This element focuses on a rapid-learning approach through the combination of health/social and research systems that at all levels (self-management, clinical encounter, program, organization, regional (or provincial) health authority, and government levels) is:

- anchored on the needs, perspectives and aspirations of people living with HIV through the ‘Greater Involvement of People Living with HIV/AIDS/Meaningful Involvement of People Living with HIV/AIDS’ principles (GIPA/MIPA) with a focus on improving care experiences and health at manageable per capita costs and with positive provider experiences;
- driven by timely data and evidence, including:
 - digital capture, linkage and timely sharing of data where systems capture, link and share (with individuals at all levels) data (from real-life, not ideal conditions) about patient experiences (with services, transitions and longitudinally) alongside data about other process indicators (e.g., clinical encounters and costs) and outcome indicators (e.g., incidence, prevalence and health status across different priority groups), and
 - timely production of research evidence through systems producing, synthesizing, curating and sharing (with individuals at all levels) research about problems, improvement options and implementation considerations;
- supported by appropriate decision supports and aligned governance, financial and delivery arrangements through:
 - appropriate decision supports where systems support informed decision-making at all levels with appropriate data, evidence, and decision-making frameworks, and
 - aligned governance, financial and delivery arrangements that allow systems to adjust who can make what decisions (e.g., about joint learning priorities), how money flows and how the systems are organized and aligned to support rapid learning and improvement at all levels; and
- enabled with a culture of and competencies for rapid learning and improvement where systems are stewarded at all levels by leaders committed to a culture of teamwork, collaboration and adaptability.

Key findings from the citizen panels

While panellists struggled to some extent with the specific concepts included in this element, there was consensus across panels about its importance, with one panellist in the St. John’s panel indicating that “it seems like a common sense approach.” A rapid-learning approach was thought to be more achievable than trying to reinvent entire health and social systems. Other panellists noted that important aspects of the approach are that small changes that are successful can be grown into larger initiatives, and that it seems to fit better for political cycles that also function on short timelines. Another panellist noted that using this approach for system redesign is reminiscent of when HIV medications were first starting to come out given that they had to be rapidly evaluated and adjusted.

Table 6. Summary of citizens’ values and preferences related to element 3

Values expressed	Preferences for how to implement the element
<ul style="list-style-type: none"> • Accountability • Collaboration among patients/clients, providers and organizations within health and social systems • Basing decisions on data and evidence • Basing decisions on citizens’ values and preferences • Continuously improving (e.g., the quality of HIV-related data) • Ensuring excellent health outcomes 	<ul style="list-style-type: none"> • Need for an accountable organization(s) that can identify what changes could be made and then independently monitor and evaluate, and intervene right away to make needed changes • Develop and implement an interconnected database that is standardized across provinces and territories to provide timely access to continuously updated and anonymous data and evidence to promote more learning and sharing across the country • Emphasize local solutions that can then be adapted for use elsewhere based on data and evidence and the values and preferences of citizens • Structures are needed to ensure processes are led by communities and meaningful engagement of people living with and affected by HIV (e.g., community councils that support people getting involved) • Empower communities to set their own priorities and create tailored responses to local issues • Develop a common language to facilitate collaboration among patients, health professionals and organizations within health and social systems

Key findings from systematic reviews (and key illustrative examples of learning plans relevant to elements 1 and 2)

We identified three systematic reviews that were deemed to be most relevant to adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems. In addition, the McMaster Health Forum also recently completed two rapid syntheses which were used to inform this element, with one focused on creating a rapid-learning health system in Ontario,(101) and the other on creating a rapid-learning health system in Canada.(102) The description of the element provided above is based on the definition derived in these two rapid syntheses, but with the first sub-element slightly re-framed to draw on the GIPA/MIPA principles to ensure engagement of people living with HIV. In Table 7, we provide a more detailed description of the four features of rapid-learning health and social systems, including the seven characteristics associated with them and examples of activities for each characteristic. Following this, to provide illustrative examples of what a high-level rapid-learning and improvement plan could look like for each of elements 1 and 2, we provide examples of such plans in Table 8 that have been adapted from the Ontario HIV Treatment Network. These examples focus on expanding HIV testing (for element 1) and integrating services used by people living with and at risk of HIV to reduce gaps and provide more holistic care and support (element 2).

The most recent rapid synthesis (from December 2018) was focused on creating a rapid-learning health system in Canada. While the findings are too detailed to report on here, two high-level points are noteworthy from it, which we list below.

- “The list of assets is remarkably rich for the health system as a whole and for the primary-care sector and elderly population specifically, even in many small jurisdictions, but there are a number of notable gaps across a number of jurisdictions, such as data about patient experiences often not being linked and shared in a timely way to inform rapid learning and improvement.
- “Some other sectors (e.g., home and community care) and populations (e.g., Indigenous peoples), many conditions (e.g., mental health and addictions) and some ‘treatments’ (e.g., surgery) have been or will be the focus of sustained efforts to create rapid-learning health systems in some jurisdictions.”(102)

These findings are notable in the context of HIV given the rich array of assets available across the country for pursuing a rapid-learning approach through a key sector for providing care to people living with HIV (i.e., primary care), and for an increasingly important population of people living with HIV (i.e., older adults). These assets could be leveraged to adopt a more fulsome rapid-learning approach for HIV in the country.

Table 7: Characteristics of rapid-learning health systems (RLHS) (table reproduced with permission from Lavis et al. 2018) (102)

Category	Characteristic	Examples
Patient-centred	Engaged patients: Systems are anchored on patient needs, perspectives and aspirations (at all levels) and focused on improving their care experiences and health at manageable per capita costs and with positive provider experiences	<ol style="list-style-type: none"> 1) Set and regularly adjust patient-relevant targets for rapid learning and improvement (e.g., improvements to a particular type of patient experience or in a particular health outcome) 2) Engage patients, families and citizens in: <ol style="list-style-type: none"> a) their own health (e.g., goal setting; self-management and living well with conditions; access to personal health information, including test results) b) their own care (e.g., shared decision-making; use of patient decision aids) c) the organizations that deliver care (e.g., patient-experience surveys; co-design of programs and services; membership of quality-improvement committees and advisory councils) d) the organizations that oversee the professionals and other organizations in the system (e.g., professional regulatory bodies; quality-improvement bodies; ombudsman; and complaint processes) e) policymaking (e.g., committees making decisions about which services and drugs are covered; government advisory councils that set direction for (parts of) the system; patient storytelling to kick off key meetings; citizen panels to elicit citizen values) f) research (e.g., engaging patients as research partners; eliciting patients' input on research priorities) 3) Build patient/citizen capacity to engage in all of the above
Data and evidence driven	Digital capture, linkage and timely sharing of relevant data: Systems capture, link and share (with individuals at all levels) data (from real-life, not ideal conditions) about patient experiences (with services, transitions and longitudinally) and provider engagement alongside data about other process indicators (e.g., clinical encounters and costs) and outcome indicators (e.g., health status)	<ol style="list-style-type: none"> 1) Data infrastructure (e.g., interoperable electronic health records; immunization or condition-specific registries; privacy policies that enable data sharing) 2) Capacity to capture patient-reported experiences (for both services and transitions), clinical encounters, outcomes and costs 3) Capacity to capture longitudinal data across time and settings 4) Capacity to link data about health, healthcare, social care and the social determinants of health 5) Capacity to analyze data (e.g., staff and resources) 6) Capacity to share 'local' data (alone and against relevant comparators) – in both patient- and provider-friendly formats and in a timely way – at the point of care, for providers and practices (e.g., audit and feedback), and through a centralized platform (to support patient decision-making and provider, organization and system-wide rapid learning and improvement)
	Timely production of research evidence: Systems produce, synthesize, curate and share (with individuals at all levels) research about problems, improvement options and implementation considerations	<ol style="list-style-type: none"> 1) Distributed capacity to produce and share research (including evaluations) in a timely way 2) Distributed research ethics infrastructure that can support rapid-cycle evaluations 3) Capacity to synthesize research evidence in a timely way 4) One-stop shops for local evaluations and pre-appraised syntheses 5) Capacity to access, adapt and apply research evidence 6) Incentives and requirements for research groups to collaborate with one another, with patients, and with decision-makers <p>Note that for Indigenous peoples, this row would ideally be re-conceptualized to include traditional knowledge</p>
System supported	Appropriate decision supports: Systems support informed decision-making	<ol style="list-style-type: none"> 1) Decision supports at all levels – self-management, clinical encounter, program, organization, regional health authority and government – such as

Category	Characteristic	Examples
	<p>at all levels with appropriate data, evidence, and decision-making frameworks</p>	<ul style="list-style-type: none"> a) patient-targeted evidence-based resources b) patient decision aids c) patient goal-setting supports d) clinical practice guidelines e) clinical decision support systems (including those embedded in electronic health records) f) quality standards g) care pathways h) health technology assessments i) descriptions of how the health system works
	<p>Aligned governance, financial and delivery arrangements: Systems adjust who can make what decisions (e.g., about joint learning priorities), how money flows and how the systems are organized and aligned to support rapid learning and improvement at all levels</p>	<ul style="list-style-type: none"> 1) Centralized coordination of efforts to adapt a RLHS approach, incrementally join up assets and fill gaps, and periodically update the status of assets and gaps 2) Mandates for preparing, sharing and reporting on quality-improvement plans 3) Mandates for accreditation 4) Funding and remuneration models that have the potential to incentivize rapid learning and improvement (e.g., focused on patient-reported outcome measures, some bundled-care funding models) 5) Value-based innovation-procurement model 6) Funding and active support to spread effective practices across sites 7) Standards for provincial expert groups to involve patients, a methodologist, use existing data and evidence to inform and justify their recommendations 8) Mechanisms to jointly set rapid-learning and improvement priorities 9) Mechanisms to identify and share the ‘reproducible building blocks’ of a RLHS
<p>Culture and competencies enabled</p>	<p>Culture of rapid learning and improvement: Systems are stewarded at all levels by leaders committed to a culture of teamwork, collaboration and adaptability</p>	<ul style="list-style-type: none"> 1) Explicit mechanisms to develop a culture of teamwork, collaboration and adaptability in all operations, to develop and maintain trusted relationships with the full range of partners needed to support rapid learning and improvement, and to acknowledge, learn from and move on from ‘failure’
	<p>Competencies for rapid learning and improvement: Systems are rapidly improved by teams at all levels who have the competencies needed to identify and characterize problems, design data- and evidence-informed approaches (and learn from other comparable programs, organizations, regions, and sub-regional communities about proven approaches), implement these approaches, monitor their implementation, evaluate their impact, make further adjustments as needed, sustain proven approaches locally, and support their spread widely</p>	<ul style="list-style-type: none"> 1) Public reporting on rapid learning and improvement 2) Distributed competencies for rapid learning and improvement (e.g., data and research literacy, co-design, scaling up, leadership) 3) In-house capacity for supporting rapid learning and improvement 4) Centralized specialized expertise in supporting rapid learning and improvement 5) Rapid-learning infrastructure (e.g., learning collaboratives)

Table 8: Examples of rapid-learning and improvement plans (table adapted from plans developed by the Ontario HIV Treatment Network)

Rapid-learning activity	Example related to Element 1 (expand HIV testing)	Example related to Element 2 (integrate services used by people living with and at risk of HIV to reduce gaps and provide more holistic care and support)
Engaged patients	<ul style="list-style-type: none"> • Work with government partners, HIV testing sites, public health and care providers to expand access and use of HIV testing services by at-risk people 	<ul style="list-style-type: none"> • Work with the government partners, community-based HIV organizations, care providers, public health, communities and people living with HIV, as well as agencies beyond the HIV-specific sector to create more integrated supports and services
Digital capture, linkage and timely sharing of relevant data	<ul style="list-style-type: none"> • Analysis of HIV testing data by geography/population for a province using all laboratory tests, including positivity rates among sub populations • Make use of the HIV test requisition to better understand testing among sub-populations (race and gender identity) • Optimize use of data to understand new diagnosis in a province, including geographic, demographic, and migration patterns • Use available data to better understand re-testing patterns to clarify duplication in new diagnoses • Conduct community-based studies to determine testing behaviours for HIV among priority populations 	<ul style="list-style-type: none"> • Analyze service needs, availability and utilization service by people living with HIV using available data • Undertake epidemiological and service trend reporting to support regional care pathways planning • Develop additional needed metrics • Analyze gaps in case management support; support evaluation of case management services
Timely production of research evidence	<ul style="list-style-type: none"> • Include indicators of change to use in producing research such as HIV testing, constant or increased rate of HIV positivity among those tested, improved access to testing and the number of HIV tests done by region and population group • Produce timely research through several means <ul style="list-style-type: none"> ○ Support the adaption and evaluation of novel approaches to HIV testing (e.g., hospitals in high-prevalence areas, online ordering, integrated with other services, and satellite testing at key events) ○ Design, implement and evaluate pilot point-of-care testing to increase use of this tool ○ Conduct community-based studies to evaluate ways to more broadly offer testing for priority populations ○ Support testing interventions and innovations through existing research funding ○ Improve modelling of the undiagnosed fraction and assess the undiagnosed by population 	<ul style="list-style-type: none"> • Producing timely research will require improved metrics around linkage to care, ART use and viral suppression in the care cascade, as well as others as developed and identified through strategic initiatives and regional planning activities • Support technical innovation in care integration and support through existing research funding including apps/technology to improve health and care access for priority communities (e.g., a telephone service to provide ongoing support to people who use drugs who have recently been hospitalized) • Provide research funding to more effectively use peer support and peer navigation (collaborations between community-based HIV organizations and clinicians) to reduce barriers to early access to HIV care for people who use drugs (e.g., by making better use of supervised consumption sites where they exist), and deliver mental health services to people living with HIV in innovative, non-traditional ways
Appropriate decision supports	<ul style="list-style-type: none"> • Support the modernizing of policies on pre- and post-testing counselling and testing guidelines 	<ul style="list-style-type: none"> • Share and synthesize evidence from successes in the province

	<ul style="list-style-type: none"> • Gather evidence from other jurisdictions and from the literature to support guideline development and the development of training materials 	<ul style="list-style-type: none"> • Support the gathering of community input into priorities • Gather evidence around best practices and models of integrated care and the information needs of specific groups • Gather evidence around case management scope-of-practice development • Provide plain language and population-specific products about the care cascade in the province, as well as regionally-specific materials for regional planning initiatives
Aligned governance, financial and delivery arrangements	<ul style="list-style-type: none"> • Bring together representatives of testing services in the province to discuss best practices and necessary changes in guidelines • Work with partners (e.g., those that run Hepatitis C programs) on piloting point-of-care testing • Work with those piloting self-testing to understand the potential role of this tool in the province • Work with community-based HIV organizations to expand use of point-of-care testing services in community-based agencies and other community hubs • Identify and support other strategic initiatives to improve integration of testing services into rapid treatment and expanded strategic use of testing 	<ul style="list-style-type: none"> • Provide coordination and support to bring together champions and relevant groups, support the development of common goals and metrics, and approach political leaders for funding and support • Work with provincial and community leaders to develop a core curriculum for workers in community-based HIV organizations • Develop scope-of-practice guidelines for case management in community-based HIV organizations
Culture of and competencies for rapid learning and improvement	<ul style="list-style-type: none"> • Create training in support of new testing guidelines • Create training for community workers doing point-of-care testing • Explore ways to bring together resources to support expanded testing by primary-care physicians • Use incentives/strategies such as awards for leadership to strategically enhance capacity 	<ul style="list-style-type: none"> • Establish a plan to create the cross-cutting competencies for relevant goals and targets as they are established • Create a core curriculum for all workers in community-based HIV organizations by drawing on the expertise of each organization involved in capacity building, promoting collaboration and consistency across the sector • Provide workshops on supporting engagement in care for workers in in community-based HIV organizations • Use incentives/strategies such as awards for leadership to strategically enhance capacity

We found two recent low-quality systematic reviews related to rapid-learning health systems. The first review examined attempts to adopt the rapid-learning health system paradigm, with an emphasis on implementation and evaluating the impact on current medical practices.(103) The review identified three main themes to adopting a rapid-learning health system:

- clinical data reuse (i.e., building learning health systems by extracting knowledge from geographically distributed data collected in daily clinical practice);
- patient-reported outcome measures (i.e., using patient reporting mechanisms for collecting health-related quality indicators); and
- collaborative learning (i.e., using peer specialists for both capturing the indicators of healthcare delivery and encouraging changes through support/pressure).(102)

The second review focused on the ethical issues that can arise in a rapid-learning health system and grouped 67 ethical issues within four phases of the rapid-learning health system:

- designing activities: the risk of negative outcomes (e.g., reducing the quality and usability of results) from designing learning activities less rigorously so they are not classified as research, and the risk of inadequate engagement of stakeholders (which can affect the success of the learning activity due to a lack of established trust and support);
- ethical oversight of activities: the conflict between current oversight regulations and a learning health system, which can delay or even prevent learning activities from being conducted due to confusion regarding which learning activities require ethical oversight, and an inconsistent and burdensome oversight process;
- conducting activities: risks of misguided judgments regarding when and how participants should be notified and asked for consent, and the conflict between current data-management practices and regulations, and the goals of a learning health system; and
- implementing learning: difficulties with changing practice in a timely manner (e.g., due to conflicts with the current research infrastructure or current financial incentives), issues of transparency (e.g., due to underperforming providers or commercial interests), and unintended negative consequences from implementation (e.g., widening health disparities or increasing the risk of liability).(104)

The same review identified the following strategies to address these ethical issues: 1) clear and systematic internal policies and procedures to determine which learning health system activities require ethical review, how data sharing and data protection should be handled, and how to inform patients in routine and systematic ways about learning health system activities being conducted; 2) training and guidance for ethics committee members to learn how to apply ethical principles in the context of learning health system activities, and for researchers to learn about ethics guidelines; and 3) simplified ethical review and consent process to make it easier for learning health system activities to be conducted, including implementing a dedicated ethical review process, standardizing and harmonizing the ethical review process across multiple research sites, and streamlining the consent process.(104)

Finally, one recent high-quality review examined the processes and impacts of developing, implementing and adopting human resource information systems in health organizations, which are a sub-category of administrative systems within health organizations (e.g., recruitment, teaching, planning and resource allocation).(105) The review found that there are important gaps in knowledge when it comes to the impact and effectiveness of human resource information systems, and that few studies considered the socio-contextual and technological factors that influence the operation of these systems.(105)

A summary of the key findings from the synthesized research evidence is provided in Table 9. For those who want to know more about the systematic reviews contained in Table 9 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 3.

Table 9: Summary of key findings from systematic reviews relevant to Element 3 – Adopting a rapid-learning and improvement approach to incrementally strengthen health and social-systems

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> • No evaluations of benefits to a rapid-learning approach were explicitly identified in included systematic reviews.
Potential harms	<ul style="list-style-type: none"> • Supported by appropriate decision supports and aligned governance, financial and delivery arrangements <ul style="list-style-type: none"> ○ One recent low-quality review identified 67 ethical issues that can arise in a rapid-learning health system within the following four phases: 1) risk of negative outcomes as a result of designing activities (e.g., reducing the quality and usability of results); 2) ethical oversight of activities can lead to a conflict between current oversight regulations and a learning health system; 3) in conducting activities there is the risk of misguided judgments regarding when and how participants should be notified and asked for consent, and the conflict between current data-management practices and regulations, and the goals of a learning health system; and 4) implementing learning can create challenges in timeliness, transparency and unintended negative consequences from implementation.(104)
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> • No cost-related information was identified
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the option were pursued)	<ul style="list-style-type: none"> • Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> ○ Anchored on the GIPA/MIPA principles • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> ○ Not applicable – no ‘empty reviews’ were identified • No clear message from studies included in a systematic review <ul style="list-style-type: none"> ○ Driven by timely data and evidence <ul style="list-style-type: none"> ▪ One high-quality systematic review found a lack of evaluative research about the capacity of human-resource information systems (i.e., systems dealing with the management of human resources, such as recruitment, teaching, planning and resource allocation) to enable learning health systems.(105)
Key elements of the policy option if it was tried elsewhere	<ul style="list-style-type: none"> • See characteristics outlined in Table 3.
Stakeholders’ views and experience	<ul style="list-style-type: none"> • One low-quality systematic review examined attempts to adopt the learning health system paradigm, with an emphasis on implementation and evaluating the impact on current medical practices, and found minimal focus on evaluating impacts on healthcare delivery and patient outcomes.(103)

Additional equity-related observations about the three elements

While several of the systematic reviews included in the evidence synthesis of the three elements incorporated studies that focused on Indigenous peoples, with the exception of one review, details of these studies were limited to the tables of characteristics and not part of the main text of the reviews. With respect to the first element, strengthening comprehensive HIV care within the health system, one recent high-quality review examined adherence to medicines by Indigenous Australians with chronic conditions.⁽⁷⁰⁾ As noted in a previous section, the review identified several barriers to adherence, which were reported by both patients and health professionals and included: 1) having other priorities including sociocultural obligations; 2) cost; 3) sharing or swapping medicines; 4) stopping medicines once feeling better; and 5) issues obtaining medicines while away from home.⁽⁷⁰⁾ Facilitators to improved adherence identified in the review included: 1) dose administration aids; 2) Indigenous community engagement; 3) involvement in medication dispensing; and 4) medication-cost reductions.⁽⁷⁰⁾

As outlined in the earlier section about equity-related observations about the problem, access to healthcare for Indigenous peoples living in Canada is a ‘patchwork’ due to the jurisdictional complexity in federal and provincial/territorial governmental roles in the delivery of healthcare for this population.^(35; 36) Indigenous peoples bear a disproportionate burden of HIV, accounting for more than 20% of new diagnoses, while making up less than 5% of the population.⁽¹⁶⁾ When considering the three elements of a comprehensive approach for addressing the problem as it relates to Indigenous peoples, consideration needs to be given to:

- 1) strengthening comprehensive HIV care within the health system (element 1) through improving access to health services (e.g., point-of-care testing) and providing the complete range of supports for Indigenous peoples (e.g., chiefs, elders, knowledge keepers and translators involved in providing cultural and linguistic supports);
- 2) providing supports across social systems that are needed to address the full range of challenges faced by people living with HIV (element 2), recognizing that health- and social-system arrangements (delivery, financial and governance) are handled in unique ways and require greater supports for system(s) navigation; and
- 3) adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems (element 3) will require incorporating traditional knowledge into western medicine and having appropriate supports and training for professionals (e.g., residential school system and trauma-informed care).

IMPLEMENTATION CONSIDERATIONS

A number of barriers might hinder implementation of the three elements of a potentially comprehensive approach to enhancing the delivery of comprehensive care for people living with HIV, which need to be factored into any decision about whether and how to pursue any given element (Table 10). While potential barriers exist at the levels of providers, organizations and systems (if not patients/citizens, who are unlikely to be aware of or particularly interested in the specifics of these approach elements), perhaps the biggest barrier lies in that funds are traditionally siloed within a health sector or the health system itself. Elements 2 and 3 require flexibility in the flow of funds across health and social systems, which could encounter a number of barriers in terms of budget allocation and perceptions that a health-related issue is encroaching on the budgets of departments within social systems. Moreover, changes to social systems are particularly difficult because it is challenging to change from only within the HIV sector and therefore, such changes can only be achieved through coalitions with other groups.

Table 10: Potential barriers to implementing the options

Levels	Element 1 - Strengthening comprehensive HIV care within the health system	Element 2 - Providing supports across social systems that are needed to address the full range of challenges faced by people living with HIV	Element 3 - Adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems
Patient/individual	<ul style="list-style-type: none"> • Patients may not have the ability to manage certain aspects of their care • Stigma may create barriers to seeking care and being retained in it • Patients living in rural and remote areas may face long distances to travel to receive comprehensive care 	<ul style="list-style-type: none"> • Patients may not have the ability to manage their care across systems 	<ul style="list-style-type: none"> • Patient engagement requires significant inputs from patients (e.g., time and other resources), which can be challenging given an individual’s health state
Care provider	<ul style="list-style-type: none"> • Providers working in rural and remote areas may not receive the supports they need in order to provide comprehensive care • Providers may lack access to appropriate diagnostic tools, particularly in rural and remote areas 	<ul style="list-style-type: none"> • Providers supporting system(s) navigation would need to have the appropriate knowledge and training to be able to deliver these supports • Providers may face challenges in coordinating supports across systems 	<ul style="list-style-type: none"> • Providers who are already overburdened with work may have limited time to engage in rapid-learning and improvement
Organization	<ul style="list-style-type: none"> • Organizations that offer HIV programs may find it difficult to coordinate 	<ul style="list-style-type: none"> • The many organizations that provide or could provide supports may not be willing to collaborate 	<ul style="list-style-type: none"> • Organizations could view this element as one that requires substantial investment in terms of infrastructure and analytic capacity
System	<ul style="list-style-type: none"> • Introducing new types of approaches for care delivery may require changes to regulatory frameworks that govern how organizations and providers operate, as well as the funding and remuneration mechanisms needed to pay for these new options 	<ul style="list-style-type: none"> • Funds are traditionally siloed within a system and sector 	<ul style="list-style-type: none"> • Many jurisdictions lack the resources (e.g., technology, infrastructure and personnel) for timely data collection and system monitoring • Information around personal health information may restrict the sharing of information and data collection

Despite these challenges, many health systems across Canada are at critical junctures, where demographic shifts, rising costs and technological advances combined with changing patient needs and preferences are forcing rapid changes to the status quo. As such, there are a number of windows of opportunity that should be acknowledged (Table 11), since they provide a promising jumping-off point for actively working towards addressing the problems described in this brief.

Table 11: Potential windows of opportunity for implementing the elements

Type	Element 1 - Strengthening comprehensive HIV care within the health system	Element 2 - Providing supports across social systems that are needed to address the full range of challenges faced by people living with HIV	Element 3 - Adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems
General	<ul style="list-style-type: none"> The Pan-Canadian Sexually Transmitted and Blood-Infections Framework for Action provides guidance for achieving global targets and an opportunity for collaboration across provincial/territorial, federal governments, organizations and stakeholders. 		
Element-specific	<ul style="list-style-type: none"> Many of the components of this elements could build on reforms in some provincial and territorial health and social systems for enhancing integrated care for people with complex conditions 	<ul style="list-style-type: none"> Many of the components of this elements could build on reforms in some provincial and territorial health and social systems for enhancing integrated care for people with complex conditions 	<ul style="list-style-type: none"> Canadian health systems have both a health system and a research system that are increasingly putting patients and rapid learning and improvement at their centre

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APPENDICES

The following tables provide detailed information about the systematic reviews identified for each element. Each row in a table corresponds to a particular systematic review and the reviews are organized by element (first column). The focus of the review is described in the second column. Key findings from the review that relate to the option are listed in the third column, while the fourth column records the last year the literature was searched as part of the review.

The fifth column presents a rating of the overall quality of the review. The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial, or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8.

The last three columns convey information about the utility of the review in terms of local applicability, applicability concerning prioritized groups, and issue applicability. The third-from-last column notes the proportion of studies that were conducted in Canada, while the second-from-last column shows the proportion of studies included in the review that deal explicitly with the prioritized group. The last column indicates the review’s issue applicability in terms of the proportion of studies focused on Indigenous peoples. Similarly, for each economic evaluation and costing study, the last three columns note whether the country focus is Canada, if it deals explicitly with one of the prioritized groups and if it focuses on Indigenous peoples.

All of the information provided in the appendix tables was taken into account by the evidence brief’s authors in compiling Tables 1-3 in the main text of the brief.

Appendix 1: Systematic reviews relevant to Element 1 - Strengthening comprehensive HIV care within the health system

Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
Point-of-care testing	Acceptability of, and preference for, rapid point-of-care HIV testing in youth, tracking notification rates, and identifying factors associated with testing (68)	<p>This review included 14 studies examining the acceptability of, and preference for, rapid point-of-care HIV testing in youth, tracking notification rates when youth were offered rapid point-of-care testing, and identifying the factors associated with testing.</p> <p>Of the 14 included studies, 12 explored youth acceptance of rapid HIV testing. Acceptance rates of point-of-care tests varied widely, with the lowest rate of acceptance found in an adolescent outpatient clinic. The highest uptake rates were found in emergency rooms. Furthermore, one study demonstrated that rapid methods were selected the majority of the time when youth were offered an option between rapid and traditional testing methods. This suggests that youth are open to accepting rapid point-of-care testing, especially if offered.</p> <p>Four studies explored the preferences for rapid point-of-care testing. One study showed that the majority of youth preferred rapid point-of-care testing methods because they wanted the test results immediately. In another study, it was found that adolescents were more likely to get tested when a rapid test was available, and were more likely to accept the rapid test when it was offered, rather than having to proactively ask for the test.</p> <p>Two studies outlined rates of test result notifications for young people undergoing rapid point-of-care testing. In one study, it was found that participants who selected a rapid point-of-care HIV test method were more likely to receive their test results within the follow-up period in comparison to those who chose a traditional test. Another study demonstrated that all participants aged 13-17 who accepted rapid point-of-care testing received their results.</p> <p>Eight studies highlighted patient factors correlated with rapid point-of-care testing. Of these eight articles, four showed a significant increase in rapid point-of-care testing with increasing age. Studies assessing the relationships between rapid testing and ethnicity, as well as rapid testing and gender, produced variable results. Finally, several studies demonstrated that youth with HIV risk factors or a concurrent genitourinary diagnosis are more likely to accept rapid point-of-care HIV testing when offered.</p> <p>The findings of this review suggest that young people accept and prefer rapid point-of-care HIV tests when offered. However, this evidence is subject to several limitations, such as the small sample sizes employed in four of the included studies.</p>	2013	2/9 (AMSTAR rating from McMaster Health Forum)	0/14	0/14	14/14
	Assessing patient and program impact of point-	This review examined 15 studies that evaluated the program impact of point-of-care CD4 testing, with an emphasis on retention in pre-ART care and time to assessment for ART eligibility.	2013	8/11 (AMSTAR rating from	0/15	0/15	15/15

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	of-care CD4 testing (69)	<p>Of the 15 included studies, two provided data on the impact of point-of-care CD4 from HIV testing to eligibility assessment. The data suggested that the likelihoods of being tested for CD4 and of people receiving their result after being tested for CD4 increased.</p> <p>Six studies reported the proportion of people who were initiated on ART. These studies suggested that the likelihood of initiating ART was greater when point-of-care CD4 was used.</p> <p>Two studies examined the completion of all steps between HIV diagnosis and ART initiation. Both studies demonstrated a reduction in time to ART initiation with the point-of-care CD4 intervention group.</p> <p>The findings of this review suggested that point-of-care CD4 testing can improve care retention prior to initiating ART and can also reduce time to eligibility assessment. However, the authors acknowledged several caveats that should be considered when interpreting these results, such as the inclusion of conference abstracts reporting limited data/information.</p>		McMaster Health Forum)			
Patient-centred and 'whole body' approaches to care	Assessing the effects of providing physicians with feedback about their patients' medication adherence for improving adherence (71)	<p>This review included nine studies that explored the effects of providing physicians with feedback about their patients' medication adherence for improving adherence. The effects of feedback provision on patient outcomes, health resource use, and processes of care were also assessed.</p> <p>Of the nine included articles, seven examined changes in medication adherence. Across the studies, it was found that providing physicians with feedback led to little or no difference to their patients' medication adherence.</p> <p>Two studies measured patient outcomes. The findings of these studies suggested that feedback provision led to little or no difference on patients' health outcomes.</p> <p>Two studies explored the effects of the intervention on health resource use. None of these studies demonstrated improvements in health resource use outcomes when adherence-related feedback was provided to physicians.</p> <p>Four studies assessed processes of care. The results of these studies showed that providing physicians with feedback on medication adherence may improve care processes (e.g., more medication changes, increased dialogue with patients and improved hypertension management) in comparison to usual care.</p> <p>Overall, the findings of this review did not suggest that the provision of feedback to physicians about their patients' adherence to medication improved prescribed medication adherence, patient outcomes, or health resource use. Although the feedback intervention may</p>	2016	10/10 (AMSTAR rating from McMaster Health Forum)	1/9	0/9	1/9

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		improve particular care processes, the authors noted that the small number of low-quality studies examining this outcome renders the results inconclusive.					
	Identifying the proportion of patients linked to HIV care and the factors that have an impact on linkage (72)	<p>This review identified 24 eligible studies, of which 22 presented linkage to care data and seven explored factors for linkage.</p> <p>The 22 studies reporting linkage to care data covered 19 of the 53 countries from the WHO European Region. Across the 19 countries, linkage among 89,006 people was captured. A random-effects meta-analysis of linkage to care within three months was conducted with 12 studies that presented sufficient data. This meta-analysis of prompt linkage within three months generated a pooled estimate of 85%, with prompt linkage being higher in studies including only people already involved in care than in those of all new diagnoses.</p> <p>Seven articles identified factors associated with linkage to care. The majority of these studies looked at factors associated with negative outcomes (e.g., delayed entry into HIV care or never having accessed care). Factors found to be associated with delayed or absence-of-care linkage in multiple studies included: 1) acquiring HIV through heterosexual contact or injecting drug use; 2) being of younger age at diagnosis; 3) having lower education levels; 4) feeling well at diagnosis; and 5) being diagnosed outside a sexually transmitted infection clinic.</p> <p>The findings of this review suggested that the overall linkage to HIV care was high. However, the pooled estimate of prompt linkage to care presented in this meta-analysis must be interpreted with caution due to the high heterogeneity between studies.</p>	2017	11/11 (AMSTAR rating from McMaster Health Forum)	0/24	0/24	24/24
	Synthesizing the perspectives of people living with HIV on access to healthcare (76)	<p>This scoping review and framework synthesis included 64 articles that examined the perspectives of people living with HIV on access to healthcare, to help guide health planners, policymakers and researchers towards service-level changes that are meaningful for patients. This paper had three main objectives: 1) map the literature on the perspectives of people living with HIV; 2) highlight themes to summarize the perspectives of people living with HIV in relation to healthcare access; and 3) identify gaps in the research and highlight research priorities and opportunities.</p> <p>Of the initial 326 concepts identified in the literature regarding the perspectives of people living with HIV on healthcare access, there were four that were most frequently reported: 1) staff treatment; 2) wait times; 3) lack of financial resources; and 4) fear of disclosure. The most frequently reported concept related to staff treatment of patients, which revealed that patients often described staff as impersonal, rushed, discriminatory and/or judgmental. The next most frequently discussed concept was long wait times, followed by limited financial resources or difficulty paying service fees, and fear of HIV status disclosure.</p>	Not reported	No rating tool available for this type of document	4/64	2/64	64/64

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>The final themes that emerged to summarize the perspectives of people living with HIV were: 1) acceptability; 2) availability; 3) accessibility; 4) affordability; 5) other barriers, including health and personal barriers; 6) communication; 7) satisfaction; 8) accommodation; 9) preferences; and 10) equity in access.</p> <p>This study's knowledge-user team noted that there were some important gaps in the literature. These gaps included the inability for people living with HIV to talk to their physicians about sensitive sexual health topics, and the lack of accessibility of care caused by the inability of patients to bring their children to their appointments.</p> <p>The findings of this review suggested that specific changes are essential to improving access to healthcare for people living with HIV. These changes include improving availability through staff and provider training, creating acceptability and reducing HIV-related stigma, and increasing accessibility through increased HIV information provision.</p>					
	<p>Synthesizing data on adherence to long-term medicines by Indigenous Australians living with chronic illnesses (70)</p>	<p>This review examined 47 studies that reported on the rates and outcomes of adherence to medicines by Indigenous Australians with chronic conditions, explored health professionals' attitudes towards adherence, and identified barriers to and facilitators of adherence.</p> <p>Of the 47 included studies, six highlighted adherence rates and reported that an estimated two-thirds of Indigenous Australians take their regular medications at least some of the time. Two of these studies found that adherence rates were lower among Indigenous Australians as compared to non-Indigenous Australians; however, the accuracy of this self-reported data is unclear.</p> <p>In studies that examined the relationship between medication adherence and outcomes of adherence, some authors attributed poor clinical outcomes to inadequate adherence, and the majority of health professionals working in mental health services in the Northern Territory reported low adherence rates as a frequent cause of relapse.</p> <p>In most of the studies, health professionals expressed the view that Indigenous Australians have inadequate adherence to medications, which has a negative impact on Indigenous health in Australia.</p> <p>Studies highlighted several barriers to adherence reported by both providers and patients, including: 1) having other priorities including sociocultural obligations; 2) cost; 3) sharing or swapping medicines; 4) stopping medicines once feeling better; and 5) issues obtaining medicines while away from home. A challenge described by patients only was forgetting to take their medications, and some individuals perceived their religious values to serve as a barrier. Only health professionals cited inadequate safe storage for medicines at home as a barrier.</p>	2015	9/10 (AMSTAR rating from McMaster Health Forum)	0/47	47/47	1/47

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>In terms of enablers, dose administration aids, Indigenous community engagement and involvement in medication dispensing, and medication cost reductions have reportedly improved adherence. The review suggested that strategies to improve adherence may be employed to improve health outcomes among Indigenous Australians. However, more evidence is needed on which specific activities effectively support Indigenous Australians requiring long-term medicines.</p>					
	<p>Exploring whether Canadian primary-care reforms have improved health-system performance (84)</p>	<p>This review included 14 studies that described whether Canadian primary-care reforms have improved health-system performance based on measures of health service utilization, processes of care, and physician productivity.</p> <p>Three studies examined health service utilization as a primary outcome and addressed team-based aspects of reforms among chronically ill or older patients in Quebec and Alberta. The results of these studies suggested that team-based care was associated with statistically significant decreases in emergency-department visits; however, the evidence on hospital admissions produced variable findings. For example, while one study evaluating primary-care networks found significant reductions in the rate of avoidable use of the emergency department and admissions within the general population, low-income population, and First Nations, a study examining family medicine groups produced null effects on hospital admissions.</p> <p>Three studies evaluated measures pertaining to care processes for patients with diabetes and four studies examined various care process outcomes related to screening and prevention activities. These studies provided low-quality evidence that team-based models, blended capitation models and pay-for-performance incentives were associated with small and sometimes insignificant improvements in care processes.</p> <p>All four studies that focused on physician costs and productivity as an outcome were of high methodological quality and addressed enhanced fee-for-service and blended capitation payment models. While the findings suggested that blended capitation payment in Ontario led to decreases in the number of services delivered and patients seen per day, the number of enrolled patients and days worked per year was comparable to that of enhanced fee-for-service models.</p> <p>This review isolated the effects of reforms on outcomes related to health service utilization, processes of care and physician costs and productivity. However, based on the findings of this paper, the authors noted that the body of literature on this topic is small, which signals a need for further research.</p>	<p>2015</p>	<p>8/10 (AMSTAR rating from McMaster Health Forum)</p>	<p>14/14</p>	<p>1/14</p>	<p>0/14</p>

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	Managing HIV infection in older adults (85)	<p>This narrative review explored the broad topic of aging with HIV. The examined studies were organized into the following categories: 1) specific comorbidities that present a challenge; 2) syndromes associated with aging that may occur earlier; and (3) other factors that may affect the health of older people living with HIV.</p> <p>There are specific comorbidities associated with HIV that present increased challenges for people living with HIV. For example the relative risk of cardiovascular disease among individuals with HIV who have received ART is approximately twofold greater than for those of a similar age without HIV infection. With increases in life expectancy for those living with HIV, it will be crucial to proactively address cardiovascular risk factors to prevent future disease. Furthermore, there are several risk factors for chronic kidney disease among people living with HIV, including older age, being a woman, diabetes, hypertension, dyslipidemia, low CD4 cell count and alcohol misuse. Consideration of chronic kidney disease is essential, because its presence should inform the administration of certain medications. People living with HIV are also more likely to have certain components of metabolic syndromes than those without HIV. In addition, mortality caused by non-AIDS related, non-hepatitis related cancers was found to increase twofold among people living with HIV in France between 2000 and 2010. However, specific cancer-screening recommendations for people living with HIV have not been developed yet. Finally, results from 11 cohort studies showed that liver disease is responsible for up to one in five deaths among people living with HIV.</p> <p>Several conditions associated with the aging process may occur earlier as a result of HIV infection, including: 1) neurocognitive impairment, which may compromise adherence to ART and other aspects of care; 2) frailty, which is associated with increased risk of multimorbidity, hospital admissions, long-term care use and death; and 3) osteoporosis and fractures.</p> <p>This review also identified other factors that may affect the health of older people living with HIV. These include: 1) falls that could lead to increased risk of fractures and traumatic brain injury among people living with HIV; 2) polypharmacy, which may expose individuals to a variety of adverse drug-drug interactions; 3) vaccinations, which are contraindicated for people living with HIV whose immune systems are compromised; 4) depression, decreased health-related quality of life and social isolation; and 5) new HIV infection among older adults, which reminds clinicians of the importance of maintaining a high index of suspicion for HIV throughout the human lifespan. Rates of HIV testing have been found to decrease with age due to barriers such as lack of provider awareness of HIV risk in older adults, as well as older patients not viewing themselves as being at risk.</p> <p>Individuals are both aging with HIV and acquiring HIV infection at older ages. Thus, the provision of comprehensive care for people aging with HIV should address the growing burden of age-related, non-HIV related conditions.</p>	2018	No rating tool available for this type of document	Not reported in detail	Not reported in detail	Not reported in detail

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	Evaluating programs or services that seek to integrate HIV and mental health services in adult populations (78)	<p>This review included 45 studies that described and evaluated programs and services seeking to integrate HIV and mental health services in adult populations. One integration program was identified at the macro-level. Three models of integration were identified at the meso- and micro-levels: single-facility integration, multi-facility integration, and integrated care coordinated by a non-physician case manager.</p> <p>Of the 45 papers, only two described macro-level integration. Both of these articles summarized the Indiana Integration of Care Project, a project that integrated mental health services with Indiana's HIV and AIDS service delivery system. One of these papers included an analysis of the linkages between community mental health providers and primary-care and HIV providers. The other study aimed to examine the effect of mental health centre staff turnover on HIV and AIDS service delivery integration. The latter study showed that staff turnover rates did not negatively affect integration, except when HIV was integrated within the mental health system itself.</p> <p>Two integration models were identified from 31 papers describing interventions in which integration occurred both at the meso- and micro-levels: integration in a single-facility and integration across multiple facilities. Single-site integration enhances interdisciplinary collaboration and decreases access barriers for patients. However, the practicality of providing comprehensive care for patients with complex needs is debatable. Furthermore, the collaborative network of specialized centres that emerges from multi-facility integration may support those with multiple co-morbid conditions, but fragmented and uncoordinated care can pose additional barriers.</p> <p>Twelve papers described interventions that integrated services only at the micro-level by using case managers. Integrated care coordinated by an individual case manager can support continuity of care for patients, but warrants specialized training and support for case managers.</p> <p>The findings of this review identified several promising integration models involving HIV and mental health services. However, the authors acknowledged a need for higher quality evaluative studies, particularly in low- and middle-income countries with high HIV and AIDS burden.</p>	2015	8/9 (AMSTAR rating from McMaster Health Forum)	1/45	0/45	45/45
	Examining the effectiveness of the Chronic Care Model for individuals with HIV (80)	<p>The review examined 16 studies in order to examine the effectiveness of the Chronic Care Model, which is comprised of decision support and clinical information systems interventions, for individuals with HIV.</p> <p>The Chronic Care Model has been established as an effective tool for clinical and quality improvement in chronic disease, but evidence for HIV management is limited. Decision Support interventions involve the distribution of educational materials, guidelines and evidence. Clinical Information Systems interventions are geared towards improving the</p>	2011	7/10 (AMSTAR rating from McMaster Health Forum)	0/16	0/16	16/16

Enhancing the Delivery of Comprehensive Care for People Living with HIV in Canada

Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>delivery of care by organizing patient data. These two systems are becoming intertwined as technology advances.</p> <p>The effectiveness of these interventions for individuals with HIV were quantified across a number of outcomes, including immunological or virological outcomes, medical outcomes, psychosocial outcomes and economic outcomes.</p> <p>Four studies examined the effects of Decision Support interventions. Two studies found an improvement in process measures, and two studies found an improvement in immunological/virological outcomes, medical outcomes, and psychosocial outcomes. The strongest evidence came from the Decision Support intervention which focused on guideline implementation, with improvement in 80% of evaluated healthcare process and performance measures.</p> <p>Nine studies examined Clinical Information Systems interventions. Evidence for provider reminders was strong, as it was found to improve healthcare process and provider outcomes in two studies. There was weak evidence for the effectiveness of audit and feedback.</p> <p>Three studies examined a combination of Decision Support and Clinical Information Systems interventions. While these studies were more likely to improve outcome measures, the sample size was small. The combination of interventions was less likely than Decision Support alone to improve process measures.</p> <p>The review aimed to examine the effectiveness of the Chronic Care Model for people with HIV. Decision Support and Clinical Information Systems interventions were found to contribute positively to outcomes, with process measures being more likely to be improved compared to definitive outcome measures. Future research should focus on experimental studies with a larger sample size, focusing on equity indicators in study design.</p>					
	<p>Synthesizing findings of studies that implemented the Chronic Care Model in primary care (82)</p>	<p>This review included 22 studies that identified barriers and facilitators of Chronic Care Model implementation across various primary-care settings.</p> <p>From this review, the following facilitators of implementation were identified: 1) strong networks and increased communication between health care providers and organizations, which were supported by collaboration across disciplines during care transition processes; 2) an organizational culture that promotes interdisciplinary, or patient-centred care; 3) implementation climate, which was attributed to a commitment and recognition for the need for change from the organization; 4) operationalization of Chronic Care Model components, which was facilitated by care providers such as specialists and nurse practitioners with an expanded scope of practice; 5) strong, committed and engaging leadership involving supportive administration and supervisors; and 6) provider knowledge about Chronic Care</p>	<p>2014</p>	<p>2/9 (AMSTAR rating from McMaster Health Forum)</p>	<p>2/22</p>	<p>0/22</p>	<p>0/22</p>

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		<p>Model interventions, which was strengthened through staff education and shadowing processes.</p> <p>The following barriers were gleaned from this review: 1) executing intervention processes, which created additional responsibilities for staff; 2) institutional factors such as staff/leadership turnover and loss, which placed increased burden on remaining providers; 3) lack of interest and dedication from leadership and limited resources for implementation; 4) lack of support and accountability from senior leadership; 5) providers who had misconceptions, were unconvinced of the model's effectiveness, or lacked information.</p> <p>The findings of this review emphasize the importance of evaluating organizational capacity and gaps before and during the implementation of the Chronic Care Model in primary-care settings. However, the authors noted several methodological limitations to their review, such as the exclusion of unpublished literature.</p>					
	Evaluating the linking and retaining of patients with HIV to care (73)	<p>The review examined 69 articles in order to evaluate the linkage and retention of patients in HIV care.</p> <p>The ability to link and retain patients in HIV care is crucial for treatment efficacy and reduction of transmission. In order to carry out effective care, barriers and facilitators to engagement must be understood. Findings from this meta-synthesis explored the complex constellation of elements that affect a patient's relationship with the community and healthcare system. In order to illustrate this complexity, the review presented the factors through an adaptation of the Theory of Triadic Influence which breaks care engagement into three streams: 1) intrapersonal stream; 2) social stream; and 3) cultural-attitudinal stream.</p> <p>The intrapersonal stream encapsulates individual traits that affect one's efficacy to perform a behaviour. This review found that an individual's psychological state upon HIV diagnosis was an important factor in care engagement. Shame, shock, issues with self-esteem, uncertainty, fear, stigma and mental fatigue all contributed to care disengagement. Informational challenges, such as unfamiliarity with transmission and diagnosis, presented a barrier to care. Patient education was a significant facilitator to care, and post-test counselling and ongoing education accommodated patients' psychological reactions and supported HIV literacy.</p> <p>The social stream encompasses the social surroundings of a patient. Collaborative partnership between providers and patients resulted in supportive care and treatment, while condescending attitudes had a negative impact on patient trust and experience. The reaction of family and friends to a patient's HIV diagnosis was found to have an impact on linkage and retention in care, with supportive networks encouraging engagement through means such as financial support, transportation, and psychological support. Negative reactions impeded connection to care. Challenges were reported most often by women who were at risk of</p>	2013	3/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	69/69

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		<p>spousal and family rejection. Experiences with stigma in the past resulted in difficulty seeking care.</p> <p>Finally, the cultural-attitudinal stream refers to broader elements that influence behaviour through engrained mechanisms, such as policy. Life demands, such as family commitments and work, presented significant barriers to care. Experiences with the healthcare system had an impact on engagement, and linkage to care was more successful when mediated by an engaged professional. The location and hours of clinics was an important factor for care engagement, as travel far from home posed significant barriers. Other structural factors such as community beliefs in health and threats to safety posed significant challenges.</p> <p>The findings of the review have implications on a number of levels. Patient-focused recommendations include psychological counselling, active referrals and case management, stigma management, and exploration of gender and power inequities among patients. Provider-focused recommendations focus on the success of providers who are caring, trustworthy, competent, encouraging and collaborative. Poor patient-provider relationships have a negative impact on treatment linkage and retention and may be addressed through education. Providers must also demonstrate cultural competency and explore patient beliefs and values. Finally, system-level recommendations focus on education, structural support, streamlined clinical operations, alternative care sites, and an increased number of healthcare providers.</p>					
	<p>Assessing the impact of psychosocial group interventions on psychological well-being of adults living with HIV/AIDS (79)</p>	<p>The review examined 19 articles in order to assess the impact of psychosocial group interventions on psychological well-being among adults living with HIV/AIDS.</p> <p>A diagnosis of HIV has significant psychological effects. Psychosocial group interventions aim to improve psychological well-being among patients. The primary outcome of interest in the review was improved psychological well-being of people living with HIV, as measured by decreases in depression scores. Secondary outcomes of interest were measures of anxiety, stress and coping.</p> <p>This review found that group-based psychosocial interventions that were based on cognitive-behavioural therapy reduced depression scores. This effect was seen up to 15 months post-intervention. There was no clear evidence on the effect of the interventions on the secondary outcomes of interest (anxiety, stress and coping).</p> <p>Overall, this review found that group psychosocial interventions have a positive impact on depression scores among adults living with HIV/AIDS. However, more than half of the included trials had participant baseline scores that fell within the normal range, meaning that these participants were not depressed. As such, the observed effect was small and future trials should include people with signs of depression, stress, or poor coping at baseline.</p>	<p>2016</p>	<p>10/11 (AMSTAR rating from McMaster Health Forum)</p>	<p>1/19</p>	<p>0/19</p>	<p>19/19</p>

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	Assessing patient and primary-care health outcomes for adults living with HIV (83)	<p>The review examined 13 studies in order to assess patient and primary-care health outcomes for adults living with HIV across a number of care delivery models in the United States.</p> <p>Combination ART has significantly improved the life expectancy for people living with HIV, but connecting patients to care and managing chronic disease are key challenges in care provision. In response, a number of HIV care delivery models have been recommended. The current review examined four types of delivery models: 1) specialty-based care; 2) advanced practitioner-based care; 3) team-based care; and 4) shared care.</p> <p>The results of this review suggest that specialty-based care supported improved clinical outcomes, associated with increased clinician experience. Patients were more likely to be retained when HIV clinicians were more experienced, or when the patients were enrolled in a care coordination program. Eight studies also found that increased ART use was associated with more experienced or specialized HIV clinicians.</p> <p>There are significant workforce challenges posed in the management of HIV, and this review found that significant delivery reform is needed. Greater coordination of care providers is needed to address these challenges. The current evidence is limited and outdated, and future research should address workforce training and policies, along with clinician roles and relationships, in order to enhance care provision.</p>	2015	3/9 (AMSTAR rating from McMaster Health Forum)	0/13	0/13	13/13
	Understanding the barriers and facilitators to implementation of a chronic-care model (81)	<p>The review examined 38 articles in order to understand the barriers and facilitators to chronic-care model implementation in primary care, according to healthcare providers.</p> <p>The chronic-care models included in this review had to include at least two of eight elements. The first four elements were geared towards patient needs: 1) facilitation of community support; 2) facilitation of informal family support; 3) enhancement of health professional case management; and 4) self-management support. The remaining elements were geared towards provider needs: 5) organizational change; 6) delivery system design; 7) decision support; and 8) clinical information systems.</p> <p>Four synthesized findings emerged from this review of the literature. First, the acceptability of chronic-care model interventions was found to be largely reported from the view of the healthcare provider. The helpfulness of the model and positive impact on patient health were cited as facilitators to implementation. Studies examining patient perspectives found that chronic-care models were acceptable. However, response was mixed with one study reporting patient empowerment, but also inefficiencies. Second, factors preparing healthcare providers for a chronic-care model included sufficient information delivery, skilled and experienced staff, and the support of strong leaders and champions. Third, this review identified a range of factors that influenced patient engagement with chronic-care models. These factors included patient support, information dissemination, and acknowledgment of patient differences. Last,</p>	2013	5/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail

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		<p>resources for implementation and sustainability were found to include time and effort, information and communication systems, and funding. Ongoing quality improvement was key to the sustainability of chronic-care models.</p> <p>This review found that the acceptability of chronic-care models to both providers and patients was an important factor for success. Factors such as preparing providers for change, providing support for patients, providing appropriate resources and engaging stakeholders are all key factors in implementing the model.</p>					
	Assessing strategies for promoting retention in HIV primary care (75)	<p>The review examined 13 studies in order to assess strategies for promoting retention in HIV primary care.</p> <p>This review found that successful interventions focused on engaging and retaining patients, rather than targeting multiple broader issues. However, using multiple intervention strategies within a study was found to be necessary to address barriers to care.</p> <p>Interventions that build on patient strengths and assist with care navigation were beneficial in retention. Reducing barriers through appointment accompaniment, transportation support, outreach, and culturally competent care reduced barriers in interventions. These strategies assist patients who have more than one diagnosis and/or are highly marginalized. Sending appointment reminders and involving peers as advocates and workers on a person's care team were crucial components to care retention.</p> <p>This review also identified room for improvement among existing intervention strategies. For example, most strategies targeted individuals. Structural and system-level barriers must be understood to improve care. Few interventions were implemented in non-medical settings, which may play a significant role in connecting and retaining patients in care. Finally, this review found a lack of interventions that addressed providers and significant others of the patient.</p> <p>This review identified a number of strategies contributing to the retention of patients in HIV care. Future studies should examine the development of interventions that are specifically focused on retention, and that address multi-level factors.</p>	2012	5/9 (AMSTAR rating from McMaster Health Forum)	0/13	0/13	13/13
	Determining aspects of healthcare that are valued by people living with HIV (77)	<p>The review examined 23 studies in order to determine the aspects of healthcare that are valued by people living with HIV.</p> <p>In examining the aspects of care that are valued by patients, seven themes emerged: 1) relationships with providers of care; 2) provider expertise; 3) practical considerations; 4) support and information; 5) coordination of services; 6) confidentiality/stigma; and 7) patient involvement in decisions about treatment.</p>	2015	9/11 (AMSTAR rating from McMaster Health Forum)	3/23	0/23	23/23

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		<p>Nineteen studies included in the review reported value in the relationship between patients and healthcare providers. Important factors included professionalism, emotional support, empathy, understanding and enabling of patient discussion. Trust was a key factor in the development of positive relationships, and care, compassion, support and respect were among the valued qualities of healthcare providers in this context.</p> <p>The expertise of providers was valued by patients, including specialist knowledge, knowledge of prevention, and knowledge of current treatment. Primary-care physicians were perceived as having insufficient expertise, and this review found that HIV training should be given to primary-care physicians in rural settings to counter stigma and isolation.</p> <p>Easy access to healthcare services was important, as patients valued the ability to contact care reliably. Being able to make an appointment and travel with ease, as well as have enough time to discuss with providers, were important factors in service access.</p> <p>The ease and clarity of information dissemination was important to patients, and understanding provider instructions was associated with satisfaction. Having enough time to discuss as well as having additional support, such as in financial planning and informal support, were valued by patients.</p> <p>Patients reported fragmented care between primary providers, HIV clinics and other hospital departments, highlighting the importance of communication between services. While the sharing of health information was viewed as important by patients, there were also concerns about the security of this system – sometimes stemming from a fear about employers learning of a person’s HIV status.</p> <p>Confidentiality was a concern of patients, and fear of disclosure was found to play a major role in the decision not to access care. HIV-related stigma was a significant issue for patients when new technology was introduced.</p> <p>Six studies demonstrated the importance of involving patients in care decisions. Greater satisfaction resulted from involvement, which included collaborating and partnering with healthcare providers. Having been diagnosed with HIV for longer was associated with a greater feeling of empowerment and control, compared to people who had received a more recent diagnosis.</p> <p>The review highlights aspects of care that are valued by persons living with HIV. These values should be incorporated into interventions and services to enhance outcomes.</p>					

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	Identifying best practices for increasing linkage, retention and re-engagement in HIV care for persons living with HIV (74)	<p>This review examined 24 interventions that identify best practices for increasing linkage, retention and re-engagement in HIV care for individuals living with HIV. Ten best practices emerged from the examined interventions, of which five were evidence-based interventions tested with a comparison group and the remaining were evidence-informed interventions tested with a one-group design.</p> <p>Of the five evidence-based interventions, one showed effects for linkage, one for linkage and retention, and three for retention only. Re-engagement outcomes were not reported in any of the evidence-based interventions. In the evidence-based intervention addressing linkage, newly diagnosed patients were linked to medical care using trained counsellors and home visits from community support workers in Uganda. The other four evidence-based interventions were conducted in the U.S. and provided up to five strengths-based case management counselling sessions. These sessions generated significant intervention effects for both linkage and retention outcomes among patients. The other three evidence-based interventions that showed intervention effects on retention outcomes used different strategies such as co-locating services, implementing an interactive provider-reminder system, and encouraging patients to adhere to their medical visits via in-person and telephone contact.</p> <p>Five evidence-informed interventions conducted in the U.S. were identified. Of these, one focused on linkage, while the remaining four interventions focused on retention. Re-engagement in care outcomes were not reported in any evidence-informed interventions. The intervention that produced intervention effects on the linkage outcome implemented a policy of scheduling an orientation visit when new clinic patients booked an appointment. In the four evidence-informed interventions that showed intervention effects on the retention outcomes, three focused on minority groups or youth. Furthermore, these three interventions focused on both the individual and clinic level. Individual-directed strategies included counselling, motivational interviewing, case management, providing brief reminders of the importance of care retention, and assisting with appointment scheduling. Clinic-focused strategies included displaying educational posters about the importance of adhering to medical appointments in care settings, and recruiting staff that had expertise in or represented the patient population.</p> <p>The majority of the best practices identified in this paper were designed to improve retention in HIV care. However, the authors mentioned several limitations to their review, including insufficient information from the included reports to provide specific implementation recommendations.</p>	2015	3/9 (AMSTAR rating from McMaster Health Forum)	0/24	0/24	24/24

Appendix 2: Systematic reviews relevant to Element 2 - Providing supports across social systems that are needed to address the full range of challenges faced by people living with HIV

Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
Delivery arrangements	Evaluating patient navigator programs in people with a broad range of chronic illnesses (87)	<p>This review examined 67 studies that summarized the evidence for patient navigator programs compared to usual care for patients with any one of a defined set of chronic diseases.</p> <p>In terms of intervention characteristics, most navigator programs employed lay persons trained for the role. The main method of communication was by phone. Patient navigators were responsible for a wide range of activities, including care facilitation and appointment scheduling. Furthermore, navigators also helped to address patient barriers by influencing patient attitudes and beliefs, providing appointment reminders, offering health literacy support and delivering practical assistance. Many studies also reported employing patient navigators who identified with the patient population in terms of ethnicity, or who practised culturally tailored education and communication approaches. The frequency of contact between navigators and patients varied widely from only one contact to ‘as needed’ throughout the study period.</p> <p>Primary outcomes were most commonly process measures, which included completion of disease screening and adherence to follow-up procedures. Of the 67 studies identified in this review, 45 showed a statistically significant improvement in one or more primary outcomes. The results of this review did not identify an association between any program characteristics and the detection of a statistically significant improvement in a primary outcome. Secondary outcomes more frequently included patient-reported outcomes such as physical and mental health status, quality of life, and psychological distress. In terms of secondary outcomes, no studies demonstrated a negative impact from the patient navigator intervention.</p> <p>The findings from this review suggested that patient navigator programs may improve care processes. However, the authors acknowledged the presence of several study limitations, including the inclusion of heterogeneous intervention designs and reported outcomes.</p>	2017	7/10 (AMSTAR rating from McMaster Health Forum)	3/67	0/67	7/67
	Examining associations between HIV patient navigation and HIV care continuum outcomes (88)	<p>This review included 20 studies that assessed whether the provision of patient navigation was associated with HIV care continuum outcomes in the U.S.</p> <p>Of the 20 included studies, 17 highlighted any positive associations between patient navigation and any HIV care continuum outcome. Five studies specifically reported positive associations with linkage. Furthermore, 10 studies reported a positive association</p>	2018	8/10 (AMSTAR rating from McMaster Health Forum)	0/20	0/20	20/20

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		<p>with retention rates, one with ART uptake, two with medication adherence, and 11 with viral suppression.</p> <p>Only three out of the 20 studies did not detect any positive associations between patient navigation and HIV care continuum outcomes. Two of these studies reported accompaniment to appointments, appointment coordination, service provision, and HIV education and information provision as care continuum outcomes. In addition, one study reported relationship building (i.e., connecting the patient with larger social networks), and another study reported referral to non-HIV health services and accompaniment to the first substance disorders treatment appointment.</p> <p>The findings of this review suggested that patient navigation may serve as an efficient strategy to support engagement in the care continuum among individuals with HIV. Nevertheless, the majority of the included studies were of low methodological quality, thereby warranting further research in this field.</p>					
	<p>Determining the features of care that support access to comprehensive primary care for women living with HIV in high-income settings (89)</p>	<p>This review included 44 articles that identified features of care, including interventions, providers, care models and programs, that facilitate access to comprehensive primary care for women living with HIV. Across the 44 studies, 13 themes emerged, which were then categorized into three domains: 1) care providers; 2) clinic care environment; and 3) social and institutional factors.</p> <p>The quality and types of relationships with care providers served as the most dominant theme present in the majority of the articles. Most studies focused on the nature of patient-physician relationships, attributing improved care to the quality of this relationship, having a female provider which increased women's sense of safety and comfort, as well as the facilitation of comprehensive primary care by certain provider specialties (e.g., gynecologist and primary-care providers). Several articles also emphasized the essential role of case managers and nurse navigators in addressing socio-structural barriers to HIV care. Furthermore, peer advocates, peer supporters, and peer engagement in the design and delivery of services were deemed to be facilitators of HIV care by several women.</p> <p>Components of the clinical care environment (e.g., organization of care, transportation to clinics, and the scheduling of appointments) were highlighted in 23 of the studies. At this level, facilitators to care, as identified by female service users, included appointment-reminder systems, clinic signs, women and family spaces, transportation services, and coordination of care to meet women's HIV, comorbidity, and reproductive healthcare needs.</p>	2017	4/9 (AMSTAR rating from McMaster Health Forum)	5/44	3/44	44/44

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		<p>Broader institutional and societal factors influencing access to care were discussed in 22 of the studies. Across these studies, social and institutional factors included healthcare insurance, patient and physician information and education provision, as well as eliminating HIV-related social stigma.</p> <p>This review presents several features of care that are important to the care experiences of women living with HIV in high-income areas. However, the authors noted several study limitations, including the challenges associated with isolating particular factors that are most effective in improving care access from multifaceted improvement studies.</p>					
	Evaluating the effectiveness of interventions addressing access to primary care among people who are homeless (91)	<p>This review examined five studies in order to examine the effectiveness of interventions addressing access to primary care among people who are homeless. Included studies examined outreach interventions, integration of services, and housing and supportive services interventions.</p> <p>One outreach intervention focused on linking homeless veterans to primary care, and found that incorporating nurse examination, feedback, and clinic orientation to the usual care improved access. Another outreach intervention addressed single adults who were homeless, examining the effects of transitional housing and supportive services, including additional clinics for HIV testing. While the baseline characteristics of control and intervention groups did not appear to be comparable, positive health outcomes (e.g., reduced emergency-department visits and increased Pap smear tests) were observed in the intervention group at 18 months.</p> <p>The integration of primary-care services with an outpatient treatment centre for homeless veterans with substance abuse and mental health problems yielded positive health outcomes, such as increased access to care and fewer emergency-department visits. However, the authors note that the quality of this evidence was very low due to the observational nature of the study and generalizability concerns.</p> <p>Increased access to primary care was observed among people who were homeless and involved in a housing and supportive services intervention. However, the quality of this evidence was also considered to be very low.</p> <p>The findings of this review suggest that interventions addressing barriers to care faced by people that are homeless can improve access to primary care.</p>	2015	7/10 (AMSTAR rating from McMaster Health Forum)	0/5	0/5	0/5
	Identifying barriers and facilitators to the integration of	This review included 153 studies that summarize facilitators of and barriers to integration of healthcare for HIV and other long-term conditions. Four cross-cutting, system-level themes were identified: 1) requirement for effective collaboration and coordination; 2) need for adequate and appropriately skilled and incentivized healthcare providers; 3) need	2015	7/9 (AMSTAR rating from	3/153	0/153	153/153

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	HIV and chronic disease services (90)	<p>for supportive institutional structures and dedicated resources; and 4) leadership with respect to political will, effective oversight and organizational culture. A fifth theme related to patient-centred care was also identified.</p> <p>The first cross-cutting theme highlights collaboration and coordination as a facilitator or barrier to integration, depending on the nature of the relationships between different groups (i.e., providers and specialties, patients and providers, families and communities).</p> <p>The second theme revealed the availability and employment of adequately trained care providers as a key facilitator. In turn, the lack of sufficiently trained providers created significant barriers to care integration for HIV and other chronic illnesses.</p> <p>The third theme that surfaced to support care integration was described as the need for a health system to have supportive institutional structures and resources. Having the right physical structures and commodities, and receiving sufficient funding were identified as important facilitators to setting up and sustaining service integration.</p> <p>The fourth major theme addressed leadership, stewardship, management and organizational culture. This theme includes three distinct dimensions: 1) key factors that can facilitate integration relate to leadership, including political support for integration, describing integration as a central goal and having clear strategies for its implementation; 2) integration is facilitated when these strategies are supported by structural and program features; and 3) high-level support for care integration is inadequate without shifting organizational culture.</p> <p>The fifth theme, external to the health system but supporting all components of health system operation, was placing the patient at the centre of care and addressing their unique needs in a holistic manner. This was identified as a key facilitator of integration.</p> <p>The findings of this review suggested that effective integration of HIV and chronic disease services depend largely on system-level supports. However, these results were complicated by several limitations, including the existence of heterogeneity across the terminology used when defining service integration.</p>		McMaster Health Forum)			
	Examining the association between housing status, medical care, and health outcomes among	This review of 152 studies explored the relationships between housing status, medical care, and health outcomes among patients with HIV. Specifically, six outcome domains were examined: 1) HIV healthcare access and utilization; 2) adherence to ART; 3) HIV clinical health outcomes; 4) other health outcomes; 5) emergency department (ED) and inpatient use; and 6) HIV risk behaviours.	2014	7/9 (AMSTAR rating from McMaster Health Forum)	27/152	1/152	152/152

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	people with HIV (86)	<p>Of the 152 included studies, 35 examined housing status and HIV healthcare access or utilization. The majority of these studies reported statistically significant associations between housing instability and not receiving appropriate HIV care.</p> <p>Thirty articles examined housing status and ART adherence. Of these, 24 studies reported lower adherence among those facing housing instability.</p> <p>Of the 27 articles examining HIV-related clinical health outcomes, 20 found that unstable housing status was associated with poorer health outcomes for people living with HIV.</p> <p>Other health outcomes related to physical or mental health functioning and quality of life were assessed in 27 articles. Twenty-five of these studies showed that homelessness or housing instability was associated with significantly worse outcomes on one or more of these indicators.</p> <p>Twelve out of the 13 studies assessing acute-care services identified that HIV-infected individuals facing unstable living conditions had higher utilization rates of hospital-based emergency department or inpatient care than those with HIV who had stable housing.</p> <p>Finally, 18 of 22 included studies exploring housing status and sexual or drug risk behaviours detected significant associations between housing instability and risk behaviours for continued transmission of infection.</p> <p>Overall, this review found strong evidence for the relationship between housing insecurity and inappropriate HIV care management. However, the findings of this review should be interpreted with caution due to several methodological limitations, such as the inclusion of studies based only in high-income countries.</p>					
	Evaluating the state of knowledge for integrating the social determinants of health into comprehensive shared-care plans (94)	<p>This review included seven studies that evaluated the current state of knowledge for the integration of social factors into comprehensive shared-care plans.</p> <p>The following key themes emerged from the evaluation: 1) integrating health and social sectors; 2) interoperability; 3) standardizing ontologies and interventions; 4) process implementation; 5) professional tribalism; and 6) patient centredness.</p> <p>For example, in 1996, a meeting was convened with national leaders from several countries across the European Union to reach a consensus for the development of a model for the integration of healthcare and social-care needs to promote aging in place. From this meeting, it was suggested that care planning be patient-centred and supported by health information systems that facilitate the collection and dissemination of social status information. Similar consensus-building meetings of interdisciplinary leaders were convened across Europe from 2011 to 2015, which highlighted using informatics to</p>	2016	No rating tool available for this type of document	1/7	0/7	0/7

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		<p>support healthcare and social-care integration. The stakeholders also highlighted that this integration necessitates identifying needs for information exchange, standardizing ontologies and standards, improving information access, and empowering citizens.</p> <p>One study identified interprofessional communication as a potential barrier to collaboration due to professional tribalism. Other barriers that emerged from this study’s findings included organizational structures and geographical distance, uncertainty about knowledge and different value systems, and respecting other people’s unique knowledge and experiences.</p> <p>Finally, several studies recommended placing the care recipient at the centre of planning to facilitate effective interprofessional communication and social-factor integration.</p> <p>The findings of this study highlight that care transitions can be complicated by chronic comorbidities, low socio-economic standing, and aging processes, which supports the importance of integrating the social context into comprehensive shared-care plans. However, this study also illustrates the fact that the current state of knowledge of incorporating the social determinants of health into these care plans are still emerging.</p>					
	<p>Assessing how the criminal justice system may be leveraged to increase HIV intervention among women (92)</p>	<p>The scoping review examined 51 studies in order to assess how the criminal justice system can serve as a setting for HIV intervention among women. This review examined interventions in closed, community, or other criminal justice settings.</p> <p>Closed criminal justice settings were defined as prisons, jails or pre-trial detentions. The majority of HIV interventions were focused on prevention and testing, and were centred on psycho-educational and behavioural approaches. Closed criminal justice settings provided a structured and controlled environment where staff could ensure participation from women and prison staff. Interventions that contained trauma-informed content and emphasized peer support, self-efficacy and awareness were successful at addressing factors such as health knowledge and behaviour. While closed settings provide a unique opportunity for health intervention, these settings often pose difficulty in terms of access, funding, policy and control. Although time-intensive programs seem optimal for the closed setting, time-limited or transitional programs may be better suited for the rapid turnover in jails and detention centres.</p> <p>Community supervision criminal justice settings included probation, parole or transitional-housing programs. Interventions in these settings focused HIV testing and prevention through psycho-education, integrated substance use care, and transitional case management. One intervention, titled Project WORTH, enrolled 306 women for an HIV and intimate partner violence prevention program, and demonstrated an increased</p>	2016	No rating tool available for this type of document	0/51	0/51	51/51

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>proportion of protected sex acts at a 12-month follow-up. This project demonstrated the potential of programs in a community setting.</p> <p>Other criminal justice sites included other settings where at-risk populations could be reached, such as courts and alternative education programs for juveniles. All interventions focused on HIV prevention or testing, with positive outcomes resulting from the feasibility and acceptability of the programs. However, accrual, attrition and heterogeneity of the study sample posed a limiting factor. Further, studies that were time-intensive may be limited in other settings.</p> <p>The most successful interventions in the study involved positive relationships with criminal justice system staff, through understanding of population needs and alignment of staff priorities. Many women are at high risk of acquiring HIV because of transactional sex, drug use, violence and psychiatric disorders. Further, incarcerated women face additional risk factors, and extraordinary stigma. Thus, women in the criminal justice system represent an important population for health intervention. Future research should assess the involvement of this key population in HIV prevention efforts, as interventions grow globally.</p>					
	<p>Assessing the discussion of social determinants of health in peer-reviewed literature (100)</p>	<p>The review examined 366 articles in order to assess the frequency and type of social determinants of health that appear in peer-reviewed publications relating to health. All publications had an affiliation with the National Centre for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. The social determinants of interest included employment and income, homelessness and housing, schooling and education, stigma or discrimination, social or community context, health and healthcare, and neighbourhood or built environment.</p> <p>Certain social conditions predispose particular populations to disease. An understanding of these social determinants of health is key to understanding disparity, and discussion should be included in peer-reviewed research. This review examined how frequently these social determinants were discussed in the literature and examined the depth with which these topics were covered. Articles were considered to have a “substantial” focus if the social determinant of health was one of three or fewer foci in the article. Articles were deemed to have a “minimal” focus if the social determinant was briefly mentioned or was included as one of four or more foci.</p> <p>Sixty-two articles discussed income and employment, six had a substantial focus and discussed income in a range of ways, including personal and household income, and individual or community unemployment. Thirty-two articles discussed housing and homelessness and included measures such as an individual’s current housing situation, past homelessness, and family in the home. Seven articles focused substantially on the</p>	2014	2/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>topic. A total of 118 articles examined education and schooling, emphasizing health programs and policies, training opportunities for educators, or school-based activities and interventions. Thirty-seven articles were described as having a substantial focus. Ten articles addressed stigma or discrimination. Of the four studies focusing substantially on this topic, focus was largely on the stigma associated with the testing and treatment of HIV/AIDS, tuberculosis, and sexually transmitted diseases. A total of 190 articles discussed health and healthcare, and 28 of these articles had a substantial social determinant focus. Of these studies, healthcare provision, access, retention and costs were discussed. Finally, 67 articles examined neighbourhood or built environment, with 17 having a substantial focus. These articles largely addressed this determinant in terms of violence, geography or urbanicity.</p> <p>The review examined the number of articles on the social determinants of health in order to assess improvement in this field and in the reduction of health disparities. Most articles had a minimal focus on the social determinants of health, with one factor in a category often covered to a greater extent than others. The social determinants of health are central to the discussions of infectious disease, as well as to the strategic plan of the National Centre for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Future research should focus on areas that were minimally covered in this review, in order to address the central importance of social determinants to health outcomes.</p>					
	<p>Synthesizing evidence on linkage to care interventions for people living with HIV (93)</p>	<p>This review included 25 articles that described linkage to care interventions for individuals living with HIV. From these studies, five intervention-specific themes and seven major cross-cutting themes were identified.</p> <p>In terms of intervention-specific themes, several key findings were noted. Task-shifting was identified in four studies as effective in increasing linkage to care among people living with HIV. Furthermore, three studies highlighted community-based mobile outreach testing and linkage programs as facilitators of linkage to care. Two studies examined interventions targeting integration of HIV-specific and primary medical care. These studies found that the integration of HIV care into primary health services was acceptable and feasible to people living with HIV and care providers. In addition, two studies demonstrated that provider-initiated testing, counselling, and linkage facilitated linkage to care for people living with HIV. However, these studies also highlighted challenges that prevented the scaling up of interventions beyond individual settings. Finally, providing cessation support for people living with HIV who use drugs was a necessary precursor before effective linkage to care implementation.</p> <p>In addition to intervention-specific themes, seven major cross-cutting themes were identified. Ten studies reported on providers' experiences with linkage-to-care interventions, which yielded diverse provider feedback for intervention implementation,</p>	2015	7/9 (AMSTAR rating from McMaster Health Forum)	1/25	1/25	25/25

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>facilitators and barriers. Furthermore, five studies suggested that the confidentiality concerns of people living with HIV negatively influenced the effectiveness of linkage interventions. The theme of active referral systems was reported in 12 studies. These studies showed that active referral processes were effective in linking people living with HIV into the care pathway, with active referrals being favoured over non-active or no referrals. Eight studies reported that case management and support teams for coordinating linkage to services facilitated efficient linkage. Moreover, nine studies emphasized that persistent problems were present before and after linkage interventions, which, in turn, impaired linkage to care programs. Ten studies examined the importance of receiving support from family members, friends and peers from the local community as enabling interventions by prompting people living with HIV to enrol in HIV-specific services. Lastly, the importance of positive interactions with health workers and case managers were highlighted in 12 studies. In these papers, it was found that healthcare providers and other support workers improved linkage interventions.</p> <p>Overall, this review found that certain community and individual level factors may improve the effectiveness of HIV linkage to care initiatives. However, several limitations, including the exclusive inclusion of cross-sectional data which may have introduced recall bias, should be considered when interpreting the findings of this paper.</p>					
Financial arrangements	Examining whether the potential of integrated funds has been realized in practice (96)	<p>This review of 38 schemes from eight countries sought to propose a framework for understanding the role of integrated funding in promoting coordinated care, and review the evidence to see whether the effects have been attained in practice. None of the included evidence isolated the effects of integrated funding. Rather, studies assessed the collective effects of integrated funding and integrated care, as compared to usual care.</p> <p>Of the 38 schemes, 24 assessed health outcomes including measures of health-related quality of life, physical functioning, depression and anxiety, mortality and carer burden. Thirteen of the 24 schemes assessing health outcomes found no significant differences compared to usual care, and the remaining schemes produced variable findings.</p> <p>This review also reported evidence on secondary-care costs and/or service utilization for 34 schemes. Eleven schemes produced no significant effect on hospital costs or utilization, while three schemes reported a significant reduction in utilization or costs. One scheme reported significantly higher admission rates, and in the remaining schemes, the effects were mixed or ambiguous.</p> <p>Quality of care and user experience were evaluated in various ways, with many studies eliciting the perspectives of staff, patients and carers about their experience of the integrated-care schemes. These studies produced mixed findings, with some reporting improved access to services and increased knowledge of health services, and others</p>	2013	3/9 (AMSTAR rating from McMaster Health Forum)	2/38	5/38	0/38

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>highlighting patients' negative experiences such as being unable to see staff of their choice and feeling less involved in decision-making processes.</p> <p>Although some schemes led to short-term reductions in delayed discharges, there was anecdotal evidence of unintended consequences, including premature hospital discharge and an increased risk of readmission. It is important to note that no scheme was conducive to a sustained reduction in hospital use.</p> <p>Finally, barriers to integration were also identified. The primary barrier to emerge was the difficulty of integrating funds for health and social care, in spite of the existence of supporting statutory and regulatory measures. Other barriers included: 1) differences in performance frameworks, priorities and governance – all of which were prominent among the U.K.-based schemes; and 2) difficulties related to linking different information systems, which were more widespread.</p> <p>The findings of this review suggest that the link between integrated funding and improved health outcomes and lower costs is likely to be weak. Thus, expectations surrounding the potential of integrated health and social care should be realistic and further research should be conducted on its effectiveness.</p>					
	Examining different financial mechanisms to facilitate inter-sectoral collaboration for health promotion (95)	<p>Collaboration between sectors such as health, social welfare, education and labour can influence the social determinants of health. This review identified 51 documents that described the use of different financial mechanisms to facilitate inter-sectoral collaboration for health promotion. Three major financial mechanisms that support inter-sectoral collaborative health-promotion activities emerged from this review: 1) dedicated earmarked funding; 2) delegated financing; and 3) joint budgeting.</p> <p>Dedicated earmarked funds were provided and controlled by one ministry or agency in charge of health at national level. At a local level, funds are typically under the control of regional or municipal administrations. Increased flexibility in funds earmarked for inter-sectoral collaboration can maximize opportunities for collective action.</p> <p>Delegated financing involves allocating funding to an independent statutory organization such as a health-promotion agency or organization. Funds can be administered to this agency from several different sources in addition to health budgets. This form of financing also signals the decentralization of power to prioritize initiatives away from the government. However, the degree to which delegated financing can support inter-sectoral collaboration depends on the amount of flexibility in funding use.</p> <p>Finally, joint budgeting is an approach to funding inter-sectoral activity in which two or more sectors share their resources to address a particular health-promotion problem. Joint</p>	2016	3/9 (AMSTAR rating from McMaster Health Forum)	4/51	0/51	0/51

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>budgets can also improve mutual understanding across different sectors and support flexibility in how funds are distributed. However, one key challenge is sustaining the partnerships emerging from these joint budgets.</p> <p>This paper outlined the main financing mechanisms that have been employed to support inter-sectoral health-promotion activities. However, the authors noted several review limitations, including the absence of any evaluations of the equity implications of various financing mechanisms.</p>					
Governance arrangements	Describing the Australian National Disability Insurance Scheme and analyzing the potential of this scheme to address inequities (99)	<p>A systematic search of policy documents related to the Australian National Disability Insurance Scheme was conducted with the aim of exploring issues of equity. This search, which served to supplement a longitudinal study on the implementation of this scheme in Australia, produced five relevant documents. Three interrelated themes pertaining to inequities in care and outcomes emerged from an analysis of these documents: 1) differences between disability type; 2) differences emerging from disability service and support markets; and 3) widening inequities between groups on the basis of locality.</p> <p>Theme one highlights the fact that while empowerment, choice and control are important to health, there are differences in people’s abilities to exercise this choice and control. Thus, in some contexts, personalization schemes and individualized budgets for equity may lead to greater satisfaction and continuity of care and a more effective use of resources. This, in turn, redresses the inequities between those with and without a disability.</p> <p>Underlying the National Disability Insurance Scheme is a market-based approach, which includes services and supports that can be either disability-specific or more general in nature. Thus, theme two addresses the concern that citizens need to have the right capabilities and supports to exercise choice and control to select quality services. Yet, it has been noted that this will exist as a challenge for people who are marginalized and experience complex forms of disadvantage.</p> <p>The third theme emphasizes the fact that the National Disability Insurance Scheme actually requires many local markets based on geographic diversity. Since developing these markets warrants significant time, this feat may be less achievable in outer urban areas with high populations of Indigenous, culturally and linguistically diverse communities. In rural and remote areas ‘thin’ markets (i.e., where only one or two providers exist) may emerge, which, in turn, may lead to market failure, where no new providers enter the marketplace. Market failure or thin markets may preclude individuals who are already disadvantaged geographically from exerting true choice and control through personalization.</p>	Not reported	3/9 (AMSTAR rating from McMaster Health Forum)	0/5	Not reported	Not reported

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	Identifying different concepts and frameworks to characterize inter-sectoral processes (97)	<p>The National Disability Insurance Scheme has the potential to improve the health and wellbeing of Australians. However, the findings of this paper highlight the importance of addressing the implementation-related inequities of this scheme.</p> <p>This review included papers that explored different concepts and frameworks to describe inter-sectoral processes. Conceptual definitions were proposed for four key terms: 1) inter-sectoral action; 2) inter-sectoral action for health; 3) inter-sectoral collaboration; and 4) inter-sectoral policy. Conceptual frameworks for inter-sectoral processes were also reviewed for potential use.</p> <p>Fifteen references provided a definition of the term ‘inter-sectoral action’. The majority of the definitions characterized inter-sectoral action as a process, a practice, a collaboration, a coordination, or an interaction. Interestingly, only one of the definitions highlights the importance of the conditions and leadership skills required to achieve inter-sectoral action. Due to the heterogeneous nature of the examined definitions, the authors devised a unified definition: working with more than one sector to address an issue of shared interest to achieve better results than those obtained working independently.</p> <p>Fourteen references provided a definition of the term ‘inter-sectoral action for health’. The following definition was presented most frequently: an established relationship between components of the health sector and components of another sector that has been formed to address a health issue, in a way which is more advantageous than single-sector action.</p> <p>Eleven different references reported a definition of the term ‘inter-sectoral collaboration’. Across the literature, however, the term ‘inter-sectoral action for health’ seemed to be used interchangeably with ‘inter-sectoral collaboration’. Thus, the authors proposed their own definition building on concept analysis approach: working with more than one sector of society to take action on an area of mutual interest to achieve better results than those realized working independently.</p> <p>With respect to ‘inter-sectoral policy’, only one definition was identified: policies concerning health that affect sectors external to health services, but typically developed in collaboration with the health sector.</p> <p>No comprehensive conceptual frameworks emerged from the included articles.</p> <p>Overall, this project gleaned several key definitions to be used for the terms: ‘inter-sectoral action’, ‘inter-sectoral action for health’, ‘inter-sectoral collaboration’, and ‘inter-</p>	2011	No rating tool available for this type of document	Not reported	Not reported	Not reported

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>sectoral policy'. However, the authors noted the absence of a comprehensive, conceptual model for inter-sectoral processes.</p>					
	<p>Identifying and describing global cases of inter-sectoral action for health equity featuring a central role for governments (98)</p>	<p>This scoping review included 128 articles that examined global cases of inter-sectoral action for health equity involving governments.</p> <p>The findings of this review suggested that inter-sectoral action was frequently implemented with cooperation and/or coordination occurring between different government sectors. The majority of the included case articles also highlighted some description of why government sectors reached decisions about the initiation and/or implementation of inter-sectoral action.</p> <p>Fewer than a quarter of the case articles described government-centred inter-sectoral activities addressing upstream determinants of health. However, the majority appeared to focus on midstream factors such as health behaviours or life circumstances, and/or downstream determinants including service accessibility issues.</p> <p>Over half of the case articles described some form of evaluation in response to inter-sectoral initiatives. However, less than half of the included case articles described the use of specific tools, such as Health Impact Assessment tools, for the purpose of impact assessment in implementing inter-sectoral initiatives which address health inequities.</p> <p>In general, a high proportion of case studies did not report enough information to confirm the period of initiation of various initiatives, the involvement of non-governmental sectors, whether evaluations were performed, and processes of inter-sectoral collaboration. Thus, improvements in such reporting in future publications are needed.</p>	<p>2010</p>	<p>No rating tool available for this type of document</p>	<p>Not reported</p>	<p>Not reported</p>	<p>Not reported</p>

Appendix 3: Systematic reviews relevant to Element 3 - Adopting a rapid-learning and improvement approach to incrementally strengthen health and social systems

Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
Creating rapid-learning health and social systems	Examining the processes and impacts of developing, implementing and adopting human resource information systems in health organizations (105)	<p>The review examined 68 publications in order to examine human resource information systems in healthcare.</p> <p>Human resource information systems are a sub-category of administrative systems within health organizations. These systems deal with the management of human resources, including recruitment, teaching, planning and resource allocation. Human resource information systems have potential benefit in healthcare, but further research is needed to identify its usefulness, effectiveness and implementation barriers. The review aimed to assess evidence on human resource information systems across healthcare organizations, focusing on the methods employed and the focus of interest across studies.</p> <p>In collecting and interpreting the existing evidence on human resource information systems in healthcare organizations, this review found that few studies considered the socio-contextual and technological factors that influence the operation of human resource information systems in this context. These factors are crucial in considering the impact of this system. Many studies applied theoretical frameworks, but these frameworks varied across research. Most research in this area focuses on applied projects – in order to advance theoretical understanding, there must be an emphasis on the theory of human resource information systems development, implementation and use. The focus of studies varies, with high-income countries largely focusing on smaller-scale projects. Lower-income countries mainly focus on broader systems of decision-making and policymaking. Finally, there are a limited number of studies focusing on the development and outcomes of human resource information systems projects as most current research emphasizes use of human resource information systems.</p> <p>The review explored human resource information systems in healthcare, and found that there are important gaps in knowledge when it comes to the impact and effectiveness of these systems. As the cost and size of the healthcare system grows, the need for linkage between administrative data and clinical outcomes grows in importance. In order to enhance “learning” health systems, future research should broadly examine the value of information within health systems.</p>	2014	8/9 (AMSTAR rating from McMaster Health Forum)	5/42	0/68	7/67
Creating rapid-learning health and social systems	Examining attempts to adopt the Learning Health System paradigm, with an emphasis on	<p>The review examined 32 documents, including 13 studies, in order to examine the attempts to adopt the Learning Health System paradigm.</p> <p>A learning healthcare system is driven to generate and apply the best evidence for collaborative healthcare, while focusing on innovation, quality, safety and value. Patients are a major factor in this model of health provision, given the emphasis on collaboration and</p>	2015	2/9 (AMSTAR rating from McMaster)	Not reported in detail	0/32	0/32

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
	implementations and evaluating the impact on current medical practices (103)	<p>collective decision-making. This review examines the attempts to implement this model of medicine.</p> <p>The results of this review indicate that there has been very little action in terms of implementing learning health systems, despite a great deal of interest. It is possible that there is great trust placed in the learning health system without proper assessment of impact. This may have contributed to the low number of studies qualifying for inclusion in the review. A major focus should be placed on assessment and reporting, considering that many attempts to adopt this system of health have been attempted and not reported. Existing frameworks for assessing medicine applications can be used to assess the efficacy of learning health systems. Further, reporting of the evaluation of these systems must be comprehensive. Lack of consistency across studies diminishes quality and effectiveness, and makes it difficult to assess outcomes.</p> <p>Taken together, the Learning Health System paradigm must be of central focus to researchers moving forward. While the central tenets of this approach are supported by researchers, there is a lack of assessment. The impact of such a system must be evaluated in order to boost adoption.</p>		Health Forum)			
Creating rapid-learning health and social systems	Examining the spectrum of ethical issues that is raised for stakeholders in a Learning Health System (104)	<p>The review examined 65 studies in order to determine the spectrum of ethical issues raised for stakeholders in a “Learning Health Care System”.</p> <p>A Learning Health Care System embodies an approach for integrating clinical research and clinical practice, in order to address problems of effectiveness and efficiency in the healthcare system. In such a system, knowledge generation should be embedded so that health systems can learn and grow. However, this blend of research and practice raises ethical dilemmas such as confidentiality and consent. This review aimed to summarize pertinent ethical issues in order to guide decision-making among healthcare professionals and policymakers.</p> <p>The ethical issues arising in Learning Health Care Systems can be broken down into different phases. In the phase of designing activities, ethical issues include the risk of negative outcomes that may result from activities that are not academically rigorous. As well, it is possible that stakeholders will not engage with this stage, which can affect trust and support in a learning activity. In the ethical oversight of activities, confusion surrounding ethical obligations and regulations can hinder progress. In conducting activities, the involvement of participants can lead to ethical difficulties with consent and data management. In implementing learning, main difficulties arise in changing practice efficiently, maintaining transparency, and reducing unintended negative consequences.</p> <p>The distinction between “research” and “practice” often creates ethical confusion, as many learning healthcare activities do not fit this dichotomy. Strategies to cope with these ethical</p>	2015	1/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	0/65	0/65

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Element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with Indigenous peoples	Proportion of studies that focused on HIV
		<p>problems include implementing policies and procedures, providing training and guidance for ethical committee members, and streamlining ethical review processes. The rights of individuals must be protected as healthcare quality improves.</p> <p>Future research should focus on clarifying these ethical dilemmas and contribute to improving the quality of healthcare.</p>					



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