

Prevention of HIV Infection in Adolescents: A Literature Review

Prepared for the Saskatchewan Prevention Institute

March 2015

Prevention of HIV Infection in Adolescents: A Literature Review

Report Prepared by the Saskatchewan Prevention Institute

March 2015

Table of Contents

Executive Summary	4
1. Introduction	6
1.1 Current Literature Review.....	6
1.2 Terminology	7
2. Introduction to HIV/AIDS	7
2.1 HIV Transmission.....	8
2.2 Symptoms of HIV.....	9
2.3 HIV Testing	9
3. Adolescence and HIV Risk	10
3.1 HIV in Canadian Adolescents	11
3.2 Adolescents at Particular Risk.....	12
3.2.1 Homeless or Street-Involved Youth	13
3.2.2 Adolescents who use Substances.....	14
3.2.3 Gay and Bisexual Young Men	14
3.2.4 Adolescent Survivors of Abuse.....	15
3.2.5 Aboriginal Adolescents.....	16
3.3 Importance of the Social Determinants of Health	16
4. HIV Prevention Programs for Adolescents	17
4.1 Sexual Health Education in Schools	17
4.2 Abstinence-Only Programs	20
4.3 Comprehensive Risk-Reduction Programs	20
4.3.1 Behavioural Risk-Reduction Programs	21
4.3.2 Youth Development Programs.....	23
4.4 Community-Based Programs	23
4.5 Digital Technology Prevention Methods.....	24
5. Other Prevention Program Considerations	26
5.1 Integration of Services for Adolescents	26
5.1.1 Importance of HIV Testing	27
5.2 Adolescent Involvement in Prevention Programs	28
5.2.1 Youth Engagement.....	29

5.3 Parental Involvement in HIV Prevention..... 31

6. General Principles for Successful HIV Prevention Programs 32

7. Barriers to HIV Prevention Program Participation..... 34

8. Summary and Conclusions 34

References 36

Executive Summary

Saskatchewan adolescents have high rates of sexually transmitted infections (STIs) and unplanned pregnancies, both of which are indicators of participation in high risk sexual behaviours. These indicators, along with the high rates of human immunodeficiency virus (HIV) in Saskatchewan, suggest that many adolescents may be at risk of HIV infection. Many of the behaviours that pose a risk of HIV infection start to emerge during adolescence, making this time period a vital focus for prevention efforts. Like all people, adolescents are at risk of contracting HIV if they participate in high risk behaviours like unprotected sex and unsafe substance use. Additional social factors that increase adolescents' vulnerability to HIV infection include income, employment, unstable housing, and homelessness. Other compounding factors include low perception of risk, low rates of HIV testing, inconsistent condom use, having older sexual partners, and inadequate HIV prevention education and services. Groups of adolescents already vulnerable to a range of health, social, and economic inequities are overrepresented in the HIV epidemic. These include homeless and street-involved adolescents, adolescents who use substances, gay and bisexual males, survivors of abuse, and Aboriginal adolescents.

Today's adolescents have grown up in a world with HIV, but many still lack the knowledge and skills necessary to prevent HIV infection. Fortunately, research has shown that well-designed, well-implemented HIV prevention programs can decrease HIV risk behaviours among adolescents. Research has also shown that comprehensive, holistic HIV prevention programs are the most effective in reducing HIV risk. These types of programs often provide the following: education and information on all health issues (including HIV), opportunities to build life skills, youth-friendly services (including reproductive health services and access to contraception), and a safe and supportive environment. Other attributes that are common among programs deemed to be effective in reducing sexual health risk behaviours include having trained instructors; having age-appropriate information; involving parents, youth-serving organizations, and health organizations; and including a variety of skill-building components. Skills relevant to sex refusal, resisting peer pressure, communicating with sexual partners, and using condoms correctly are critical for reducing HIV risk. In order to prevent negative health outcomes, these programs have to target young adolescents prior to their involvement in sexual activity.

Although successful prevention programs often have these attributes in common, it is important to remember that adolescents are not a homogeneous group. No single HIV prevention strategy will work for all adolescents. Therefore, successful programs often include adolescents in the planning, implementing, and monitoring of HIV prevention programs to ensure that these programs are tailored to their needs. Because adolescents have many different needs, integrating services can be important in order to lower the barriers they face to obtaining sexual health information and services. Integration also benefits organizations and service providers because they can expand their reach and impact. Integrating services can include providing "one-stop shopping" where sexual health information and services are provided alongside other healthcare and social services or it can involve linking adolescents to a wide array of supportive services. Integration of services can also include broader structural interventions, including a combination of education and awareness, biomedical interventions (e.g., HIV

testing, treatment for those living with HIV), and population-based interventions that focus on the social determinants of health (e.g., mental health programs, housing, and education).

Research has shown that comprehensive HIV prevention programs can effectively reduce adolescents' risk of HIV infection. Reported outcomes include delay of first intercourse, reduction in the number of sexual partners, decrease in unprotected sex, and increase in condom use. Therefore, in addition to reducing the risk of HIV, these programs reduce the risk of other STIs and unplanned pregnancies. Importantly, providing adolescents with accurate, comprehensive information about sex has not been shown to hasten initiation of sexual intercourse among adolescents. There are many methods through which adolescents can receive these programs including school-based education, community-based programs, clinic-based interventions, and digital technology methods (e.g., mobile phone applications, online games, websites). A coordinated focus on HIV prevention in adolescents, using a variety of methods, will greatly improve the services received by adolescents and, ultimately, reduce the rate of HIV infections in Saskatchewan.

For more information, including a list of references, please refer to the complete report.

1. Introduction

Young people are the key in the fight against AIDS. By giving them the support they need, we can empower them to protect themselves against the virus. By giving them honest and straightforward information, we can break the circle of silence across all society. By creating effective campaigns for education and prevention, we can turn young people's enthusiasm, drive and dreams for the future into powerful tools for tackling the epidemic. (Kofi Annan, 2002, as cited in Joint United Nations Programme on HIV/AIDS [UNAIDS], 2003, p. 3).

Unlike other parts of Canada, Saskatchewan has seen a substantial increase in the number of new cases of human immunodeficiency virus (HIV) since 2003. Although the rates have begun to decrease in the last few years, rates of new HIV infections in Saskatchewan have remained around twice the national average since 2008 (Saskatchewan Ministry of Health, 2014). Of the 129 new cases of HIV reported in 2013 in Saskatchewan, 81% were in those aged 20 to 49 years. While 66% of the overall cases were identified in males, women of childbearing age (ages 15 to 39 years) are one of the groups that has seen large increases in HIV infection rates in the last number of years. This is particularly true for the 20 to 29 age group, where female cases exceeded male cases in 2012 (Saskatchewan Ministry of Health, 2013). These are important facts to consider when thinking about the prevention of HIV transmission, both to sexual partners and to future children.

Given the number of individuals testing positive for HIV in the 20 to 29 age group, it is also important to consider the prevention of HIV infection in youth. Research suggests that because many youth have not been tested for HIV, and because the symptoms of HIV can take many years to develop, many cases of HIV and AIDS (acquired immunodeficiency syndrome) that are identified among people in their 20s and early 30s may have been acquired during adolescence (Boyer & Kegeles, 1991; Canadian AIDS Information Treatment Exchange [CATIE], 2014a; Kirby, 2002b; Morse, Morse, Burehfiel, & Zeanah, 1998; Mullen, Ramirez, Strouse, Hedges, & Sogolow, 2002). In other words, the number of youth infected with HIV is likely much higher than that suggested by age-specific statistics. The fact that many youth living with HIV remain unaware of their status for years increases the likelihood that they are unknowingly infecting others with HIV (DiClemente, Crosby, & Wingood, 2002; Public Health Agency of Canada [PHAC], 2013b). Therefore, it is important that youth are aware of their HIV status and that HIV prevention efforts are directed toward this population. Without increased testing and prevention efforts directed at youth, HIV infection rates will likely remain high in Saskatchewan.

1.1 Current Literature Review

Recognizing the importance of focusing on the primary prevention of HIV infection in Saskatchewan youth, both for their own health and for the health of their future children, the Saskatchewan Prevention Institute conducted a review of the literature in this area. In order to highlight the importance of HIV prevention for adolescents, the following review first summarizes information about common risk behaviours in adolescence that can lead to HIV

infection. The review also includes information about adolescents at particular risk of HIV infection. Finally, the review will focus on ways to most effectively reduce the risk of infection in adolescents, including sexual health education, community programs, parental involvement, youth engagement, and other prevention methods. The information from this review will be shared by the Saskatchewan Prevention Institute in an effort to increase understanding about the importance of HIV prevention in adolescence and the components of prevention programs that lead to successful outcomes.

1.2 Terminology

There is little agreement in the developmental literature about the age ranges encompassing adolescence and youth, but these age ranges do overlap. The Canadian Paediatric Society (2003; reaffirmed 2014) states that “adolescence begins with the onset of physiologically normal puberty, and ends when an adult identity and behaviour are accepted” (p. 577). They suggest that this period of development corresponds roughly to the ages 10 to 19 years. PHAC (2014g) defines youth as those aged 15 to 24 years. The American Academy of Pediatrics defines adolescence as ages 11 through 21 and young adulthood (youth) through age 30 (Morse et al., 1998). Much of the literature reviewed in the current document either used these terms interchangeably or did not define the age range being discussed. As the focus of the current literature review is on HIV prevention, including education about HIV risk before these types of behaviours occur, the early adolescent period is very important. Therefore, the terms “adolescent” and “adolescence” will be used whenever possible. The term “youth” will also be used when appropriate, based on the topic or literature being discussed (e.g., youth engagement). However, the period of adolescence (ages 10 to 19 years) is the primary focus of this review.

2. Introduction to HIV/AIDS

Before proceeding, it is important to have a basic understanding of HIV/AIDS, including the meanings of acronyms used in this area. As indicated previously, HIV is the acronym for human immunodeficiency virus. This name highlights the fact that HIV can only be transmitted from one human to another human, and that it is a virus that causes a deficiency in the immune system (Positive Women’s Network Society, 2001). More specifically, HIV infects the CD4 positive T cells, which are the key components of the human cellular immune system (UNAIDS, 2008). CD4 cells, a type of lymphocyte or white blood cell, are responsible for signalling other immune system cells to fight infections in the body (AIDS.org, 2009). When HIV enters these cells, it impairs or destroys them, resulting in a deterioration of the immune system. According to UNAIDS, the immune system is considered deficient when it is no longer able to fight off infections and diseases (i.e., when the number of CD4 cells is less than 200, meaning 200,000 cells per mL of blood).¹ HIV is a progressive disease that continually causes changes and damage to an individual’s immune system.

¹ The lower limit of ‘normal’ is 500, meaning 500,000 CD4 cells per mL of blood.

When individuals' CD4 cells drop below 200 and they contract one or more opportunistic infections, they are said to have AIDS (acquired immunodeficiency syndrome). Opportunistic infections are those that individuals with HIV are particularly susceptible to because of the damage to their immune system. There are a wide range of opportunistic infections that include, but are not limited to, fungal infections, respiratory infections, and various forms of cancer. These infections are ones that are rare among people with a healthy immune system. In summary, AIDS is considered a syndrome or a group of signs, symptoms, illnesses, and infections that are related to the damage done to the immune system due to infection with HIV (UNAIDS, 2008).

Prior to the introduction of antiretroviral therapy (ART), particularly combination antiretroviral therapy (cART), the average life expectancy after HIV diagnosis was around 10.5 years (Harrison, Song, & Zhang, 2010). The use of ART or cART can slow down the progression of HIV by decreasing the individual's viral load or the amount of HIV in a person's blood. As a result, ART and cART can allow the immune system to strengthen itself. Since 1996, when the use of cART was expanded, the average life expectancy increased dramatically, approaching that of the general population (Gulick, 2010; Samji et al., 2013).

2.1 HIV Transmission

HIV can only be transmitted when there is a direct exchange of specific bodily fluids between two humans. The five fluids capable of transmitting HIV are: 1. blood; 2. semen and pre-cum; 3. vaginal fluid; 4. anal fluid; and 5. breast milk (Positive Women's Network Society, 2001). Common high risk activities include unprotected vaginal and anal sex, sharing needles and other substance use equipment, and tattooing with used needles. In Saskatchewan, injection drug use (IDU) accounted for 55% of new cases of HIV in 2013 (Saskatchewan Ministry of Health, 2014), while the primary mode of transmission in other provinces was unprotected sex. In Canada, 49% of new cases of HIV infection were found in men who have sex with men, and 30% were reported in people engaged in heterosexual sex (PHACf, 2014).

Everyday, casual contact is not a risk for transmitting HIV, unless people are participating in behaviours that could result in an exchange of bodily fluids. Simply put, HIV is spread when a body fluid with a high concentration of HIV (blood, semen, vaginal fluid, anal fluid, breast milk) enters the body of someone else through an activity (e.g., intercourse, sharing needles, during labour, delivery, breastfeeding) that provides direct access to the bloodstream (e.g., through breaks in the skin or by passing through a mucous membrane²) (Positive Women's Network Society, 2001; Sheth & Thorndycraft, 2009). In other words, HIV transmission requires a direct exchange of body fluids with high concentrations of HIV. Certain activities, like unprotected vaginal and anal sex, are considered higher risk activities because small abrasions can occur during sex, resulting in direct routes for HIV transmission.

² Mucous membranes are tissues that line the surfaces of body cavities such as the nostrils, mouth, throat, vagina, urethra, and anus.

2.2 Symptoms of HIV

Most people living with HIV do not show symptoms for several years after infection. This means that they may not know that they have been infected. Some people do develop acute retroviral syndrome at the time of seroconversion, the time at which the body develops antibodies to HIV. Seroconversion usually takes place between 1 and 6 weeks after HIV infection (UNAIDS, 2008). People experiencing acute retroviral syndrome typically have symptoms similar to glandular fever (e.g., fever, rash, joint pains, and enlarged lymph nodes). Even people with HIV who are not symptomatic are highly infectious, particularly at the time of seroconversion, and can transmit the virus to others.

AIDS is the most serious stage of HIV infection. People living with AIDS have severely weakened immune systems and, as such, may have developed an opportunistic infection (e.g., thrush, tuberculosis, recurrent pneumonia) or an AIDS-related cancer (e.g., lymphoma, Kaposi's Sarcoma) (AIDS.gov, 2014). Not everyone living with HIV will advance to AIDS. However, if a person is diagnosed with AIDS, they require medical treatment in order to prevent death. According to the Centers for Disease Control and Prevention (CDC, 2014a), life expectancy without treatment is about one year following a diagnosis with AIDS. With proper treatment, CD4 cell counts may increase and the person's health may begin to improve. Once a person receives a diagnosis of AIDS, however, the diagnosis is not removed regardless of subsequent changes in health status (CDC, 2014a).

2.3 HIV Testing

Early detection of HIV infection is important for both treatment and for the prevention of HIV transmission (Spielberg et al., 2003). HIV diagnostic tests are used to detect whether HIV antibodies are present in a person's body. These antibodies are produced by the immune system in response to the HIV infection. This type of test is used because it is easier and cheaper to detect antibodies rather than the virus itself (UNAIDS, 2009).³ As the test relies on the presence of antibodies, there is a window period between the occurrence of risky activities and when the results of an HIV test will be accurate. For most people, it takes three months for enough HIV antibodies to develop and result in a positive HIV test result.

Regular HIV testing is extremely important as it allows people who test positive to access treatment, care, and support services as early as possible. Because someone can have HIV and not have any symptoms for five or more years, waiting until symptoms occur can be detrimental, as damage to the immune system is still occurring (Society of Obstetricians and Gynaecologists of Canada [SOGC], 2004). Receiving care before the immune system is severely impacted and/or opportunistic infections occur can help individuals keep their viral loads down, thereby prolonging the time before they are diagnosed with AIDS. Testing is also crucial because

³ The first test used is the enzyme-linked immunosorbent assay (ELISA). If the first test is positive for HIV antibodies, a repeat ELISA test will be done, and then a second test (called a Western blot) will be done to confirm the results.

it allows people who test positive to take the necessary precautions to prevent the spread of HIV to others. Frequent testing is particularly important for people who are engaged in risky activities, as their HIV infection status may change rapidly. Also, because the HIV virus mutates quickly, a person living with HIV can be re-infected with a different strain of HIV by participating in risky behaviours (Canadian AIDS Treatment Information Exchange [CATIE], 2009).

Recognizing the importance of HIV testing for treatment and HIV transmission prevention, the Saskatchewan Provincial Leadership Team (SK HIV PLT) has developed a Saskatchewan-specific HIV testing policy.⁴ The policy recommends voluntary, confidential HIV testing and counselling for:

- all pregnant women;
- all patients with tuberculosis and/or hepatitis C;
- all clients assessed in a sexually transmitted infection (STI) clinic or seen in any health care setting for an STI;
- all patients showing signs or symptoms that may be consistent with an HIV-related disease;
- all clients who have requested an HIV test; and
- all patients aged 13 to 64 receiving primary or emergency health care who do not know their HIV status, or who are sexually active and have not had an HIV test in the last 12 months.

3. Adolescence and HIV Risk

Many of the behaviours that pose a risk of HIV infection start to emerge during adolescence, making this time period a vital focus for prevention efforts. Adolescence is a unique developmental period marked by rapid physical changes, sexual maturation, and significant changes in cognitive, behavioural, emotional, and social skills (Commendador, 2010; Flicker, Guilamo-Ramos, & Bouris, 2009; Kachur et al., 2013). It is also generally thought of as a time of behavioural experimentation and risk-taking, where youth work to assert their increasing independence (Battles & Weiner, 2002; Bush, 2002; Silverman, 2013). As adolescents strive for independence, they often face decisions about romantic relationships, sexual activity, and substance use. Like people of all ages, adolescents are at risk of HIV infection if they engage in risky sexual and/or substance use behaviours (e.g., unprotected vaginal, anal, or oral sex; sharing needles or other substance use equipment) (Challacombe, 2013; Kapogiannis, Legins, Chandan, & Lee, 2014; Kirby, 2002b). Adolescents may engage in these types of high risk behaviours for many reasons, including lack of knowledge, peer pressure, lack of planning, and being under the influence of substances (Battles & Weiner, 2002).

According to the 2009 – 2010 Canadian Community Health Survey, Canadian youth (aged 15 to 24) do engage in behaviours that place them at risk for HIV and other STIs (Challacombe, 2013). For example, this survey found that 66% of youth were sexually active, and condom use in this group

⁴ For more information about the Saskatchewan HIV testing policy, please refer to [http://www.skshiv.ca/SK%20HIV%20Testing%20Policy%20Final%20Dec%202012%20\(2\).pdf](http://www.skshiv.ca/SK%20HIV%20Testing%20Policy%20Final%20Dec%202012%20(2).pdf).

was inconsistent. Based on the same study, Rotermann (2012) states that 9% of youth reported having sexual intercourse for the first time before 15 years of age, and 25% had intercourse at age 15 or 16. A third of those who reported being sexually active reported having more than one sexual partner in the last year; this number was higher among 15 to 17 year olds (35%) than 20 to 24 year olds (30%). Although reported condom use has increased since the 2009-2010 Canadian Community Health Survey, 32% of youth surveyed in 2013 reported not using a condom the last time they had sex.

Although adolescents and youth do not represent the majority of HIV cases in Saskatchewan or Canada, they do represent the majority of STI cases (PHAC, 2013f; Saskatchewan HIV Provincial Leadership Team, 2013). In 2010, the highest rates of chlamydia and almost half of all reported cases of gonorrhoea were identified in youth aged 15 to 24 (PHAC, 2014g). The highest rates of gonorrhoea were reported among adolescent females aged 15 to 19. In addition to the high rates of STIs in adolescents, Canada's rates of adolescent pregnancy remain some of the highest among developed countries (UNICEF, 2007). Saskatchewan has the highest rates of live births from adolescent pregnancies in Canada (excluding the Canadian territories), at 32.5 out of 1,000 (Statistics Canada, 2013). In 2005, Saskatchewan adolescents experienced 1,652 pregnancies that resulted in 1,191 live births; 15 of these were to girls under the age of 15 (Murdock, 2009).⁵ These facts are further indication that adolescents are participating in high risk behaviours, making them a significant at-risk group for HIV infection (Saskatchewan HIV Provincial Leadership Team, 2013).

3.1 HIV in Canadian Adolescents

Although statistics focused on HIV in adolescents are not common in Canada, research has shown that 27% of HIV diagnoses in Canada between 1985 and 2011 were in youth aged 15 – 29 (CATIE, 2014a). In 2011 alone, there were 531 cases of HIV diagnosed in Canadian youth. According to PHAC (2014g), positive HIV tests have not been evenly distributed across males and females in this age group. From 2002 – 2011, females were overrepresented in the 15 – 19 age group (56.5% of the total positive HIV tests in this age group), and males were overrepresented in the 20 – 29 age group (66.3% of the total for this age group). This data suggests that females tend to be diagnosed with HIV at a younger age than males (PHAC, 2014g). This difference may be due to the fact that females are infected at younger ages or that they are simply more likely to be tested at younger ages.

Saskatchewan has the highest proportion of cases attributed to youth at 36% of the total number of cases. PHAC (2014g) indicates that youth are also over-represented in the number of positive HIV test reports in Saskatchewan compared to their representation in the overall population. For example, between 2002 and 2011, youth aged 15 to 29 represented 34.2% of the positive HIV tests in Saskatchewan, yet they comprised an average of only 21.5% of the

⁵ For more information about adolescent pregnancy in Saskatchewan, please refer to a previously completed report by the Saskatchewan Prevention Institute titled "Adolescent Pregnancy in Saskatchewan: Best Practices for Prevention" (available at <http://www.skprevention.ca/shop/adolescent-pregnancy-in-saskatchewan-best-practices-for-prevention-report/>).

province's general population. These numbers are particularly concerning as it is estimated that 25% of Canadians (and up to 50% of adolescents) infected with HIV are unaware of their infection and may be unknowingly infecting others (Kourtis et al., 2006; PHAC, 2013b). Similarly, it is important to remember that many people who are infected with HIV in their adolescence and youth will not be diagnosed until they are adults, when symptoms appear. Therefore, many of the people who are infected with HIV during their adolescence and youth may not be captured within these statistics (CATIE, 2014a).

According to Challacombe (2013), over half (56%) of new HIV diagnoses among youth in Canada in 2011 were attributed to men who have sex with men (MSM), and 26% were attributed to heterosexual sex. The percentage of youth infections attributed to heterosexual sex is likely higher in Saskatchewan, as the overall percentage attributed to the MSM category is lower than in the rest of Canada (Saskatchewan - 9% in 2013 vs Canada - 50% in 2013). The Saskatchewan Ministry of Health (2014) reports that there is a steady upward trend in cases reporting heterosexual sex as their risk factor. The second most common HIV transmission route reported in this age group is injection drug use.

3.2 Adolescents at Particular Risk

Like all people, adolescents are at risk of contracting HIV if they participate in high risk behaviours like unprotected sex and unsafe substance use. That being said, there are a number of factors that increase adolescents' vulnerability to HIV infection beyond individual behaviours. These social factors include income, employment, unstable housing and homelessness, and access to services (CATIE, 2012; PHAC, 2014g). Other compounding factors include low perception of risk, low rates of HIV testing, inconsistent condom use, high rates of STIs, having older sexual partners, and inadequate HIV prevention education and services (CDC, 2014b; Kirby, 2002b).

Particular groups of adolescents and youth are at higher risk of HIV because of a higher prevalence of risky behaviours in their group (CATIE, 2014a; Flicker et al., 2009; Kirby, 2002b; Morse et al., 1998). Five of the groups identified as being the most vulnerable to HIV infection in Canada are discussed in the following sections: homeless and street-involved youth, youth who use substances, gay and bisexual young men, survivors of abuse, and Aboriginal youth. It is important to note that these risks tend to cluster or intersect (CATIE, 2012; Morse et al., 2008; Sales & DiClemente, 2010). For example, adolescents who are homeless are often more likely to be involved in substance use and high risk sexual behaviours (e.g., sex work). Adolescents who are members of more than one risk group may experience additional stigma and marginalization (CATIE, 2012), which may lead to increased participation in high risk activities (e.g., injection drug use) (Kirby, 2002b; PHAC, 2014d).

3.2.1 Homeless or Street-Involved Youth

There has been a lot of research focus on the impact of homelessness and street involvement on HIV risk. While it is difficult to know the exact number of youth living on the street, PHAC (2014g) estimates that there are roughly 150,000 homeless or street-involved youth in Canada. This represents approximately one-third of Canada's homeless population. According to E-SYS, the Enhanced Surveillance of Canadian Street Youth, a street youth is a youth (aged 15 to 24) who faces unstable living conditions and has been "subjected to complex social factors in their daily lives," including poverty and family violence.⁶ Although street-involved youth are diverse and become street-involved for many reasons, PHAC (2014e) indicates that the majority leave or are thrown out of their homes due to family conflict, including abuse and neglect.

In 2014, PHAC created a series of five fact sheets based on an analysis of current literature and findings from Cycle 6 of E-SYS. These five fact sheets focus on key determinants of sexually transmitted and blood borne infections among street-involved youth, including HIV. The fact sheets in the series include: mental health and mental illness, unstable housing and homelessness, education and employment, experiences with the criminal justice system, and access to health services.⁷ The fact sheets indicate that street-involved youth face a number of challenges that increase their vulnerability to HIV infection. For example, street-involved youth are more likely to use and abuse substances (PHAC, 2014d), and be involved in sex work (PHAC, 2014b). Additionally, female youth are more likely to report being victims of sexual assault and intimate partner violence (PHAC, 2014c). Research has shown that substance use (particularly intravenous drug use [IDU]), sex work, and unprotected sex are strongly linked to HIV infections in street-involved youth (DeMatteo et al., 1999; Marshall et al., 2009).

The socioeconomic conditions and life experiences faced by street-involved youth can force them to engage in high risk and/or illegal activities to obtain money, shelter, and other basic necessities for survival (e.g., selling or using substances, sex work) (CDC, 2014b; PHAC, 2014g; Rotherman-Borus, O'Keefe, Kracker, & Foo, 2000; Tucker et al., 2012). While these activities and behaviours pose a high risk of HIV and other STIs, they are used as methods to cope with the conditions of poverty, violence, and abuse often experienced on the street (Aidala & Sumartojo, 2007; DeMatteo et al., 1999; PHAC, 2014e). Research shows that street-involved youth engage in higher levels of risky sexual and substance use behaviours. For example, data collected between 2009 and 2012 through E-SYS found that 97% of surveyed youth were sexually active; 55% had not used a condom the last time they had sex; and at least 18% reported having more than 10 sexual

⁶ For more information about E-SYS, please refer to PHAC's website (<http://www.phac-aspc.gc.ca/sti-its-surv-epi/qf-fr/qa-qr-eng.php#jmp-lan2>).

⁷ These fact sheets can be downloaded from CATIE's website at www.catie.ca.

partners in their lifetime (Kirby, 2002b). Additionally, 20% of those surveyed reported using injection drugs, and 33% of these reported sharing a needle.

Silverman (2013) states that street-involvement and living in poverty drastically increase the risk of adolescents contracting HIV, particularly because rates of HIV tend to be higher in lower income communities. The National AIDS Housing Coalition and Ontario HIV Treatment Network (2011) agrees, reporting that people who are homeless or unstably housed have HIV infection rates as much as 16 times higher than those with stable housing. Based on research with similar findings, Marshall et al. (2009) suggest that programs and policies aimed at reducing HIV risk in street-involved youth must address housing issues. These authors state that multiple studies have demonstrated the effectiveness of programs like rent subsidy on reducing HIV risk behaviours for marginalized and at-risk youth. According to PHAC (2014e), stable housing has a significant impact on health outcomes for youth, including increased use of health care and social services, improved health status, and a reduction in high risk behaviours.

3.2.2 Adolescents who use Substances

Substance use has both a direct and an indirect role in HIV transmission in adolescents. Sharing needles provides a direct route for HIV transmission, but research suggests that only a small percentage of adolescents inject drugs (Rotheram-Borus et al., 2000). Even when substance use does not involve needles, substance use impairs judgment and is indirectly linked with HIV risk through increased participation in other high risk behaviours (Center for Population Options, 1993; Rotheram-Borus et al., 2000). Research has found that both casual and chronic substance users are more likely to engage in high risk behaviours when they are under the influence of drugs or alcohol (CDC, 2014b). Substance use has also been linked to an increased likelihood of unprotected sex, multiple sexual partners, sex with high risk partners (e.g., IDUs), and involvement in sex work to pay for drugs (Kirby, 2002b; Rotheram-Borus et al., 2000). It is for these reasons that the Canadian Aboriginal AIDS Network (CAAN, 2009) suggests that HIV prevention messages need to be targeted toward adolescents before they start using substances, and that education and harm reduction tools need to be provided to adolescents who use substances.

3.2.3 Gay and Bisexual Young Men

Another group of youth at particular risk of HIV infection is gay and bisexual men. Although data about the sexual orientations of Canadian youth is lacking, the Canadian Community Health Survey found that 1.2% of youth aged 18 to 24 identified as homosexual and 2.6% identified as bisexual (PHAC, 2014g). Research has found that, when compared to heterosexual youth, gay and bisexual youth are more likely to experience their first sexual encounter at a younger age, to consume substances before intercourse, to have multiple sexual partners, to report problems with substance use, and to be involved in sex work (Harper & Riplinger, 2013; PHAC, 2014g). All of these factors are related to an increased risk of HIV infection in this population. Additionally, the CDC

(2014b) found that young gay and bisexual men are more likely to choose older sex partners, and older partners in the MSM community are more likely to be infected with HIV than younger men. Gay and bisexual adolescents who are not provided with adequate support and services may experience feelings of isolation, stigma, and discrimination. This can be associated with an increase in risky sexual behaviours and substance use (CDC, 2014b; PHAC, 2014g).

Further compounding the risk of HIV, prevention messaging and education is lacking for this population, meaning that many gay and bisexual adolescents may not have adequate information to make informed decisions related to their sexual health (CDC, 2014b). Harper and Riplinger (2013) found that many youth do not have accurate information about same-sex sexual activity and HIV risk factors when they first have sex with another male, which can result in high risk sexual behaviours. In order for these adolescents and youth to make informed decisions about their sexual health, they need access to appropriate sexual health and HIV prevention education. Harper and Riplinger suggest that this information needs to be provided early in adolescence, before sexual behavioural patterns become established. Unfortunately, although rates of HIV among adolescent MSM are increasing, there has not been an increase in the number of HIV prevention interventions targeted to this population (Harper & Riplinger, 2013).

3.2.4 Adolescent Survivors of Abuse

Like substance use, abuse has direct and indirect impacts on HIV vulnerability and risk (PHAC, 2014e). Sexual abuse and sexual assault can lead to HIV infection directly, particularly because violent sex can increase the risk of transmission (Andersson, Cockcroft, & Shea, 2008). Sexual, physical, and emotional abuse have also been found to increase HIV risk indirectly, as those who have experienced sexual assault, violence, and abuse have been found to engage in more high risk behaviours (Andersson et al., 2008; Kalichman & Simbayi, 2004; PHAC, 2014g). For example, PHAC (2014e) reports that youth who have been sexually abused in childhood are more likely to adopt negative coping strategies such as substance use, unprotected sex, and sex with multiple partners. Other research supports these findings and identifies additional connections between childhood sexual abuse, earlier age of initiating sexual activity, and sex work (Malow, Dévieux, & Lucenko, 2006).

The 2009 “Family Violence in Canada” report identified more than 54,000 police-reported cases of sexual offences and physical abuse against children and youth (PHAC, 2014g). Due to the fact that these crimes are under-reported, the actual number of offenses is likely much higher. Based on the police-reported cases, it appears that the majority of survivors of sexual offenses are young females, while the majority of physical abuse is against young males. Research has shown that childhood sexual abuse is associated with a sevenfold increase in HIV risk behaviours in women and an eightfold increase in HIV risk behaviours in men (Bensley, Eenwyk, & Simmons, 2000). This same research has shown that childhood

physical abuse is associated with a threefold increase in HIV risk behaviours in men. Taken together, the importance of educating survivors of abuse about HIV risk behaviours is clear (Malow et al., 2006). Because many of the risk behaviours associated with childhood abuse are viewed as methods of coping, it is also important that those who experience abuse are provided with counselling and support. According to Malow et al. (2006), treating the psychological and/or psychiatric outcomes of abuse (e.g., depression and post-traumatic stress disorder) can reduce survivors' risk behaviours and, therefore, their chances of acquiring HIV.

3.2.5 Aboriginal Adolescents

In Canada, Aboriginal people, including youth, are overrepresented in the HIV epidemic (Larkin et al., 2007). Aboriginal people make up about 3.8% of the general population in Canada, but HIV rates are 3.6 times higher in Aboriginal populations than non-Aboriginal populations (PHAC, 2010). This over-representation is particularly pronounced in the younger age groups. The Canadian Aboriginal AIDS Network (CAAN, 2009) reports that, between 1998 and 2006, 32.4% of positive HIV diagnoses in Aboriginal people were in those under the age of 29, compared to 21% of non-Aboriginal diagnoses. Aboriginal people are also overrepresented among street-involved youth with approximately 33% of E-SYS participants self-reporting Aboriginal ancestry (CAAN, 2009). These facts highlight the need for HIV education and prevention methods tailored to meet the needs of this population.

That being said, researchers have warned that focusing solely on the high HIV infection rates in Aboriginal communities can reinforce stereotypes and discrimination against Aboriginal people (Larkin et al., 2007). Instead, it is important to understand and educate people about the unique social, cultural, and economic issues facing Aboriginal people. As a result of colonization and the residential school system, many Aboriginal youth experience violence, poverty, and racism (Larkin et al., 2007). As discussed in the previous sections, common coping methods like street involvement, substance use, multiple sexual partners, and sex work can place these youth at high risk of HIV infection. Therefore, CAAN (2009) recommends incorporating structural factors of risk (e.g., colonization and the residential school system) into HIV prevention programs for all youth in an effort to reduce the stigma, discrimination, and self-blame experienced by Aboriginal youth.

3.3 Importance of the Social Determinants of Health

As the previous section highlights, HIV has the greatest impact on populations already vulnerable to a range of health, social, and economic inequities (Larkin et al., 2007; Saskatchewan Ministry of Health, 2010). Therefore, when discussing HIV prevention in adolescents, it is important to keep the relationship between HIV risk and the social determinants of health in mind. The Saskatchewan Ministry of Health (2010) states that the social determinants of health that impact the risk of acquiring HIV include poverty, inadequate housing, lack of education, child abuse, and family violence. Undoubtedly,

individual behaviours like inconsistent condom use and sharing substance use equipment increase the risk of infection. However, according to PHAC (2014g), an emphasis on individual behaviours “in isolation of other factors assumes that all youth have equivalent knowledge, capacities, and opportunities to make fully informed choices about their sexual health and behaviour” (p. 3). In reality, the social determinants of health both directly and indirectly impact adolescents’ vulnerability to and resilience against HIV. In addition to helping to explain how and why particular groups of adolescents are vulnerable to HIV infection, a consideration of the social determinants of health can also aid in prevention efforts by highlighting what adolescents need in order to make free and informed decisions about their sexual health.

4. HIV Prevention Programs for Adolescents

According to Flicker et al. (2009), healthy development in adolescence means learning to make informed decisions, manage risks, and negotiate options. It is a time when attitudes about sexuality and patterns of sexual behaviour are established, making it a vital time for sexual health education, including information about the prevention of HIV (PHAC, 2014b). The United Nations Population Fund (UNPFA, n.d.) states that young people have grown up in a world changed by HIV/AIDS, but many still lack the knowledge and skills necessary to prevent HIV infection. It is for this reason that CAAN (2009) recommends increasing interventions that target school-aged children before they become sexually active or involved with alcohol and drugs. CAAN also recommends increasing the design and delivery of programs that are culturally, age, and gender appropriate to meet the needs and diversity of adolescents. In addition, Dittus, Miller, Kotchick, and Forehand (2004) suggest that interventions should keep family, peers, and the community in mind, as these have been found to be strong systems of influence on adolescent sexual behaviour.

Despite widespread agreement that adolescents are in need of information and education, there is a lot of debate about the best approach to optimize sexual health outcomes for this age group. The following sections highlight the available literature in terms of HIV prevention for adolescents, including sexual health education, community-based programs, the role of parents, and youth engagement. This discussion is followed by common principles that have been identified as important when working with adolescents around HIV prevention. It is likely that decreasing the rates of HIV infection in adolescents and youth, including addressing the social determinants of health related to HIV risk, will require a coordinated, multisectoral approach (Saskatchewan Ministry of Health, 2010).

4.1 Sexual Health Education in Schools

The Canadian Guidelines for Sexual Health Education (PHAC, 2008) define sexual health education as “equipping individuals, couples, families, and communities with the information, motivation, and behavioural skills needed to enhance sexual health and avoid negative sexual

health outcomes” (p. 5).⁸ This is why sexual health education is seen as an essential tool in the prevention of HIV (PHAC, 2014g). The most common form of sexual health education is that which is provided through the school system. Capacity for delivering sexual health education in schools varies across Canada, depending on the provincial curriculum, teacher training, and whether the school is public, private, or faith-based (PHAC, 2014g). Schools are an essential part of HIV prevention and sexual health promotion, if only because they have direct contact with millions of students for at least six hours a day for up to 13 years (Centers for Disease Control and Prevention, Division of Adolescent and School Health [CDC DASH], 2013). During these years, schools are one of the primary places responsible for students’ development. Therefore, schools have an opportunity to dramatically improve the health and well-being of their students, including playing an important role in HIV prevention (National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2010b).⁹

Research has identified a number of essential elements for effective school-based HIV prevention programs. These include being delivered by trained instructors who are knowledgeable and comfortable with the topic area; providing information that is age-appropriate and medically accurate; and involving input from parents, youth-serving organizations, and health organizations (CDC DASH, 2013; Cooper, Risley, Drake, & Bundy, 2007). The importance of teaching skills such as how to access accurate information about HIV and how to develop effective refusal and negotiation skills has also been stressed (CDC DASH, 2013; Fisher & Fisher, 1998; National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2010a). Cooper et al. (2007) suggest that being taught age-appropriate life skills is a necessary part of HIV prevention education. Practice and role-playing are necessary in order to encourage the development of these skills, and can be provided through appropriate classroom activities (e.g., how to address peer pressure and communication skills around sexual health) (Fisher & Fisher, 1998).

In order to have significant impacts on students’ HIV risk behaviour, Fisher et al. (Fisher, Fisher, Bryan, & Misovich, 2002) state that programs should be based on well-articulated and well-tested behaviour change theory. The information-motivation behavioural skills (IBM) model is one that has demonstrated effectiveness at changing HIV risk behaviours (McCall, 2012). According to this model, HIV prevention information, motivation, and behavioural skills are the fundamental determinants of HIV preventive behaviour. According to Fisher et al. (2002) information that is directly relevant to HIV transmission and prevention, and is easy to apply in an individual’s own life, is an initial prerequisite of HIV preventive behaviour. The second prerequisite is motivation, both personal motivation toward HIV prevention and social

⁸ These Guidelines can be found at <http://www.sexualityandu.ca/uploads/files/guidelinessexedeng.pdf>.

⁹ For more detailed information about general sexual health education and the components of successful sexual health education programs, please refer to a literature review completed for the Saskatchewan Prevention Institute titled “Effective Evidence-Based Sexual Health Education for Youth: A Literature Review” (see <http://www.skprevention.ca/sexual-and-reproductive-health/>).

motivation (i.e., perceived social support for HIV preventive behaviours). Motivation determines whether people will act on the knowledge they have about HIV prevention. The final prerequisite is having the behavioural skills necessary to actually do the HIV preventive acts. Without these skills, even well-informed and motivated individuals may not be able to participate in HIV prevention effectively (Fisher et al., 2002). Therefore, according to this model, effective HIV prevention programs must address knowledge, motivation, and skills. Continuous education will help to keep levels of knowledge, motivation, and behavioural skills high, thereby helping adolescents maintain patterns of HIV preventive behaviour.

Cooper et al. (2007) call education the social vaccine against HIV infection. In order for this “vaccine” to be effective, these authors state that students need to receive age-appropriate information about the existence of HIV from the earliest school age. Research indicates that youth want to receive this type of information. For example, PHAC (2014g) reports that HIV/AIDS is one of the top three priorities in sexual health that youth report wanting to learn more about. Increased HIV-specific information may become a reality in Saskatchewan as a stated objective of Saskatchewan’s HIV Strategy is to provide earlier school prevention education opportunities (Saskatchewan Ministry of Health, 2010). Importantly, many of the strategies implemented by schools to prevent HIV infection can also help adolescents avoid other STIs and unplanned pregnancies, increasing the benefit of such programs (Advocates for Youth, 2012; CDC DASH, 2013). Effective and broad-based sexual health education that addresses the diverse needs of adolescents is crucial for helping adolescents avoid HIV. This type of education ensures that youth have access to non-judgmental information, allowing them to make informed decisions about their own sexual health (PHAC, 2014g).

A common misperception about sexual health education is that it promotes early and irresponsible sexual activity among adolescents. In reality, numerous studies have found that adolescents who participate in well-designed, well-implemented school-based sexual health programs reduce their sexual risk behaviours (Advocates for Youth, 2012; CDC DASH, 2013; National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2010b; UNAIDS, 2003). For example, outcomes identified in this research include delay in first sexual intercourse, a decrease in the number of sex partners, and an increase in condom and/or contraceptive use. None of the 48 studies examined by CDC DASH found an increased likelihood of having sex following participation in sexual health education. Not providing adolescents with education about sexual health, on the other hand, increases their risk of acquiring HIV, as they do not have the necessary information to protect themselves. At the very least, UNAIDS (2003) suggests that children and adolescents need to be informed about how HIV is transmitted, what the effects are, and how they can protect themselves. In order to protect themselves, as previously discussed, adolescents and youth need to know how to negotiate safer sex and cope with peer pressure. School-based HIV prevention interventions may represent the most cost-effective, efficient, universal delivery method for providing this information (CDC DASH, 2013; Fisher et al., 2002).

4.2 Abstinence-Only Programs

When offered, abstinence-only programs are often provided in school settings. They may also be the basis of community HIV prevention programs, depending on the organization providing the program. As the name suggests, abstinence-only programs focus on the importance of abstinence from sexual intercourse, typically until marriage. Abstinence is promoted as the best and only means of preventing sexual acquisition of HIV (Underhill, Operario, & Montgomery, 2009). Therefore, these programs do not provide information about safer-sex strategies, but instead focus on preventing or stopping sexual activity (Underhill et al., 2009). Either these programs do not discuss contraception at all (including condoms), or they briefly discuss contraception in terms of its failure rate and ineffectiveness (Kirby, 2002a). These types of programs also generally include information about the psychological and health benefits of abstinence, and the harms and risks of sexual activity (Community Preventive Services Task Force, 2012).

Research examining the effectiveness of abstinence-only programs has not found a consistent or significant impact on reducing HIV risk behaviours, such as delaying the onset of intercourse (Kirby, 2002a). An international Cochrane review of the effects of abstinence-only programs for HIV prevention in high-income countries found no indications that these types of programs can reduce HIV risk as indicated by self-reported biological and behavioural outcomes (Underhill et al., 2009). Specifically, the evaluated programs consistently did not affect incidence of unprotected vaginal sex, frequency of vaginal sex, number of partners, sexual initiation, condom use, or rates of STIs. Therefore, the Cochrane review concluded that abstinence-only programs do not appear to effectively decrease HIV risk among participants in high income countries. In another review of abstinence-only programs, the Community Preventive Services Task Force (2012) concluded that there was insufficient evidence to determine the effectiveness of abstinence-only education due to the number of inconsistent results across studies and the methodological concerns found in the few studies that did find effects.

4.3 Comprehensive Risk-Reduction Programs

In contrast, the Community Preventive Services Task Force (2012) did find sufficient effectiveness for comprehensive risk-reduction programs. These types of programs promote behaviours that prevent or reduce the risk of HIV (along with pregnancy and other STIs). There are at least three versions of comprehensive risk-reduction programs:

1. those that suggest a hierarchy of recommended behaviours, where abstinence is identified as the preferred method, but information about sexual risk-reduction strategies is also included (also known as abstinence-plus programs) (Flicker et al., 2009; Underhill et al., 2009);
2. those that promote abstinence and sexual risk-reduction without placing one strategy above the other (Community Preventive Task Force, 2012); and
3. those that focus almost solely on promoting sexual risk-reduction strategies (Community Preventive Task Force, 2012).

Without separating these three types of programs, the Community Preventive Task Force (2012) indicates that there is sufficient effectiveness of comprehensive risk-reduction programs in reducing the following: engagement in any sexual activity, frequency of sex, number of sexual partners, unprotected sexual activity, and incidence of self-reported or clinically documented STIs. Other research has confirmed that comprehensive approaches can reduce behaviours that put adolescents at risk of HIV, STIs, and unplanned pregnancies (Canadian Council on Learning, 2009; Kirby, Laris, & Rolleri, 2005). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2009) reports that these types of programs have been associated with delay of first intercourse, increased condom and overall contraceptive use among sexually active youth, and increased knowledge about sexual behaviour and its consequences. It is for these reasons that comprehensive risk-reduction education is integral to UNESCO's strategy on HIV/AIDS, with a focus on HIV prevention.

Importantly, none of the comprehensive programs examined in the Community Preventive Task Force (2012) review were found to increase sexual activity. There is also strong evidence to suggest that comprehensive education does not lead to increased sexual risk behaviours (Kirby, Obasi, & Laris, 2006; McKay & Bissel, 2010). Despite these findings, sexual health education programs that want to provide more comprehensive information (e.g., include information about condoms and contraception) may face opposition. Kirby (2002a) found that these types of programs are more likely to be accepted and implemented when they are able to: 1. document the sexual activity of students in the community; 2. provide evidence of student and parent support for such programs; 3. involve parents and community leaders in the design and development of the program; and 4. accommodate the concerns of opponents without sacrificing the goals of the program.

Evidence from the Community Preventive Task Force (2012) indicates that these types of programs can reduce both prevalence and frequency of sexual activity. PHAC (2013b) reports that comprehensive in-school educational programs can be particularly effective in changing adolescent HIV risk behaviours when these programs combine learning about sexual risk and protection with relevant, non-sexual factors (e.g., building healthy relationships). PHAC also recommends that these programs address diversity (e.g., sex and gender, sexual orientation). Many HIV prevention programs, particularly those located in schools, do not address diversity. Fisher et al. (2002) state that this is a missed opportunity for primary HIV prevention among gay and bisexual youth. In addition to reducing HIV risk among this population, including information about same-gender sexual activity would allow for discussions about sexual diversity that may result in decreased stigma and discrimination (Fisher et al., 2002).

4.3.1 Behavioural Risk-Reduction Interventions

Behavioural risk-reduction interventions are included under the umbrella of comprehensive risk-reduction programs. Behavioural interventions focus on a variety of outcomes, including increasing knowledge and attitudes, changing perceived risk of acquiring HIV, and increasing motivation and skills to adopt safer sex strategies (Wilton,

2014). Behavioural interventions can take many different forms, including using educational, motivational, peer group, skills-building, or community approaches to behaviour change (Wilton, 2014). Combining behavioural interventions with other HIV prevention strategies may increase the level of protection against HIV (e.g., treatment as prevention for people living with HIV, use of antiretroviral medication after exposure [post-exposure prophylaxis; PEP] or on an ongoing basis [pre-exposure prophylaxis, PrEP]). The use of antiretroviral therapy in these ways is not 100% effective, and there is some concern that people using these strategies may increase their risk behaviours (Wilton, 2014). Provision of behavioural interventions may increase the success of antiretroviral prevention methods.

Due to time and resource limitations, many HIV prevention interventions, including behavioural interventions, take place within a single learning session. While single-session interventions are potentially more feasible and are likely more cost-effective than multiple-session interventions, there is limited time available for reinforcement of ideas and follow-up questions. Therefore, some question the effectiveness of single-session interventions. Wilton's (2014) review of the recent literature on single-session behavioural interventions found that these types of interventions can be effective at reducing HIV risk. A systematic review and meta-analysis by Eaton et al. (2012) also found that single-session behavioural interventions can be effective at reducing the risk of STIs, including HIV. The review only included studies that had a control group and measured actual new STI infection rates. After combining data from the 29 relevant studies, the meta-analysis found that the rate of STI transmission was 35% lower among those who received a single-session behavioural intervention compared to the control group (who received standard risk-reduction counselling).

Components of the behavioural interventions included education, personalized feedback, communication skills-building, safer sex discussions, activities to alter perceived social norms, and condom skills training. Most of the behavioural interventions used educational and skills-building strategies to reduce risk, while a few also used motivational interviewing.¹⁰ The average time taken to deliver the interventions was 79 minutes but ranged considerably from 15 to 250 minutes. While Eaton et al. (2012) found that behavioural interventions reduced the risk of STIs overall (including HIV), several components were found to improve the effect of the behavioural interventions. For example, the strength of the effect was higher if the intervention was longer in duration and if it was delivered in-person (rather than through technological media; e.g., audiotape, computer, video).

¹⁰ For more information about motivational interviewing, including information about motivational interviewing training, please see <http://www.skprevention.ca/motivational-interviewing-training/>.

As single-session interventions have shown success in reducing HIV risk, it would be beneficial for service providers to include these types of interventions into routine interactions with adolescents. As the effectiveness of these interventions can decrease over time (Wilton, 2014), routine provision of these interventions will help improve their long-term effectiveness. Eaton et al. (2012) concluded that single-session interventions offer considerable benefits in terms of STI and HIV prevention, and pose minimal burden for both the client and the service provider.

4.3.2 Youth Development Programs

Also included under comprehensive risk-reduction programs is the youth development approach (also known as the youth asset-development approach). This approach places less emphasis on explicitly addressing sexual risk and a greater emphasis on helping adolescents develop assets and skills (Kourtis et al., 2006). This approach is based on the principle that adolescents who experience success, build skills, and feel supported will be less likely to engage in risk behaviours (CATIE, 2012; Kourtis et al., 2006). These types of approaches focus on developing assets, rather than simply reducing risks. Some of these assets include connections to community, family, and peers; academic and work skills; self-confidence; and caring for others (Kourtis et al., 2006). Other assets include problem-solving, communication, and planning for the future (National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2010a). Adolescents who develop these assets are thought to be more motivated to avoid negative outcomes like pregnancy and HIV. CATIE (2012) suggests that youth development approaches increase the odds of positive development and healthy outcomes through a holistic approach to programming. Current evidence suggests that these types of programs can be associated with long-term reductions in sexual risk behaviours (National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, 2010a).

4.4 Community-Based Programs

Community-based programs are an important part of HIV prevention, as many adolescents either do not go to school or do not receive appropriate HIV prevention education in school (UNAIDS, 2003). This may be particularly true for the most at-risk populations of adolescents (e.g., street-involved adolescents). PHAC (2014b) states that dropping out of school can lead to missed opportunities for adolescents to receive sexual health education. This lack of education can play a role in developing high risk behaviours for HIV, making HIV prevention education through community-based programs vital.

As previously discussed, comprehensive risk-reduction programs have shown positive results in terms of helping adolescents reduce their risk of HIV, STIs, and unplanned pregnancy. Advocates for Youth (2012) has identified similar findings and suggests that community-based organizations or after-school programs may be well-suited to provide these interventions. Many community organizations work to provide programs tailored specifically to adolescents and youth who are not in school and, therefore, may be better suited to create programs for

adolescents at high risk of HIV infection. In order to be effective, community-based programs must include some form of skills-building. For example, PHAC (2014c) suggests including workshops about basic health and literacy skills in order to help adolescents interact effectively with health information and the healthcare system. Other important topics for programs focused on adolescents include: communication, healthy relationships, positive mental health, partner violence, and conflict resolution. Development of these skills can help adolescents learn to make positive and healthier choices, thereby reducing their risk of HIV infection (PHAC, 2014c).

PHAC (2014e) highlights the importance of integrating HIV prevention into broader, community-based interventions for adolescents and youth. Research indicates that street-involved adolescents and youth most frequently use youth drop-in centres for health-related services, followed by walk-in clinics and hospitals/emergency rooms (PHAC, 2014a). Therefore, these are important places to provide adolescents with relevant HIV prevention information. It is also important for adolescents to be made aware of all of the available local HIV prevention services and community resources. Community-based organizations can educate adolescents accessing their programs about other related services in the community (e.g., street nurses, mental health workers, STI and HIV testing locations). Providing this information will increase the likelihood that adolescents will access these services in the future (PHAC 2014a). Kourtis et al. (2006) agree and suggest that coordination between community-based programs and clinical service providers is important for HIV prevention.

There are a number of community-based programs focused on HIV prevention in Saskatchewan and Canada, some of which focus specifically on adolescents and youth. For more information about these types of programs, please refer to a recently completed environmental scan by the Saskatchewan Prevention Institute titled “Promising Models of HIV Prevention Programming for Youth in Saskatchewan.”¹¹

4.5 Digital Technology Prevention Methods

The search for HIV intervention strategies that are appropriate for adolescents has led to the use of new technology (Enah, Moneyham, Vance, & Childs, 2013; Korda & Itani, 2013). Today’s adolescents and youth are noted for being the first “connected” generation, having grown up with communication technologies like email, cell phones, instant messaging, and social networking sites (Kachur et al., 2013). According to Lenhart et al. (Lenhart, Ling, Campbell, & Purcell, 2010), 93% of adolescents are online, 75% have mobile phones, and 97% play video games. These technologies allow adolescents to engage in behaviours such as chatting, flirting, and dating in new ways. They also provide adolescents with new ways to get information about their reproductive and sexual health (Kachur et al., 2013); even if they are not in school, have not taken part in other sexual health education; and/or if they live in rural areas with few in-

¹¹ This resource, as well as other resources specific to sexual and reproductive health, can be found at <http://www.skprevention.ca/sexual-and-reproductive-health/>.

person services (Enah et al., 2013). Importantly, adolescents are able to get this information anonymously. According to Kachur et al. (2013), the Internet has the potential to reach the greatest number of adolescents about a range of sexual health topics, including HIV prevention. The Internet contains websites full of information, video clips for skills-building, and games focused on behaviour change, much of which can be accessed via mobile phones.

Most adolescents are on the Internet at least once a day (Kachur et al., 2013). Therefore, providing HIV prevention education using this format is important in order to reach this population. Recognizing this fact, many service providers use tools like social media and text messaging alerts in their outreach and education programs (CATIE, 2012; Furber et al., 2011). Lefebvre (2009) suggests that cell phones offer service providers opportunities to engage adolescents in a context where they may be most likely to be open to communication. Cell phones can also be seen as a two-way communication channel, an instant source of health information, a social support tool, an engagement tool, and a data collection and feedback device (Lefebvre, 2009). In terms of cell phones, there are also a variety of downloadable apps designed for sharing sexual health and HIV prevention information. For example, there are apps that can be used to find HIV testing locations, get answers to questions about sex, and get reminders for birth control or health appointments.¹² Text messaging and social media have also been used by some youth-focused programs to encourage peer-to-peer sharing of sexual health information and to encourage HIV testing.

Beyond simply providing information, digital technology methods for HIV prevention need to try to shape judgements and behaviours that have long-term consequences (Enah et al., 2013). For example, adolescents need to have opportunities to learn about and reflect on the consequences of sexual risk behaviours in safe, non-threatening venues. Recent research suggests that the use of digital games may be another appropriate HIV prevention strategy as it allows adolescents to explore new activities in a safe way, while being rewarded for participating in safer sexual behaviours (e.g., gaming points) (Enah et al., 2013). The gaming approach also capitalizes on an interest common to many adolescents. Enah et al. (2013) point out several other benefits to the digital gaming approach to HIV prevention, including: 1. overcoming traditional barriers like transportation; 2. the ability to improve effectiveness of HIV prevention efforts by being adaptable to knowledge level; 3. increasing access to consistent, accurate HIV prevention information; 4. confidential delivery; and 5. tailoring to address the social and contextual influences of the target group. Although research on the effectiveness of digital gaming for HIV prevention is limited, proof of effectiveness in other areas of health is promising (e.g., health risk prevention, behavioural interventions, and diabetes self-management) (Enah et al., 2013).

¹² The Saskatchewan Prevention Institute has recently created a smart phone app, Keep it Safe Saskatchewan (KIS-SK). The app allows users to find free contraceptives and STI testing sites in Saskatchewan, set reminders for taking contraceptives or booking health appointments, and learn about contraceptives and contraceptive myths. To learn more about this app, please visit <http://www.skprevention.ca/keep-it-safe-saskatchewan/>.

There is great potential for new technologies to improve the sexual and reproductive health of adolescents, while reducing health risks like HIV through education, interventions, and provision of resources (Kachur et al., 2013). This is an area of prevention programming that is likely going to grow further in the coming years, particularly as technology becomes more affordable and because its use for sexual health education is becoming more acceptable to both adolescents and service providers (CATIE, 2012). There is increasing recognition of the need to target and tailor messages to specific audiences in order to increase the effectiveness of HIV prevention programs (CDC DASH, 2013; Enah et al., 2013). Digital technologies are a viable method of achieving this for HIV prevention programs, but they require input from their target population of adolescents to ensure the methods and messages used are addressing the adolescents' needs (Liang, Commins, & Duffy, 2010). For more detailed information about the use of new technologies for adolescent sexual health education, please refer to a recently completed literature review for the Saskatchewan Prevention Institute titled *Digital Technologies and Adolescent Sexual Health: A Literature Review*.¹³

5. Other Prevention Program Considerations

In addition to looking at different categories of HIV prevention programs, it is important to examine other factors that can increase the effectiveness of these programs. These factors include providing integrated services (including HIV testing), youth involvement and engagement in prevention programming, and a consideration of the role of parents in HIV prevention. Each of these factors will be discussed further below.

5.1 Integration of Services for Adolescents

According to Advocates for Youth (2005), many service providers focus on one area in the lives of adolescents, instead of serving them more holistically. Integration of necessary services benefits adolescents by lowering the barriers they face to obtaining sexual health information and services. Integration also benefits organizations and service providers because they can expand their reach and impact. Integrating services can include providing “one-stop shopping,” where sexual health information and services are provided alongside other healthcare and social services or it can involve linking adolescents to a wide array of supportive services (Advocates for Youth, 2005). Integration of services can also include broader structural interventions, rather than a focus solely on individuals. Broader interventions can include a combination of education and awareness, biomedical interventions (e.g., HIV testing, treatment for those living with HIV), and population-based interventions that focus on the social determinants of health (e.g., mental health programs, housing, and education) (PHAC, 2013b).

Addressing the social determinants of health is particularly important when attempting to provide integrated, comprehensive services to adolescents. For many adolescents who are most

¹³ This resource can be found at <http://www.skprevention.ca/sexual-and-reproductive-health/>.

vulnerable to HIV, their health needs are less important when compared to other issues they face on a daily basis. For adolescents dealing with violence, homelessness, and/or addictions, information about HIV prevention is often not a priority. Therefore, Morse et al. (1998) state that prevention programs must be comprehensive when and where resources permit. This is particularly true for programs aimed at high-risk adolescents.

Research shows that HIV prevention programs for at-risk adolescents are often most effective when they are integrated with other services like drop-in centres and food/clothing distribution sites (Morse et al., 1998). Due to the connections between substance use and HIV risk, HIV prevention programming could also occur in combination with substance abuse prevention programming (Silverman, 2013). In order to improve the HIV prevention education received by all adolescents, Advocates for Youth (2005) recommends adding HIV prevention information to pregnancy prevention information and services and to youth development programs. They also recommend that healthcare providers make their services and spaces youth-friendly. Creating an atmosphere that encourages nonjudgmental risk counselling is also key (American Academy of Pediatrics, 2011). Clinics are in a unique position to meet adolescents' needs for HIV prevention services because they can provide confidential education, as well as HIV and STI testing, medical care, and access to condoms and contraception (Advocates for Youth, 2012).

Integration of services and increased connections between service providers produces more coordinated efforts to reduce the risk of HIV among adolescents, thereby creating an environment that supports risk reduction (Kourtis et al., 2006). This highlights the importance of integrating and coordinating HIV prevention education, prevention programs, clinical services, and related service providers. Integration is about creating an environment in which service providers working in the area of adolescent sexual health work together with youth, parents, communities, and government agencies to promote the sexual health of adolescents, including a focus on HIV prevention (Advocates for Youth, 2005). Although this is not an easy task, integration will greatly improve the services received by adolescents and, ultimately, their sexual and reproductive health.

5.1.1 Importance of HIV Testing

HIV testing is extremely important for HIV prevention in adolescents. Research suggests that approximately 25% of people living with HIV do not know their HIV status. The proportion of those who are unaware of their HIV status is thought to be higher among adolescents than in the general population (Leonard et al, 2010; Rotheram-Borus & Futterman, 2000). Therefore, increased HIV testing for adolescents is vital for reducing HIV infection rates (UNAIDS, 2003). HIV testing allows people who test positive to take the appropriate precautions to limit HIV transmission to others. For those who test negative, HIV testing and counselling provide opportunities for education about HIV risk and risk reduction strategies. Increased HIV testing will rely on service providers' screening practices because the main reason adolescents give for not being tested is that they have not been offered a test (Leonard et al., 2010).

As discussed previously, the 2013 Saskatchewan HIV Testing Policy recommends HIV testing for all patients aged 13 to 64 receiving primary or emergency health care who do not know their HIV status, or who are sexually active and have not had an HIV test in the last 12 months. Although the accessibility of HIV testing and counselling can sometimes serve as a barrier, the introduction of rapid testing in Saskatchewan may reduce this barrier. Rapid testing provides a negative or preliminary positive result in minutes, allowing for results while the individual remains at the testing facility, increasing the number of people actually receiving their results. This gives people who test positive the opportunity to make decisions about treatment and to take steps to prevent the transmission of HIV to others.

5.2 Adolescent Involvement in Prevention Programs

Adolescents often report that other adolescents are a primary source of their sexual information, whether or not this information is accurate (Center for Population Options, 1993). Particularly as adolescents age, peer influences appear to be important determinants of HIV risk and protective behaviours (DiClemente et al., 2002). Inaccurate information reduces the likelihood that adolescents are taking the proper precautions to prevent HIV, putting them at greater risk of infection. Therefore, it is important that adolescents are provided with accurate information so that they can learn with and from each other (UNAIDS, 2003). Historically, adolescents have had limited involvement in planning and delivering health promotion initiatives that affect them (Reed, Miller, & the Adolescent Medicine Trials Network for HIV/AIDS Interventions, 2012); however, they are increasingly being considered vital partners in adolescent health promotion (Frank, 2006).

Peer-to-peer education models involve youth being trained as educators to provide sexual health information to their peers. In this way, adolescents and youth learn from each other, instead of from an older professional who may not have the same life experiences. The idea is that adolescents may be more comfortable receiving information from, and more likely to listen to, those of the same group (Blanchet-Cohen, McMillan, & Greenwood, 2011; Kim & Free, 2008). Although peer-to-peer models of education are becoming increasingly popular, evidence regarding their effectiveness for sexual health education interventions is very limited, and findings are mixed. Reported benefits for peer educators include gaining valuable work experience, a sense of community, personal growth, and counselling skills (Jaworsky et al., 2013). Reported challenges for peer educators include difficulties with boundaries and “professionalism” when educating friends and/or partners (CATIE, 2012).

Other research has shown success for peer-to-peer programs in terms of making youth-focused HIV services and support programs appear more credible (CATIE, 2012), and in terms of being an effective method for disseminating sexual health and harm reduction messages (Larkin et al., 2007). In terms of outcomes among adolescent participants, a systematic review of peer-to-peer adolescent sexual health education between 1998 and 2005 found that most interventions

produced improvements in knowledge, attitudes, and intentions (Kim & Free, 2008). Unfortunately, none of these studies were found to show significant positive impacts on sexual health behaviour and behavioural outcomes. These authors concluded that convincing evidence that peer-to-peer education improves sexual outcomes among adolescents is not available.

Research does show that peer-led interventions are more popular among students (Ross, 2008). However, this fact and the above-mentioned benefits may not outweigh the costs of these programs. For example, peer-to-peer education is often more labour intensive and involves training of new peer leaders every couple of years (Ross, 2008). Peer-based interventions may also have long-term negative effects, particularly when working with adolescents who are considered high risk. Some reviews of the literature have suggested that peer-based interventions may in some cases constitute “risk training,” where those taking part in the intervention then become involved in more high risk behaviours (Fisher et al., 2002). Valente et al. (2007) state that peer-led prevention programs may accelerate peer influence in either direction, depending on the participants’ peer environments. For example, these authors found that peer-to-peer approaches can be effective in reducing substance use, but this was mainly true for students who belonged to peer networks with low substance use (Valente et al., 2007). Those with friends with higher levels of substance use actually showed increased substance use. This is consistent with research showing that the influence of peer educators may become negative rather than positive if these educators are later seen participating in, or believed to be participating in, risky behaviours themselves (Fisher et al., 2002). Valente et al. (2007) concluded that programs involving peer-to-peer methods may work best when social norms favour healthy behaviours. When these norms are not present, methods other than peer-based methods may need to be used or adult participation and monitoring may need to be increased.

5.2.1 Youth Engagement

Youth engagement is a component of many youth development programs, and goes beyond simply having youth involved in the programming (Centre of Excellence for Youth Engagement; CEYE, 2003). The CEYE (n.d.) defines youth engagement as “the meaningful participation and sustained involvement of a young person in an activity, with a focus outside of him or herself” (p. 2). Youth engagement is built upon true youth-adult partnerships, and the belief that adolescents and youth have the right to participate in programs that affect them (UNPFA, n.d.). Youth engagement also acknowledges that adolescents and youth are the experts on their own lives, and that they should take part in and influence processes, decisions, and activities that affect their health (Blanchet-Cohen et al., 2011). When adolescents and youth are provided with the necessary means, information, and skills training, they can be important advocates for their specific sexual and reproductive health needs (UNPFA, n.d.).

The Children and Youth in Challenging Contexts Network (2013) developed five principles of youth engagement. These principles are as follows:

1. Youth voice: the unique ideas and concerns of youth are respected; youth feel free to express them within an organization or program; youth voices are seen as equally important to adult voices.
2. Civic engagement: when youth are engaged in their community, they can become agents of change; youth see that they can positively influence situations, which can improve their self-concept.
3. Culture and context: recognizing that there are many important differences between youth based on factors such as race, gender, and sexual orientation.
4. Positive relationships: having positive, supportive relationships with peers and adults is fundamental; relationships can be fostered through adult-youth mentorships, youth-adult partnerships, and peer mentoring.
5. Participatory research: supports youth engagement by making youth equal partners in a collaborative research process; youth work with researchers to identify research questions based on issues that are important to them.

Youth engagement, which acknowledges the independence and agency of youth, is increasingly being considered best practice in interventions involving young people (CYCCN, 2013). Research suggests that HIV prevention programs are more sustainable and more effective when youth are treated as partners (UNPFA, n.d.). According to UNAIDS (2010), actively involving adolescents and youth in the design, monitoring, and evaluation of HIV prevention programs helps to ensure that these programs are effectively meeting the needs of this population. As youth engagement is an emerging field, there are few published studies that have measured its effectiveness in relation to youth health promotion. One literature review conducted by the CEYE (2003) found support for the existence of a link between youth engagement and positive health outcomes, including lower levels of substance use and less engagement in risky sexual behaviours.

In order for youth engagement to succeed in HIV prevention programs, adult partners are vital. Youth engaged in these types of programs have reported that health is a shared responsibility between them and the adults in their lives (Khanna & McCart, 2007). Moreover, research shows that youth want and expect support from adults when they are working in health promotion (Camino & Zeldin, 2002). Youth have also stated that supportive adults play a key role in their ability to initiate and maintain health behaviours (Khanna & McCart, 2007). Adults involved in youth engagement must focus on working alongside youth and empowering them, rather than simply guiding and supporting them (Frank, 2006). This type of partnership between adults and youth may be especially important in the case of engaging marginalized youth (Erbstein, 2013), and may help to prevent any issues with “risk training” as discussed in the previous section.

5.3 Parental Involvement in HIV Prevention

In addition to the importance of adult-youth partnerships, research has begun to examine the importance of parent-child relationships for HIV prevention. Specifically, having a positive parent-child relationship has been identified as a protective factor related to high risk sexual activity (Commendador, 2010). In an ideal world, part of this relationship would include open and honest communication about sex and sexuality. In reality, many parents find these types of conversations difficult. Many parents may also lack the knowledge they need in order to provide their adolescents with accurate information about sex, sexuality, and HIV prevention (UNAIDS, 2003). Therefore, it is important that parents are provided with the necessary skills and information to have these types of conversations. Research has shown that parent-adolescent communication about sex is associated with adolescents reporting less frequent sex, more consistent condom use, and improved communication with their sexual partners (DiClemente et al., 2002). Research also suggests that parents and other family members play critical roles in shaping adolescent sexual behaviour through their parenting practices, communication of expectations around sexual activity, modelling of risk reduction strategies (Dittus et al., 2004), and monitoring of adolescents' activities (DiClemente et al., 2002).

Edwards and Reis (2014) suggest that healthcare professionals can improve adolescent sexual health by encouraging parents to actively involve their children in discussions about HIV prevention. A review of several large-scale studies found that effective conversations about sexual health occur early in adolescence (before the onset of sexual activity), take place frequently, are comprehensive, are informative and comfortable, and occur within supportive parent-child relationships (Dittus et al., 2004). In addition, these types of conversations are more likely to be effective if they are interactive, as opposed to being dominated by the parent (Edwards & Reis, 2014). Edwards and Reis (2014) also recommend using visual examples, gently quizzing the child to assess his/her knowledge, and setting the stage for future conversations. In order for these types of conversations and interactions to be effective in reducing HIV risk behaviours, parents first need appropriate and accurate information about HIV prevention.

Several HIV prevention programs have been created with a specific focus on the parent-adolescent relationship. For example, the "Mother/Daughter HIV Risk Reduction" intervention in the United States trains mothers to be their daughters' primary HIV educators. Evaluations of this program have shown that mothers were effective in increasing their daughters' HIV transmission knowledge and self-efficacy, and in reducing their daughters' level of sexual activity (Dancy, Crittenden, & Talashek, 2006). Further, mothers' delivery of information was found to be equally effective to that of health experts. Therefore, the authors concluded that mothers can deter their daughters' high risk sexual behaviours when they are provided with comprehensive and accurate information about sexuality and HIV prevention.

Another American program, called "The Parents Matter! Program," is designed to promote positive parenting and effective parent-child communication about sexuality and sexual risk reduction, including HIV prevention. This program offers parents instruction and guidance in

general parenting skills related to decreased sexual risk behaviour among adolescents (e.g., relationship-building, monitoring) and in sexual communication skills. Parents are also provided with HIV, STI, and pregnancy prevention messages that they can share with their children. In order to prevent sexual risk behaviours, the program is implemented when children are between the ages of 9 and 12 years old (i.e., before they are engaging in high risk sexual behaviours). While the success of this program has not yet been formally evaluated, Dittus et al. (2004) report that this program was designed based on existing research about parental influences on adolescent sexual risk behaviour.

Taken together, the literature shows that parents are in a unique position to shape adolescents' attitudes and behaviours toward sex, including safer sex and HIV prevention. Parents are able to do this by providing accurate information about risks, consequences, and responsibilities and by teaching their children the skills needed to make responsible decisions about health and sexuality (Dittus et al., 2004). HIV prevention programs can serve to support parents in these efforts by providing them with accurate, age-appropriate information.

6. General Principles for Successful Adolescent HIV Prevention Programs

Providing adolescents with accurate, age-appropriate information about HIV and how to prevent it should be the first objective of any HIV prevention program. This information should address common misconceptions about HIV preventive behaviours (e.g., douching, using birth control pills). If these misconceptions are not addressed, adolescents may increase their risk of HIV even though they believe they are participating in preventive behaviours. Research suggests that misconceptions such as these are common. For example, DiClemente et al. (2002) highlight studies showing that as many as 46% of youth believed douching could protect them from STIs, including HIV; 39% believed urinating after sex was protective; and 20% believed oral contraception would protect them from HIV. In order to be effective, programs must first ensure they are providing accurate information that addresses any myths or misconceptions.

Many of the behaviours that are high risk for HIV infection also put adolescents at risk for STIs and unplanned pregnancies. It is for this reason that many international organizations are now advocating for a shift toward more inclusionary models of health promotion (e.g., UNESCO, WHO) (Flicker et al., 2009). There has also been a shift toward more holistic, comprehensive prevention programming that aims to increase the odds of positive development and healthy outcomes (CATIE, 2014b). According to UNAIDS (2010), comprehensive services are necessary for effective HIV prevention; such services should include sexuality education, knowledge of HIV, access to sexual and reproductive health services, and discussions on harmful sexual norms and harm reduction.

Regardless of their circumstances, all adolescents need the following in order to protect themselves against HIV: education and information on all health issues (including HIV), opportunities to build life

skills, youth-friendly services (including reproductive health services and access to contraception), and a safe and supportive environment (UNAIDS, 2003; UNPFA, n.d.). It is also important to remember that adolescents and youth are not a homogenous group. No single HIV prevention strategy will work for all adolescents (UNAIDS, 2003). Therefore, it can be beneficial to include adolescents in the planning, implementing, and monitoring of HIV prevention programs to ensure that these programs are tailored to their needs. These programs should be youth-friendly and should address important issues that adolescents are faced with, including: adolescent sexuality, the need for earlier sexual health education, violence against women, sexual diversity, the inequalities women face, and the social and cultural values that allow these realities to continue (UNAIDS, 2003). In order to prevent negative health outcomes, these programs have to target young adolescents prior to their involvement in sexual activity (Enah et al., 2013).

After conducting a systematic review of published STI/HIV prevention intervention programs for American adolescents, Sales and DiClemente (2010) compiled a list of “what works” for reducing adolescents’ sexual risk behaviours. The key strategies they identified through this work are:

- Target behaviours that are most amenable to change (e.g., condom use rather than abstinence), laying the foundation for more sustainable sexual risk-reduction over time.
- Tailor programs for the target population.
- Use theory to guide program development (e.g., social learning theory and social cognitive theory). These types of programs often incorporate modelling activities (e.g., how to use a condom, how to discuss safer sex with partners) and skill-building exercises into their information sharing.
- Address more than just sexual risk; include broader-based content like problem-solving, decision-making, capacity-building, and social skills building.

The National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention (2010a) lists other attributes that are common among programs deemed to be effective in reducing sexual health risk behaviours among adolescents. These attributes include having trained instructors; having age-appropriate information; involving parents, youth-serving organizations, and health organizations; and including a variety of skill-building components. Skills relevant to sex refusal, resisting peer pressure, communicating with sexual partners, and using condoms correctly are critical for reducing HIV risk (DiClemente et al., 2002). Research also suggests that programs and interventions may be more likely to succeed if they involve adolescents in a manner that stimulates learning, makes the best use of their knowledge and skills, and works to empower them (Flicker et al., 2009).

It is important that HIV prevention programs incorporate strategies that have been found to be successful while also continuing to search for new ways to teach adolescents to protect themselves from HIV (Sales & DiClemente, 2010). Adolescents have to deal with factors at a number of different levels that impact their sexual risk-taking behaviours (e.g., sexuality knowledge at the individual level, parental and peer relationships at the interpersonal level, social isolation at the community level, and poverty at the socio-contextual level). Whenever possible, it is beneficial for HIV

prevention programs to address, or at least be aware of, the multiple factors that are associated with sexual risk behaviours (Enah et al., 2013).

7. Barriers to HIV Prevention Program Participation

Discussions about successful programming should always include a consideration of the barriers to program participation. The availability of effective HIV prevention programs does not guarantee that they will be utilized by adolescents. The most obvious barriers to HIV prevention program participation include those related to the social determinants of health, as discussed previously in this review. Poverty, violence, homelessness, family dysfunction, and many other factors related to sexual risk-taking behaviours can also serve as barriers to participation in HIV prevention programs (Kirby, 2002a).

Accessibility is another large barrier to HIV prevention. Accessibility includes distance to prevention programs and services, a lack of access to harm reduction supplies, and age restrictions on programming and/or harm reduction supplies (CATIE, 2012). Access to services can also be hampered by cost, embarrassment, and lack of anonymity (DiClemente et al., 2002). In terms of new digital technology prevention methods, lack of access to reliable Internet and/or computers and smart phones can make these kinds of outreach strategies less effective in certain communities (CATIE, 2012). In order to deal with issues of access, prevention services and supplies should be provided using a variety of methods and in a variety of locations (e.g., schools, clinics, youth-serving organizations). For example, mobile services could be used to bring prevention information, harm reduction supplies, and HIV testing to street-involved youth (PHAC, 2014a). Establishing multiple locations to access prevention information and materials can serve to reduce barriers to services and increase the likelihood that adolescents will access and engage in these programs and services.

Constraints like lack of resources, lack of staff, and lack of staff buy-in to a program can also serve as barriers to the success of a program (Rotheram-Borus, Ingram, Swendeman, & Flannery, 2009). Other barriers include failing to design programs that address the needs of the adolescents in that community. Programs that are culturally-specific, youth-friendly, and LGBTQ-inclusive are necessary (CATIE, 2012). Stigma for any reason (e.g., culture, gender, sexual orientation) can act as a huge barrier to program participation and access to services. As such, supportive programming and access to services is vital (PHAC, 2013b). It is highly unlikely that HIV prevention programs can overcome all of these barriers, particularly short educational programs (Kirby, 2002a), but it is important that these barriers are recognized and addressed whenever possible.

8. Summary and Conclusions

The research highlighted in the current review shows that well-designed, well-implemented HIV prevention programs can decrease sexual risk behaviours among adolescents. Such programs have been shown to delay first intercourse, reduce the number of sexual partners, decrease unprotected sex, and increase condom use. Therefore, in addition to reducing the risk of HIV, these programs

reduce the risk of other STIs and unplanned pregnancies. Importantly, providing adolescents with accurate, comprehensive information about sex has not been shown to hasten initiation of sexual intercourse among adolescents. As adolescence is the period in which behavioural risks for HIV begin to emerge, this is a critical time in which to provide youth with comprehensive, accessible sexual health education and prevention services related to HIV, STIs, and pregnancy.

Sexual decision-making is a complex behaviour and is influenced by a vast array of factors. Therefore, adolescents require more than information about HIV and HIV prevention. They must also be provided with the opportunity to develop skills in other domains, including assertiveness, communication and negotiation, problem-solving, and dealing with peer pressure. The social determinants of health play a large role in HIV risk behaviours, resulting in certain populations of adolescents being at an increased risk of HIV infection (e.g., street-involved youth, those who use substances, survivors of abuse and violence). HIV prevention programs should be tailored to meet the specific needs of these populations. As well, large scale HIV prevention strategies can be used to address factors such as housing, violence, and poverty (Marshall et al., 2009; PHAC, 2014a).

HIV prevention education, programs, and strategies are vital. Without them, there will be an increasing number of people who will be infected with HIV. Such programs and services are particularly important for adolescents due to the fact that many cases of HIV/AIDS that are identified among people in their 20s and early 30s may have been acquired during adolescence. The high rates of HIV and the high prevalence of STIs and unplanned adolescent pregnancies in Saskatchewan also point to the importance of prevention education and services. HIV testing is another necessary step for prevention. Those who are unaware of their status are not receiving treatment (i.e., their health is being compromised), and they may be unknowingly infecting others. Without increased testing and prevention efforts directed at adolescents, HIV infection rates will likely remain high in Saskatchewan.

References

- Advocates for Youth. (2005). *Integrating Efforts to Prevent HIV, Other Sexually Transmitted Infections, and Pregnancy among Teens*. Washington, DC: Author. Retrieved June 16, 2014 from <http://www.advocatesforyouth.org/publications/publications-a-z/529-integrating-efforts-to-prevent-hiv-other-stis-and-pregnancy-among-teens>
- Advocates for Youth. (2012). *Science and Success: Sex Education and Other Programs that Work to Prevent Teen Pregnancy, HIV, and Sexually Transmitted Infections* (3rd ed.). Washington, DC: Author. Retrieved July 8, 2014 from <http://www.advocatesforyouth.org/storage/advfy/documents/thirdeditionexecutivesummary.pdf>
- Aidala, A. & Sumartojo, E. (2007). Why housing? *AIDS & Behavior*, *11*, S1-S6. doi: 10.1007/s10461-007-9302-z
- AIDS.gov. (2014). *HIV/AIDS 101: What is HIV/AIDS?* Retrieved May 12, 2014 from <http://aids.gov/hiv-aids-basics/hiv-aids-101/what-is-hiv-aids/>
- AIDS.org. (2009). *Fact Sheets: CD4 (T-Cell) Tests*. Retrieved from <http://www.aids.org/topics/aids-factsheets/aids-background-information/what-is-aids/hiv-testing/cd4-t-cell-tests/>
- American Academy of Pediatrics. (2011). Policy statement: Adolescents and HIV infection: The pediatrician's role in promoting routine testing. *Pediatrics*, *128*, 1023-1030. doi: 10.1542/peds.2011-1761
- Andersson, N., Cockcroft, A., & Shea, B. (2008). Gender-based violence and HIV: Relevance for HIV prevention in hyperendemic countries of southern Africa. *AIDS*, *22*, S73-S86. doi: 10.1097/01.aids.0000341778.73038.86
- Battles, H. B. & Wiener, L. S. (2002). From adolescence through young adulthood: Psychological adjustment associated with long-term survival of HIV. *Journal of Adolescent Health*, *30*, 161-168. doi: 10.1016/S1054-139X(01)00341-X
- Bensley, L. S., Eenwyk, J. V., & Simmons, K. W. (2000). Self-reported childhood sexual and physical abuse and adult HIV-risk behaviors and heavy drinking. *American Journal of Preventive Medicine*, *18*, 151-158. doi: [http://dx.doi.org/10.1016/S0749-3797\(99\)00084-7](http://dx.doi.org/10.1016/S0749-3797(99)00084-7)
- Blanchet-Cohen, N., McMillan, Z., & Greenwood, M. (2011). Indigenous youth engagement in Canada's health care. *Pimatisiwin: A Journal of Aboriginal and Indigenous Community Health*, *9*, 87-111. Retrieved February 23, 2015 from <http://www.pimatisiwin.com/online/wp-content/uploads/2011/08/05Blanchett-Cohen3.pdf>
- Boyer, C. B. & Kegeles, S. M. (1991). AIDS risk and prevention among adolescents. *Social Science and Medicine*, *33*, 11-23. doi:10.1016/0277-9536(91)90446-J
- Bush, T. (2002). HIV infected youth: Perinatally vs. behaviourally acquired. *The Source*, *11*, 16-20.
- Camino, L. & Zeldin, S. (2002). From periphery to center: Pathways for youth civic engagement in the day-to-day life of communities. *Applied Developmental Science*, *6*, 213-220. doi: 10.1207/S1532480XADS0604_8
- Canadian Aboriginal AIDS Network. (CAAN, 2009). *Aboriginal Strategy on HIV/AIDS in Canada II for First Nations, Inuit and Metis Peoples from 2009 to 2014*. Vancouver, BC: Author. Retrieved from <http://www.caan.ca/national-aboriginal-strategies/strategies/>

- Canadian AIDS Treatment Information Exchange. (CATIE, 2009). *Managing Your Health: A Guide for People Living with HIV*. Toronto, ON: Author. Retrieved from <http://www.catie.ca/en/practical-guides/managing-your-health>
- Canadian AIDS Treatment Information Exchange. (CATIE, 2012). *Intersexions & Interjections: CATIE's National HIV and Youth Knowledge Exchange Symposium Report*. Toronto, ON: Author. Retrieved July 7, 2014 from <http://sagecollection.ca/en/system/files/intersexions-and-interjections.pdf>
- Canadian AIDS Treatment Information Exchange. (2014a). *HIV in Canada: A Primer for Service Providers* [Living Document]. Toronto, ON: Author. Retrieved July 7, 2014 from <http://www.catie.ca/en/hiv-canada/2/2-3/2-3-6>
- Canadian AIDS Treatment Information Exchange. (CATIE, 2014b). *School-Based Education*. Toronto, ON: Author. Retrieved May 12, 2014 from <http://www.catie.ca/en/hiv-canada/4/4-2/4-2-3/4-2-3-3>
- Canadian Council on Learning. (2009). *Lessons in Learning: Learning about Sex and Sexual Health*. Retrieved February 22, 2015 from http://www.ccl-cca.ca/pdfs/LessonsInLearning/07_22_09-E.pdf
- Canadian Paediatric Society. (2003; reaffirmed 2014). Position statement: Age limits and adolescents. *Paediatric Child Health*, 8, 577. Retrieved January 13, 2015 from <http://www.cps.ca/documents/position/age-limits-adolescents>
- Center for Population Options. (1993). *Peer to Peer: Youth Preventing HIV Infection Together*. Washington, DC: Author. Retrieved June 16, 2014 from <http://www.advocatesforyouth.org/storage/advfy/documents/peertopeer.pdf>
- Centers for Disease Control and Prevention. (CDC, 2014a). *About HIV/AIDS*. Atlanta, GA: Author. Retrieved May 12, 2014 from <http://www.cdc.gov/hiv/basics/whatishiv.html>
- Centers for Disease Control and Prevention. (CDC, 2014b). *HIV among Youth*. Atlanta, GA: Author. Retrieved June 12, 2014 from http://www.cdc.gov/hiv/risk/age/youth/index.html?s_cid=tw_drmermin-00186
- Centers for Disease Control and Prevention, Division of Adolescent and School Health. (CDC Dash, 2013). *Bringing High-Quality HIV and STD Prevention to Youth in Schools*. Atlanta, GA: Author. Retrieved Jul 4, 2014 from http://www.cdc.gov/healthyouth/about/hivstd_prevention.htm
- Centre of Excellence for Youth Engagement. (CEYE, n.d.). *What is Youth Engagement?* Toronto, ON: Author. Retrieved February 24, 2015 from http://www.engagementcentre.ca/files/Whatis_WEB_e.pdf
- Centre of Excellence for Youth Engagement. (CEYE, 2003). *Youth engagement and health outcomes: Is there a link?* Toronto, ON: Author. Retrieved February 23, 2015 from http://www.engagementcentre.ca/files/litreview1_web_e.pdf
- Challacombe, L. (2013). *The Epidemiology of HIV in Youth*. Toronto, ON: Canadian AIDS Treatment Information Exchange. Retrieved July 7, 2014 from <http://www.catie.ca/en/fact-sheets/epidemiology/epidemiology-hiv-youth>
- Children and Youth in Challenging Contexts Network. (CYCCN, 2013). *Youth Engagement: Empowering Youth Voices to Improve Services, Programs, and Policy*. Halifax, NS: Author. Retrieved February 24, 2015 from <http://cycnetwork.org/en/engagement#.UzoYXfldWSO>
- Commendador, K. (2010). Parental influences on adolescent decision making and contraceptive use. *Pediatric Nursing*, 36, 147-170.

- Community Preventive Services Task Force. (2012). Recommendations for group-based behavioral interventions to prevent adolescent pregnancy, Human Immunodeficiency Virus, and other sexually transmitted infections; comprehensive risk reduction and abstinence education. *American Journal of Preventive Medicine*, 42, 304-307. doi: [10.1016/j.amepre.2011.11.006](https://doi.org/10.1016/j.amepre.2011.11.006)
- Cooper, E. S., Risley, C. L., Drake, L. J., & Bundy, D. A. P. (2007). HIV as part of the lives of children and youth as life expectancy increases: Implications for Education. *Journal of International Cooperation in Education*, 10, 101-113.
- Dancy, B. L., Crittenden, K. S., & Talashek, M. L. (2006). Mothers' effectiveness as HIV risk reduction educators for adolescent daughters. *Journal of Health Care for the Poor and Underserved*, 17, 218 -239. doi: 10.1353/hpu.2006.0012
- DeMatteo, D., Major, C., Block, B., Coates, R., Fearon, M., Goldberg, E., ... Read, S. E. (1999). Toronto street youth and HIV/AIDS: Prevalence, demographics, and risks. *Journal of Adolescent Health*, 25, 358-366. doi: [10.1016/S1054-139X\(99\)00059-2](https://doi.org/10.1016/S1054-139X(99)00059-2)
- DiClemente, R. J., Crosby, R. A., & Wingood, G. M. (2002). HIV prevention for adolescents: Identified gaps and emerging approaches. *Prospects*, 32, 135-153. doi: 10.1023/A:1019707401329
- Dittus, P., Miller, K. S., Kotchick, B. A., & Forehand, R. (2004). Why Parents Matter!: The conceptual basis for a community-based HIV prevention program for the parents of African American youth. *Journal of Child and Family Studies*, 13, 5-20. doi: 10.1023/B:JCFS.0000010487.46007.08
- Eaton, L. A., Huedo-Medina, T. B., Kalichman, S. C., Pellowski, J. A., Sagherian, M. J., Warren, M., ... Johnson, B. T. (2012). Meta-analysis of single-session behavioral interventions to prevent sexually transmitted infections: Implications for bundling prevention packages. *American Journal of Public Health*, 102, e34-e44. doi: 10.2105/AJPH.2012.300968
- Edwards, L. L. & Reis, J. S. (2014). A five-step process for interactive parent-adolescent communication about HIV prevention: Advice from parents living with HIV/AIDS. *Journal of HIV/AIDS and Social Services*, 13, 59-78. doi: 10.1080/15381501.2013.775686
- Enah, C., Moneyham, L., Vance, D. E., & Childs, G. (2013). Digital gaming for HIV prevention with young adolescents. *Journal of the Association of Nurses in AIDS Care*, 24, 71-80. doi: <http://dx.doi.org/10.1016/j.jana.2012.03.005>
- Erbstein, N. (2013). Engaging underrepresented youth populations in community youth development: Tapping social capital as a critical resource. *New Directions for Youth Development*, 138, 109-124. doi: 10.1002/yd.20061
- Fisher, W. A. & Fisher, J. D. (1998). Understanding and promoting sexual and reproductive health behavior: Theory and method. *Annual Review of Sex Research*, 9, 39-76. doi: 10.1080/10532528.1998.10559926
- Fisher, J. D., Fisher, W. A., Bryan, A. D., & Misovich, S. J. (2002). Information-motivation-behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. *Health Psychology*, 21, 177-186. doi: 10.1037//0278-6133.21.2.177
- Flicker, S., Guilamo-Ramos, V., & Bouris, A. (2009). Commentaries on 'Abstinence-plus programs for HIV infection prevention in high-income countries.' *Evidence-Based Child Health: A Cochrane Review Journal*, 4, 821-825. doi: 10.1002/ebch.347

- Frank, K. I. (2006). The potential of youth participation in planning. *Journal of Planning Literature*, *20*, 351-371. doi: 10.1177/0885412205286016
- Furber, G. V., Crago, A. E., Meehan, K., Sheppard, T. D., Hooper, K., Abbot, D. T., . . . Skene, C. (2011). How adolescents use SMS (short message service) to micro-coordinate contact with youth mental health outreach services. *Journal of Adolescent Health*, *48*, 113-115. doi: 10.1016/j.jadohealth.2010.05.022
- Gulick, R. M., (2010). Antiretroviral treatment 2010: Progress and controversies. *Journal of Acquired Immune Deficiency Syndrome*, *55*, S43-S48. doi: 10.1097/QAI.0b013e3181f9c09e
- Harper, G. W. & Riplinger, A. J. (2013). HIV prevention interventions for adolescents and young adults: What about the needs of gay and bisexual males? *AIDS and Behavior*, *17*, 1082-1095. doi: 10.1007/s10461-012-0178-1
- Harrison, K. M., Song, R., & Zhang, X. (2010). Life expectancy after HIV diagnosis based on national HIV surveillance data from 25 states, United States. *Journal of Acquired Immune Deficiency Syndrome*, *53*, 124-130. Retrieved from <http://natap.org/2010/HIV/Life.pdf>
- Jaworsky, D., Larkin, J., Sriranganathan, G., Clout, J., Janssen, J., Campbell, L., ... Flynn, S. (2013). Evaluating youth sexual health peer education programs: Challenges and suggestions for effective evaluation practices. *Journal of Education and Training Studies*, *1*, 227-234. doi: 10.11114/jets.v1i1.68
- Joint United Nations Programme on HIV/AIDS. (UNAIDS, 2003). *HIV/AIDS and Young People: Hope for Tomorrow*. Geneva, Switzerland: United Nations Department of Public Information. Retrieved June 16, 2014 from http://data.unaids.org/Publications/IRC-pub06/jc785-youngpeople_en.pdf
- Joint United Nations Programme on HIV/AIDS. (UNAIDS, 2008). *Fast Facts about HIV* [Brochure]. Geneva, Switzerland: United Nations Department of Public Information.
- Joint United Nations Programme on HIV/AIDS. (UNAIDS, 2009). *Fast Facts about HIV Testing and Counselling* [Brochure]. Geneva, Switzerland: United Nations Department of Public Information.
- Joint United Nations Programme on HIV/AIDS. (UNAIDS, 2010). *Adolescents, Young People, and HIV: Fact Sheet*. Geneva, Switzerland: United Nations Department of Public Information. Retrieved July 4, 2014 from http://www.unaids.org/en/media/unaids/contentassets/documents/factsheet/2012/20120417_FS_adolescentsyoungpeoplehiv_en.pdf
- Kachur, R., Mesnick, J., Liddon, N., Kapsimalis, C., Habel, M., David-Ferdon, C., ... Schindelar, J. (2013). *Adolescents, Technology and Reducing Risk for HIV, STDs and Pregnancy*. Atlanta, GA: Centers for Disease Control and Prevention. Retrieved from <http://www.cdc.gov/std/life-stages-populations/Adolescents-white-paper.pdf>
- Kalichman, S. C. & Simbayi, L. C. (2004). Traditional beliefs about the cause of AIDS and AIDS related stigma in South Africa. *AIDS Care*, *16*, 572-580. doi: 10.1080/09540120410001716360
- Kapogiannis, B. G., Legins, K. E., Chandan, U., & Lee, S. (2014). Evidence-based programming for adolescent HIV prevention and care: Operational research to inform best practices. *Journal of Acquired Immune Deficiency Syndromes*, *66*, S288-S235. Retrieved from <http://journals.lww.com/jaids/toc/2014/07011>
- Khanna, N. & McCart, S. (2007). *Adult Allies in Action*. Toronto, ON: The Students Commission, Centre of Excellence for Youth Engagement. Retrieved February 24, 2015 from http://www.engagementcentre.ca/files/alliesFINAL_e_web.pdf
- Kim, C. R. & Free, C. (2008). Recent evaluations of the peer-led approach in adolescent sexual health education: A systematic review. *International Family Planning Perspectives*, *34*, 89-96. doi: 10.1363/ifpp.34.0089.08

- Kirby, D. (2002a). Effective approaches to reducing adolescent unprotected sex, pregnancy, and childrearing. *The Journal of Sex Research*, 39, 51-57. doi: 10.1080/00224490209552120
- Kirby, D. (2002b). HIV Transmission and Prevention in Adolescents. In S. Coffey & P. Volberding (Eds.), *HIV InSite Knowledge Base*. Retrieved June 18, 2014 from <http://hivinsite.ucsf.edu/InSite?page=kb-00&doc=kb-07-04-03>
- Kirby, D., Laris, B. A., & Rolleri, L. (2005). Impact of sex and HIV education programs on sexual behaviors of youth in developing and developed countries. *Youth Research Working Paper Series*, 2. Retrieved February 24, 2015 from https://www.iywg.org/sites/iywg/files/youth_research_wp_2.pdf
- Kirby, D., Obasi, A., & Laris, B. A. (2006). The effectiveness of sex education and HIV education interventions in schools in developing countries. *World Health Organization Technical Report Series*, 938, 317-341.
- Korda, H., & Itani, Z. (2013). Harnessing social media for health promotion and behavior change. *Health Promotion Practice*, 14(1), 15-23. doi: 10.1177/1524839911405850
- Kourtis, A. P., Kraft, J. M., Gavin, L., Kissin, D., McMichen-Wright, P., & Jamieson, D. J. (2006). Prevention of sexually transmitted human immunodeficiency virus (HIV) infection in adolescents. *Current HIV Research*, 4, 209-219. doi: <http://dx.doi.org/10.2174/157016206776055057>
- Larkin, J., Flicker, S., Koleszar-Green, R., Mintz, S., Dagninoand, M., & Mitchell, C. (2007). HIV risk, systemic inequities, and Aboriginal youth: Widening the circle for HIV prevention programming. *Canadian Journal of Public Health*, 98, 179-182. doi: 128.233.210.97
- Lefebvre, C. (2009). Integrating cell phones and mobile technologies into public health practice: A social marketing perspective. *Health Promotion Practice*, 10, 490-494. doi: 10.1177/1524839909342849)
- Lenhart, A., Ling, R., Campbell, S., & Purcell, K. (2010). *Teens and Mobile Phones*. Washington, DC: Pew Internet & American Life Project. Retrieved February 4, 2015 from <http://www.pewinternet.org/2010/04/20/teens-and-mobile-phones/>
- Leonard, L., Berndtson, K., Matson, P., Philbin, M., Arrington-Sanders, R., & Ellen, J. M. (2010). How physicians test: Clinical practice guidelines and HIV screening practices with adolescent patients. *AIDS Education and Prevention*, 22, 538-545. doi:10.1521/aeap.2010.22.6.538
- Liang, B., Commins, M., & Duffy, N. (2010). Using social media to engage youth: Education, social justice, & humanitarianism. *The Prevention Researcher*, 17(supplement), 13-17. Retrieved from <http://www.tpronline.org/download-free-article.cfm?id=571>
- Malow, R., Dévieux, J., & Lucenko, B. A. (2006). History of childhood sexual abuse as a risk factor for HIV risk behavior. *Journal of Trauma Practice*, 5, 13-32. doi: 10.1300/J189v05n03_02
- Marshall, B. D. L., Kerr, T., Shoveller, J. A., Patterson, T. L., Buxton, J. A., & Wood, E. (2009). Homelessness and unstable housing associated with an increased risk of HIV and STI transmission among street-involved youth. *Health and Place*, 15, 783-790. doi:10.1016/j.healthplace.2008.12.005
- McCall, D. S. (2012). *Teaching Sexual Health Education: A Primer for New Teachers, a Refresher for Experienced Teachers*. Ottawa, ON: Society of Obstetricians and Gynaecologists of Canada. Retrieved February 22, 2015 from <http://www.sexualityandu.ca/uploads/files/TeachingSexEdManual.pdf>

- McKay, A. & Bissell, M. (2010). *Sexual Health Education in the Schools: Questions and Answers* (3rd ed.). Ottawa, ON: Sex Information and Education Council of Canada (SIECCAN). Retrieved from http://www.sieccan.org/pdf/she_q&a_3rd.pdf
- Morse, E. M., Morse, P. M., Burehfiel, K. E., & Zeanah, P. D. (1998). Behavioral factors affecting HIV prevention for adolescent and young adult IDUs. *Journal of the Association of Nurses in AIDS Care*, 9, 77-90. doi: [10.1016/S1055-3290\(98\)80022-8](https://doi.org/10.1016/S1055-3290(98)80022-8)
- Mullen, P. D., Ramirez, G., Strouse, D., Hedges, L. V., & Sogolow, E. (2002). Meta-analysis of the effects of behavioral HIV prevention interventions on the sexual risk behavior of sexually experienced adolescents in controlled studies in the United States. *Journal of Acquired Immune Deficiency Syndromes*, 30, S94-S105.
- Murdock, L. (2009). *Young Aboriginal Mothers in Winnipeg*. Winnipeg, MB: Prairie Women's Health Centre of Excellence. Retrieved from <http://www.pwhce.ca/pdf/YoungAboriginalMothersInWinnipeg.pdf>
- National AIDS Housing Coalition and Ontario HIV Treatment Network. (2011). *Breaking the Link between Homelessness and HIV*. Washington, DC: National AIDS Housing Coalition. Retrieved July 15, 2014 from <http://www.hivhousingsummit.org/2012/Docs/BriefingBook/Homelessness.pdf>
- National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (2010a). *Effective HIV and STD Prevention Programs for Youth: A Summary of Scientific Evidence*. Retrieved June 24, 2010 from http://www.cdc.gov/healthyyouth/sexualbehaviors/pdf/effective_hiv.pdf
- National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. (2010b). *Promoting Effective HIV and STD Prevention through Schools*. Retrieved June 24, 2014 from http://www.cdc.gov/healthyyouth/about/pdf/inbrief_effective_hiv.pdf
- Positive Women's Network Society (2001). *Pocket Guide for Women Living with HIV* [Brochure]. Vancouver, BC: Canadian HIV/AIDS Clearinghouse. Retrieved from http://orders.catie.ca/product_info.php?products_id=25878
- Public Health Agency of Canada. (PHAC, 2008). *Canadian Guidelines for Sexual Health Education*. Ottawa, ON: Author. Retrieved January 28, 2015 from <http://www.phac-aspc.gc.ca/publicat/cgshe-ldnemss/pdf/guidelines-eng.pdf>
- Public Health Agency of Canada. (PHAC, 2010). *Population-Specific HIV/AIDS Status Report: Aboriginal Peoples*. Ottawa, ON: Author. Retrieved on January 6, 2015 from <http://www.phac-aspc.gc.ca/aids-sida/publication/ps-pd/aboriginal-autochtones/pdf/pshasrap-revspda-eng.pdf>
- Public Health Agency of Canada. (PHAC, 2013a). *At a Glance - HIV and AIDS in Canada: Surveillance Report to December 31, 2012*. Ottawa, ON: Author. Retrieved April 9, 2014 from <http://www.phac-aspc.gc.ca/aids-sida/publication/surreport/2012/dec/index-eng.php>
- Public Health Agency of Canada. (PHAC, 2013b). Infectious diseases – the never-ending threat. In *The Chief Public Health Officer's Report on the State of Public Health in Canada, 2013* (pp. 63–72). Ottawa, ON: Author. Retrieved January 9, 2015 from <http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2013/assets/pdf/2013-eng.pdf>
- Public Health Agency of Canada. (PHAC, 2014a). Addressing determinants of sexually transmitted and blood borne infections among street-involved youth: Access to health services. Ottawa, ON: Author. Retrieved July 23, 2013 from http://www.catie.ca/sites/default/files/FactSheet_Health-Services_EN.pdf

- Public Health Agency of Canada. (PHAC, 2014b). Addressing determinants of sexually transmitted and blood borne infections among street-involved youth: Education and employment. Ottawa, ON: Author. Retrieved July 23, 2013 from http://www.catie.ca/sites/default/files/FactSheet_Education_EN.pdf
- Public Health Agency of Canada. (PHAC, 2014c). Addressing determinants of sexually transmitted and blood borne infections among street-involved youth: Experiences with the criminal justice system. Ottawa, ON: Author. Retrieved July 23, 2013 from http://www.catie.ca/sites/default/files/FactSheet_Criminal-Justice_EN.pdf
- Public Health Agency of Canada. (PHAC, 2014d). Addressing determinants of sexually transmitted and blood borne infections among street-involved youth: Mental health and mental illness. Ottawa, ON: Author. Retrieved July 23, 2013 from http://www.catie.ca/sites/default/files/FactSheet_Mental-Health_EN.pdf
- Public Health Agency of Canada. (PHAC, 2014e). Addressing determinants of sexually transmitted and blood borne infections among street-involved youth: Unstable housing and homelessness. Ottawa, ON: Author. Retrieved July 23, 2013 from http://www.catie.ca/sites/default/files/FactSheet_Homeless_EN.pdf
- Public Health Agency of Canada. (PHAC, 2014f). *HIV and AIDS in Canada: Surveillance Report to December 31, 2013*. Author. Retrieved December 1, 2014 from <http://www.phac-aspc.gc.ca/aids-sida/publication/survreport/2013/dec/index-eng.php>
- Public Health Agency of Canada. (PHAC, 2014g). *Population-Specific Status Report: HIV/AIDS and Other Sexually Transmitted and Blood Borne Infections Among Youth in Canada*. Ottawa, ON: Author. Retrieved July 7, 2014 from <http://librarypdf.catie.ca/pdf/ATI-20000s/26485.pdf>
- Reed, S. J., Miller, R. L., & the Adolescent Medicine Trials Network for HIV/AIDS Interventions. (2012). The benefits of youth engagement in HIV-preventive structural change interventions. *Youth & Society, online publication*, no pagination. doi: 10.1177/0044118X12443372
- Ross, D. A. (2008). Approaches to sex education: Peer-led or teacher-led? *PLOS Medicine*, 5, e229. doi: 10.1371/journal.pmed.0050229
- Rotermann, M. (2012). Sexual behaviour and condom use of 15- to 24-year-olds in 2003 and 2009/2010. *Statistics Canada Health Reports*, 23, 1-6.
- Rotheram-Borus, M. J. & Futterman, D. (2000). Promoting early detection of Human Immunodeficiency Virus Infection among adolescents. *Pediatrics and Adolescent Medicine*, 154, 435-439. Retrieved from <http://www.hawaii.edu/hivandaids/Promoting%20Early%20Detection%20of%20HIV%20Infection%20Among%20Adolescents.pdf>
- Rotheram-Borus, M. J., Ingram, B. L., Swendeman, D., & Flannery, D. (2009). Common principles embedded in effective adolescent HIV prevention programs. *AIDS and Behavior*, 13, 387-398. doi: 10.1007/s10461-009-9531-4
- Rotheram-Borus, M. J., O'Keefe, Z., Kracker, R., & Foo, H. H. (2000). Prevention of HIV among adolescents. *Prevention Science*, 1, 15-30. doi: 10.1023/A:1010071932238
- Sales, J. M. & DiClemente, R. J. (2010). Adolescent STI/HIV prevention programs: What works for teens? *ACT for Youth Center of Excellence Research Facts and Findings*, May. Retrieved July 4, 2014 from http://www.actforyouth.net/resources/rf/rf_sti_0510.cfm
- Samji, H., Cescon, A., Hogg, R.S., Modur, S.P., Althoff, K.N., Buchacz, K., ... Klein, M. B. (2013). Closing the gap: Increases in life expectancy among treated HIV-positive individuals in the United States and Canada. *PLoS ONE*, 8: e81355. doi: 10.1371/journal.pone.0081355

- Saskatchewan HIV Provincial Leadership Team. (2013). *Saskatchewan HIV Testing Policy*. Policy number 0000-00-001. Retrieved from [http://www.skshiv.ca/SK%20HIV%20Testing%20Policy%20Final%20Dec%202012%20\(2\).pdf](http://www.skshiv.ca/SK%20HIV%20Testing%20Policy%20Final%20Dec%202012%20(2).pdf)
- Saskatchewan Ministry of Health. (2010). *Saskatchewan's HIV Strategy 2010-2014*. Author. Retrieved from <http://www.health.gov.sk.ca/hiv-strategy-2010-2014>
- Saskatchewan Ministry of Health, Population Health Branch. (2013). *HIV and AIDS in Saskatchewan 2012*. Author. Retrieved from <http://www.health.gov.sk.ca/hiv-aids-annual-report-2012>
- Saskatchewan Ministry of Health, Population Health Branch. (2014). *HIV and AIDS in Saskatchewan 2013*. Author. Retrieved December 2, 2014 from <http://www.health.gov.sk.ca/hiv-aids-SK2013>
- Sheth, P. & Thorndycraft, B. (2009). *HIV Transmission: An Overview* [Brochure]. Toronto, ON: Canadian AIDS Treatment Information Exchange. Retrieved from <http://www.catie.ca/fact-sheets/prevention/hiv-transmission-overview>
- Silverman, E. A. (2013). Adolescent sexual risk-taking in a psychosocial context: Implications for HIV prevention. *HIV Clinician*, 25, 1-5. Retrieved July 7, 2014 from <http://demoiselle2femme.org/wp-content/uploads/Adolescent-Sexual-Risk-taking.pdf>
- Society of Obstetricians and Gynaecologists of Canada. (SOGC, 2004). *HIV Testing in Pregnancy: Public Education Pamphlet* [Brochure]. Ottawa, ON: Author.
- Spielberg, F., Branson, B. M., Goldbaum, G. M., Lockhart, D., Kurth, A., Celum, C. L., ... Wood, R. W. (2003). Overcoming barriers to HIV testing: Preferences for new strategies among clients of a needle exchange, a sexually transmitted disease clinic, and sex venues for men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*, 32, 318-328. doi: 10.1097/00126334-200303010-00012
- Statistics Canada. (2013). *CANSIM Table 102-4505 – Crude birth rate, age-specific and total fertility rates (live births), Canada, provinces and territories, annual (rate)*. Retrieved January 20, 2015 from <http://www5.statcan.gc.ca/cansim/a26>
- Tucker, J. S., Ryan, G. W., Golinelli, D., Ewing, B., Wenzel, S. L., Kennedy, D. P., ... Zhou, A. (2012). Substance use and other risk factors for unprotected sex: Results from an event-based study of homeless youth. *AIDS and Behavior*, 16, 1699-1707. doi: 10.1007/s10461-011-0017-9
- UNICEF. (2007). *Child poverty and perspective: An overview of child wellbeing in rich countries*. Florence, IT: Author. Retrieved January 20, 2015 from http://www.unicef-irc.org/publications/pdf/rc7_eng.pdf
- United Nations Educational, Scientific and Cultural Organization. (UNESCO, 2009). *Sexuality Education*. Retrieved February 22, 2015 from <http://www.unesco.org/new/en/hiv-and-aids/our-priorities-in-hiv/sexuality-education/>
- United Nations Population Fund. (UNPFA, n.d.). *Preventing HIV/AIDS: Young People, The Greatest Hope for Turning the Tide*. Retrieved June 16, 2014 from <http://www.unfpa.org/hiv/people.htm>
- Underhill, K., Operario, D., & Montgomery, P. (2009). Abstinence-only programs for HIV infection prevention in high-income countries (Cochrane Review). *Cochrane Library*, 4, 1-2. doi: 10.1002/14651858.CD005421.pub2

- Valente, T. W., Ritt-Olson, A., Stacy, A., Unger, J. B., Okamoto, J., & Sussman, S. (2007). Peer acceleration: Effects of a social network tailored substance abuse prevention program among high-risk adolescents. *Addiction*, *102*, 1804-1815. doi: 10.1111/j.1360-0443.2007.01992.x
- Wilton, J. (2014). Single-session interventions to reduce HIV and STI risk behaviours: How well do they work? *Prevention In Focus, Fall*. Toronto, ON: Canadian AIDS Treatment Information Exchange. Retrieved July 14, 2014 from <http://www.catie.ca/en/pif/fall-2014/single-session-interventions-reduce-hiv-and-sti-risk-behaviours-how-well-do-they-work>